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School leadership competencies in the knowledge society

PhD dissertation

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Declaration

I, Dr. Tibor Baráth, hereby declare, in full awareness of my criminal liability, that the doctoral dissertation entitled School leadership competencies in the knowledge society, submitted by me, is my own intellectual work. Where I have used the work of others, I have cited them appropriately, including both printed and online sources. I have not used AI for text generation.



Dr. Tibor Baráth

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As I mentioned in the introduction, this topic has been on my mind for a long time. Gábor Halász played an important role in the study of school leadership and the school as an organisation, as well as in research conducted in this field. We have collaborated on numerous projects in the field of school leadership development, most notably the establishment, development, and operation of the Hungarian-Netherlands School of Educational Management, and, of course, the consultations during the writing of this thesis have significantly shaped my thinking about school leadership. The discussions I had with Béla Pukánszky were also very important, as they helped me to maintain focus, to process the topic in a targeted manner, and to strike a balance: the thesis should be of high quality and innovative, but at the same time, I should stop incorporating new ideas into the thesis and concentrate on meeting the usual expectations of science. I am very grateful to my two supervisors for their continuous help and encouragement, which led to the thesis and the results presented in it.

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LIST OF ABBREVIATIONS

AI – Artificial Intelligence

ALL – Adult Literacy and Life Skills Survey (2003–2007)

C5 – Central5

Central5 – competency framework for school leaders developed in LLL-S-L and ICSL

CVF – competing values framework

DBR – design-based research

DDCDM – demand-driven competence development model

DDICR – demand-driven identification of competence requirements

DeSeCo – Defining and Selecting Competencies

DiSC – Dominance, Influence, Steadiness, and Conscientiousness

DISCO – European Dictionary of Skills and Competences

ESCO – European Skills, Competencies and Occupation

GDP – gross domestic product

HlES – high-level experienced schools

HRM – human resource management

IALS – International Adult Literacy and Basic Skills Surveys in the OECD Region (1994–1998)

ICSL – International Cooperation for School Leadership

LLL-S-L – Quality School Leadership for Effective Learning

LLUK – Lifelong Learning United Kingdom

LO – learning organisation

LO% – ratio of acting school as a learning organisation, based on the values of 6 factors of the validated LO model

LOLSO – Leadership for Organisational Learning and Student Outcomes

LOM4S – Learning Organisation Model for School

LOP4S – learning organisation profile for schools

LPOLS – Leadership in the Processes of Organisational Learning in Schools

MIT – Massachusetts Institute of Technology

MlES – medium level experienced schools

OECD – Organisation for Economic Co-operation and Development

P21 – Partnership for 21st Century Learning

PDCA – plan, do, check, act

PIAAC – Programme for the International Assessment of Adult Competencies, after 2008

PISA – Programme for International Student Assessment (OECD)

R&D – research and development

RDA – Role Diagrammatic Approach

SLE – student learning environment

SoLD – Science of Learning and Development

UK – United Kingdom

US – United States

VET – Vocational Education Training

VUCA – volatile, uncertain, complex, ambiguous

WEF – World Economic Forum

WLE – work-based learning environment

1. INTRODUCTION

What makes an organisation successful has long been studied by theorists, practitioners, leaders, and organisation members alike. When can we say that an organisation operates successfully? In order to do so, what kind of activities or behaviour does the organisation expect from its members and leaders to demonstrate? In the course of seeking to answer these questions, several organisational and leadership models have been developed, enabling us to gain a deeper understanding of the nature of organisations and their development. (int. al.: *Georgopoluos & Tannenbaum*, 1957; *Bennis*, 1966; *Lawrence & Lorsch*, 1967); *Campbell*, 1977; *Katz & Kahn*, 1978; *Cameron, & Whetten*, 1983; *Quinn & Rohrbaugh*, 1983; *Faerman, & Quinn*, 1985). These questions are naturally present when we look at schooling – be it the school system or individual schools themselves – and this leads us to the emergence of school success and efficiency studies (int. al.: *Coleman et al.*, 1966, 1981; *Jencks et al.*, 1972; *Mortimore et al.*, 1988; *Schereens,* 1992).

The obvious question arises: what role does the leader or the leadership play in the successful operation of organisations and institutions, and based on this, what kind of knowledge and competencies are needed for the successful management of organisations/schools, what kind of roles are necessary to play, what kind of behaviour and system of activities are required to be demonstrated? (int. al.: *Taylor*, 1947; *Quinn et al.*, 1996; *Jirasinghe, & Lyons*, 1996.; *National Association of Elementary School Principals*, 2008; *Ontario competences*; *UNESCO*, 2006; *Wilson, Lenssen & Hind*, 2006). Defining leadership roles and competencies, and outlining the activities and forms of behaviour in which they are manifested, are pivotal issues in leadership development.

I have had a strong interest in the quality of school leadership and its relation to student achievements for a long time. While a group of Hungarian school leaders were trained in the '90s in Amsterdam – I was one of the group members – my interest turned towards the organisational aspect and leadership styles and models. Between 1992 and 1997, two projects were established under the Dutch-Hungarian governmental agreement, which aimed to develop a new master-level training program for Hungarian school leaders and to establish its organisational framework. As an international and inter-university consortium, the Hungarian-Netherlands School of Educational Management was born from these projects. During that period, I wrote study materials about the effectiveness of schools (*Baráth*, 1993; 1997a; 1997b; 1997c). In 1996 and 1997, I planned and carried out a nationwide research

project – based on a representative sample of Hungarian public schools – which focused on identifying effectiveness models for public schools and characterising their leadership (*Baráth*, 1998; 2000). *Quinn* and *Rohrbaugh's* competing values framework served as the theoretical background for the research (1983), enabling harmonised analyses of organisations and leadership characteristics.

Later, I gained deeper insight into human resource development and began applying a well-founded behavioural competence model, the Role Diagrammatic Approach (*Wolbers*, 2005). Between 2005 and 2010, I studied the concept of the Sector Skill Councils developed in the United Kingdom and initiated by the business sphere to enhance the relevance and quality of labour. I adapted the concept and methods (demand-driven identification of competence requirements and demand-driven competence development model, later DDICR and DDCDM). I applied it to define more precisely the competence requirements of different BA/BSc and MA/MSc training programmes in higher education (*Baráth*, 2014). All these research and development projects enhanced my knowledge and enabled me to take an active role in various R&D programmes, which led to the final concept for my dissertation.

Schooling and schools play an increasingly important role in both the private lives of people and in our knowledge economy and society by providing high-level education and making it possible for students (and adults) to improve their competencies necessary for work and life. Schools are undergoing profound changes due to differences between the expectations of the industrial and knowledge societies and economies (*Sawyer*, 2008). They should fulfil multifunctional roles; their changes are characterized by evolutionary improvement; bureaucratic regulation has less importance in governing schools; schools should serve the deep learning of students; and they should become a learning organisation. The effectiveness of schools strongly depends on the capacity of their leaders. That is why I need to define the main research question – on which the dissertation is built – as follows: what makes school leaders (school leadership) able to create a school (a learning environment in the school) in which students can acquire the competencies that are required in the knowledge society.

In a complicated, complex, and turbulently changing world in which the school must operate, defining the competencies of an organisation's leadership that is able to optimise the organisation's operations is itself a challenging task. According to my initial plan, the dissertation would have focused on interpreting the competencies of successful school leadership in the 21st century, and on possible methods of defining these competencies. Thus, initially, I planned to introduce the development process of a competency framework

for school leaders, and the research supported this development process. This would have been very close to the traditional research approach: define a research question (what competencies school leaders should have); based on the research, identify and define the needed competencies; and finally, analyse and assess the results. However, following consultations with Gábor Halász, we found it would be necessary to broaden the search to answer the fundamental question. Thus, I began to examine the impact mechanism, which leads from 21st-century learner competencies through the learning environment and school organisation to the definition of leader competencies.

The second chapter of the dissertation outlines the logical framework with the help of which I will explore the factors that define the competencies to be acquired by the school leaders, how these are influenced by the competencies to be acquired by learners, the acquisition-supporting environment and organisational operation, and, I shall describe how and with what methods school leaders' competencies can be defined. This chapter presents the formation of research questions, which were inspired by development. The research findings used and analysed later served mainly as a basis for development.

The third chapter introduces the applied research approach, methods, and the theoretical grounds in harmony with them. It provides information about the integration of qualitative and quantitative methods, which makes it possible to grasp such a complex and turbulent phenomena, such as the school and its leadership, in a sensitive and sophisticated way. The methodological part, in harmony with the design-based research, includes a new approach: it is based on how we define those behavioural competencies needed to perform a successful job. The definition of demand-driven competence, combined with behavioural competencies, is a pillar of the dissertation that establishes the relationship between the different research phases and their results. This approach requires the integrated application of qualitative and quantitative methods.

As a follow-up to the previous chapter, which described the methodological approach and models, Chapter 4 discusses the methods applied. It lists the tools, outlines the data collection method and process, and specifies the sample on which data recording took place.

Chapter 5 defines learning and interprets it in the context of the knowledge-based society, and provides a brief description of 21st-century learner competencies. The content of these competencies is predictive, meaning they help define the kind of environment necessary for optimal development. In close connection to the previous chapter, chapter 6 describes the

characteristics of the learning environment that enable learners to learn efficiently and successfully, and highlights the most important school support, i.e., high-quality teaching. Defining these characteristics is important because it allows us to draw conclusions about the school organisation, which can create an optimal learning environment. Chapter 7 – based on the content of the previous chapter – examines what characterises the school leadership capable of forming a suitable school organisation. Following the logical chain, this chapter lays the foundation for examining the leadership competencies necessary for forming, operating, and continuously developing a school organisation that optimises learning. Here, we shall deal with organisational learning and the features of operating a learning organisation. We will also discuss what we know about the impact of school leadership on learner outcomes.

Chapter 8 discusses school competencies, their interpretation, a unique, demand-driven definition method of these, and a validation method of the results. The next part of the chapter examines the relationship among the organisation supporting 21st-century competencies (i.e., predicting our conclusions), the school as a learning organisation, and the school leadership capable of forming and managing its operations. This chapter deals with the elaboration and demonstration of the empirical examinations, with the help of which the research questions formulated in Chapter 2 can possibly be answered. The chapter is firmly grounded in the behaviour competence interpretation described in the methodology section, which helps us grasp the definitions of both the personal (school leaders) and organisational (schools) competencies and their relationship to each other.

The last chapter (9) summarises the results and findings – using the interpretation framework described in chapter 2 – and discusses the results from a practical application aspect. The chapter focuses on the challenges already present in knowledge-based societies, such as the 4th industrial revolution and the 3rd information technological revolution – as well as those that cannot yet be detected and their possible impact on school learning and school leaders. Based on this, we shall discuss how we can redefine the school learning environment, the expertise and competencies of the leaders responsible for this, and how we can develop these alongside both predictable and unpredictable changes to make high-quality learning available for learners. Discussing these issues raises new questions and opens the way for new research and development directions.

Some chapters are based on published studies that were formerly written independently or jointly with others. Parts of these – with some changes – are used textually for my

dissertation. In these cases, I shall highlight in the footnotes which former publication of mine is used for the given part. The methodological chapter is partly based on the studies that underpin the Central-European school leader competency framework, combining them with several new parts. These have been published in the volumes describing the results of the projects entitled Quality School Leadership for Effective Learning (2010) and International Cooperation for School Leadership (2011–2012), and with the application of their research findings. I was also co-editor of the study volume of the 2010 projects (*Baráth*, 2010a; 2010b; 2013a; 2013b). On several occasions, the chapter on school learning and learning organisations is based on some of my former publications in which I examined learning effectiveness and leadership as well as organisational characteristics (*Baráth*, 2005; 2006).

Furthermore, I identified the characteristics of learning organisations and elaborated on an empirical examination model (*Baráth & Cseh*, 2011; *Baráth,* 2014; 2015). I relied on related empirical examination results and publications on these in the chapter analysing school leadership, the learning organisational operation and the competencies of school leadership (*Baráth*, 2010c; 2010d; 2015; 2017; *Baráth, Kirkham & Hašková*, 2013). Finally, when writing the dissertation, I try to make it clear which activities, tasks, and resulting products I carried out and prepared by myself during the research phases. I also try to show which activities and products were related to the research team during the research phase.

The empirical examinations were conducted within the framework of the projects entitled *Quality School Leadership for Effective Learning* (2010), and *International Cooperation for School Leadership* (2011–2012) led by the Tempus Public Foundation. *The Learning Organisational Model for Schools* (2014–2015) was realised with the support of the infrastructure of Qualitas T&G Ltd. and the Hungarian-Netherlands School of Educational Management at the University of Szeged. The Learning Organisational Model for Schools project had a follow-up research phase in 2020, carried out within the HUNSEM framework.

1.1. Antecedents to defining the concept of the dissertation

While my original plan was to base my dissertation merely on international comparative research in 2010 (as part of an R&D project), the revised version is built on three research phases serving development projects.

The new approach – the definition of school leadership competencies adapted to the socio-economic process – fundamentally changed the framework of the dissertation. The definition of the competencies required for the work of a school leader in the context of socio-economic processes has become an order of magnitude more complex and deeper, and simultaneously, a process that creates constant challenges. It was no longer enough to present a research-based development process and its results, but it became necessary to explore the system of effects, as a result of which school leadership impacts the development of student competencies through complex interactions. For this, it was necessary to divide and connect the effects and to present the corresponding research phases. At the same time, in addition to presenting the specific goals of each phase, it was essential to maintain the original focus: the identification of leadership competencies. Last but not least, this change also posed a significant methodological challenge because R&D projects carried out within national and international frameworks, as well as the developmental research phases carried out during them, had to be linked. The implementation of this required the interpretation of the research phases within a unified framework and reflecting on the fact that the investigations serve to advance the original goal. The realization was made possible by the fact that the research phases presented in my thesis were based on the same methodological foundations, at my suggestion and initiative. This was the previously mentioned integrated application of DDICR and RDA, which, in the case of RDA was also extended to organisational behaviour. (See the details in Chapter 3.)

Changing the framework of the thesis in this way is clearly supported and confirmed by the research and methodological direction in which the researcher is also expected to fulfil the role of the reflective practitioner (*da Silva* & *Ciolan*, 2019, 26).

1.2. Research phases serving as the basis for the dissertation

Before giving a detailed description of the research methods, models, and tools (Chapters 3 and 4), I deem it necessary to highlight the methodological approach on which the answers to the research questions defined in 2.1 are based. My dissertation does not follow the traditional path of defining the research question, forming the concept, selecting the sample, developing the tools, recording the data, and analysing the data, based on which to provide responses to the research question(s). Instead, I was involved in and developed several R&D projects that – partly at my initiative – focused heavily on research activities that are best

characterized as research-based development or developmental research. From a methodological point of view, the research phases can be described as design-based research, as I will argue in Chapter 3. The research projects executed between 2010 and 2015 (the last had a follow-up in 2020) enabled me to answer the research questions with the help of an integrated use of processes, results, findings, and databases. In this sense, my paper is a work of synthesis, which is based on several sources: my former studies (paper-based dissertation), an analysis of the professional literature, and besides desk research, these are the projects briefly described next, and the research projects based on this, which jointly enable me to select consciously the sources via which in the end I will come up with the answers to the research questions.

There were three research phases embedded into different development projects, which provided data for my dissertation and in which I actively participated. This short description aims to provide a brief insight into the projects, the research phase, and my role in them.

Aim and description: The Quality School Leadership for Effective Learning, (hereinafter: LLL-S-L; 2010) project was originally aimed at developing a new competency framework for school leaders who are successful in leading schools in the knowledge society. The goals were partly realised; we had the first version of the competency structure and could also draw up the school leadership competency profiles for the participating countries. This project made it possible to conduct comparative research on leadership competence across the five participating countries. This database is one of the core sources of the empirical part of my dissertation.

Methodology and application: The research phase was essentially based on a mixed research methodology, in which quantitative and qualitative studies were closely coordinated. The developmental research was carried out using the demand-driven competency identification and development model. A key feature of this is the identification and involvement of development stakeholder groups in the R&D programme. The development of the competency framework made it necessary to identify and understand stakeholders' views and expectations, as well as support consensus-building. This was done through standardised workshops. A behavioural competency model – the RDA – was used to describe and compare the competency framework for school leaders, enabling the profiling of school leaders in each country. A questionnaire-based survey was used to comment on the framework developed and investigate the relationship between leadership competencies and

school autonomy in more depth. The first version of the competency framework was tested, and its functionality was examined through case studies.

- I adapted the demand-driven identification of competence requirements, and for the project I proposed using it to explore the expectations of those involved regarding school leaders. For this, I laid out a protocol to be used for the workshops where qualitative data collection was conducted. I prepared a questionnaire that made it possible to define behavioural competence expectations for school leaders. I analysed a database containing international data and investigated the relationship between leadership profiles and characteristics of school autonomy. The analyses performed by me were published in separate chapters of a book describing the project findings and outcomes (*Abari-Ibolya* & *Baráth*, 2010).

Aim and description: The International Cooperation for School Leadership project (hereinafter: ICSL; 2011–2012) led to completing the competency framework and working out a detailed description of the competence requirements. This is the so-called Central5, which grouped school leadership competencies into five areas and defined them using three descriptors: knowledge, skills and abilities, and attitudes (KSA). The competency framework was piloted in the participating countries.

Methodology and application: the ICSL was a continuation of the LLL-S-L project with a similar methodology. It also used mixed methods; the demand-driven competency development model was the basis for the developmental research. The behavioural competency model was used to validate the results. Building on the results of the previous R&D phase, the focus was on refining and clarifying the competency framework and its applicability. Once again, standardised workshops were used to explore the views of the groups concerned and to explain the expectations of what makes school leadership in the knowledge society successful. Following the standardised workshops, the data collection was served, expectations were interpreted, and overlaps were identified and clarified. The results obtained this way were then formulated by the R&D team along the descriptors developed (knowledge and understanding, skills and abilities, attitudes). This process was based on a series of workshops with systematically designed content and procedures (content analysis, development of rules for applying the descriptors, etc.), with multiple controls, both internal and external. The primary purpose of using the behavioural competencies model (RDA) was to examine the relationship between the original competencies (formulated by the stakeholder groups) and those described along the descriptors. Basically, to analyse

whether the final result (the competency framework produced, Central5) can be considered essentially identical to the original expectations (as formulated by the stakeholder groups). Finally, the completed framework was tested by each participating country according to its design (essentially, the prototype was used). In all cases, transparency, the production of empirical data, and their analysis were expected.

- I took part in the project as an expert. I compiled the workshop protocol aimed at redefining and fine-tuning expectations regarding school leaders. I performed content matching on the collected expectations. Based on the finalised and grouped expectations, the expert group defined knowledge, skills and attitudes. I suggested a method for matching the original expectations (the requirements of which were explored and gathered during the national workshops) with the framework system set up (the competence description built on a selected, structured expectation list). This method was built on comparing behavioural competencies using the Role Diagrammatic Approach (RDA). My research findings and results, mainly issues on the methods for developing the competence framework system, were published as chapters of the book on the project itself (*Kirkham & Révai*, 2013). I also contributed to the development of Central5-based tools that are useful for assessing the school leaders' competencies and supporting them in self-evaluation.

Aim and description: The project – Learning Organisational Model for Schools (hereinafter: LOM4S; 2014–2015) – aimed to explore and identify the organisational characteristics – or, more precisely, the organisational competencies – that characterise schools as learning organisations and can be used to create a new learning organisation model for schools. A further aim was to test and apply the model, supporting the schools involved in the project to become learning organisations in the medium term (6 years) and to develop and stabilise the characteristics of learning organisations. The focus of the project was to explore and define the characteristics – more precisely, the competencies – of schools which act as learning organisations. The methodology was practically the same for as elaborating the competency framework for school leadership: identifying the organisational behaviour, structuring the list we received, and validating the results. We conducted several surveys in schools, including data collection on the role of school leadership based on the competing values framework (*Quinn & Rohrbaugh*, 1983; *Cameron & Quinn*, 2006, 2011). The complex database enabled us to underpin our theoretical model for schools as learning organisations. In addition, it also became possible to analyse the relationship between the

level of organisational capacity to learn and the features of school leadership (what roles they take and how they perform in these roles).

Methodology and application: The methodology was essentially the same as the one used to develop the school leadership competency framework. This developmental research was also based on mixed methods; in this case, demand-driven competence identification and development was the guiding principle for the design of the activities. The involvement of the groups concerned was used to collect, organise, and structure the characteristics of learning organisation behaviour and then, using RDA, to create a learning organisation profile, which was subsequently used as a benchmark for schools. This profile allowed them to assess where and to what extent their operations deviated from the LO profile and, on this basis, what development goals and actions would bring them closer to becoming a LO. Based on the structured organisational behavioural characteristics, a theoretical model of the learning organisation, the synchronic-diachronic model, was developed as a result of a series of interrelated workshops, which were suitable for describing the changes in the content and timeframe of the organisational functioning in a targeted and professional manner. The model was validated by utilising a questionnaire survey. The complex measurement tool developed allowed us to test the validity of the theoretical (synchronous-diachronic) model and to relate the characteristics of learning organisation functioning to the attributes of organisational effectiveness and leadership using the competing values framework. The testing and application of the learning organisation model were carried out with the support of a consultancy during the project. In 2020, a follow-up survey was conducted using a questionnaire to assess the outcomes and current status of the learning organisation operation launched 6 years earlier.

- I developed the concept of the research project, and I actively took part in developing the learning organisation model for schools. From a methodological aspect, behavioural competencies were also defined here. However, in this case, the focus was on organisations. I managed the questionnaire development process, which allowed us to validate the learning organisational model for schools. Using the database compiled during the research, I analysed whether any link can be identified between the schools demonstrating learning organisation characteristics of different levels (scales) and the characteristics of their leadership. In order to identify this latter, I used the CVF leadership roles alongside the fulfilment of which leader competencies can be identified.

In the later chapters, Chapters 3 and 4, I will detail the methods and procedures used in each phase and the research process for development purposes (here, anticipating and later justifying this classification). Of course, the common feature of each research phase was the exploration and analysis of the literature on the topic under study, the consideration of the results, and their incorporation into the research and development process. The description of the projects here aims to highlight the common features of the research phases, which can serve as a basis for systematising both the activities and their results to answer the fundamental question addressed in my thesis: what makes school leaders successful in the knowledge society?

Table 1: Models and methods used in the research phases

Models, methods	*Phase 1: LLL-S-L*	*Phase 2: ICSL*	*Phase 3: LOM4S*
Demand-driven competence model (identification of competencies; personal or organisational)	X	X	X
RDA (behavioural competency model)	X	X	X
CVF (organisational culture and effectiveness model)	–	–	X
Literature exploration (desk research)	X	X	X
Interview	X	X	X
Standardised workshop for data collection and consensus building	X	X	X
Questionnaire survey	X	–	–
Questionnaire survey on a representative sample	–	–	X
Case study on the use of development products	X	X	X
Testing the results of the development (prototype) and analysing the results	X	X	X

2. CONCEPTUAL FRAMEWORK AND RESEARCH QUESTIONS

In this chapter, I describe the conceptual framework of my paper, the main components of which will be detailed in Chapters 4–8. The function of this chapter is to provide a global approach to the logical framework that enables me to find answers to the research questions and to provide an overview of the methods I/we applied in finding those answers.

2.1. Concept and questions

My paper focuses on defining the competencies required to lead a school that operates effectively and successfully in a knowledge society. The success of a school – and in fact, the leadership – is reflected in the development and success of its learners. Therefore, the thesis question can be articulated as follows.

What makes school leaders capable of creating a school – a learning environment – in which learners can acquire the competencies that are necessary for them to cope in a knowledge society?

In order to answer the question, it is first necessary to define the logic of the search for an answer. This logic shows how the starting point (student competencies in the 21st century) determines the competencies needed for school leadership, considering the context of learning (a 21st-century learning environment, and the school as a place of learning).

a) What competencies must learners have in a knowledge society?
b) What is the actual learning environment like that enables the acquisition of learner skills?
c) What kind of organisation can establish the learning environment described above, which enables students to optimally develop their competencies?
d) What kind of leadership can create, establish, and operate an organisation (school) that can optimise the learning opportunities for students, i.e., create an optimal learning environment? What kind of leadership competencies are necessary for these?

We can consider that the main research question is the following:

a) What kind of leadership can create, establish, and operate an organisation (school) that can optimise the learning opportunities for students, i.e., create an optimal learning environment for developing their competencies needed in the knowledge society? What kind of leadership competencies are necessary for these?

However, if we want to answer the main research question, then we face some other questions that need to be answered as well. These questions (and answers) lead us to identify the characteristics of the leadership we are looking for. We define those factors that determine leadership competencies. These are the following:

b) What kind of organisation can establish the learning environment described above?
c) What is the actual learning environment like that enables the acquisition of learner skills?
d) What competencies must learners have in the knowledge society?

The method of answering the research questions, i.e., the conceptual framework of the research, is described in Figure 1.

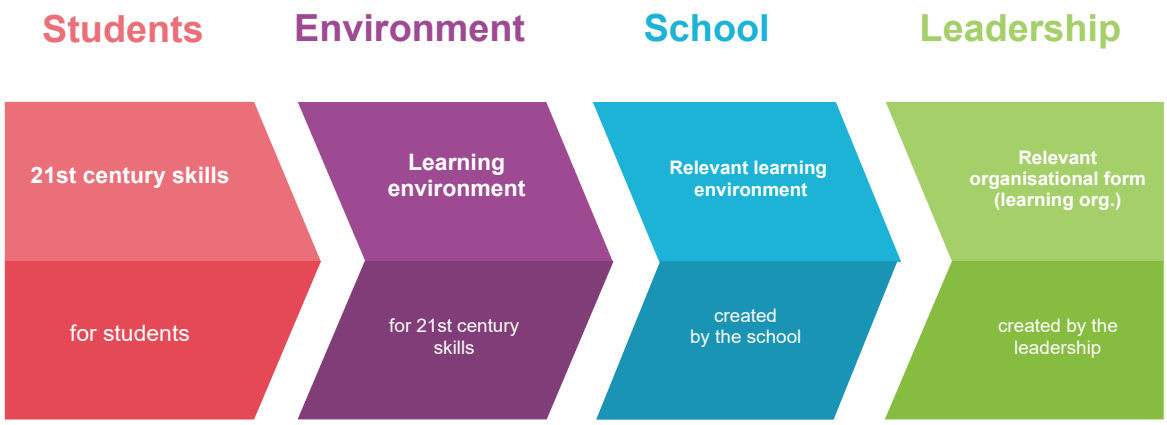


Figure 1: Conceptual framework of the research

The system of logical links described in Figure 1 demonstrates the following. The task of the school is to make knowledge (competencies) available to learners so they can operate successfully in the 21st century. For this, the school needs to create a learning environment that supports the acquisition of 21st-century competencies (let us use the phrase "21st-century learning environment" from here on). This learning environment is characterised by a high degree of complexity. The nature of the learning environment – i.e., its characteristics

and operation – depends on the organisation itself and its characteristic features; in this sense, it is defined by them. Typically, only an intelligent organisation is capable of creating the required complex environment. Therefore, the learning capacity of the organisation is valued more; thus, the school's functioning as a learning organisation is indispensable. Lastly, the organisation is shaped mainly by its leadership (at least in its primary responsibility), which means leaders are primarily responsible for making the organisation capable of creating a 21st-century learning environment. It is possible to define what competencies leaders must possess in order to be able to shape and form the organisation.

The processes go in the opposite direction in real life. Figure 2 shows this.

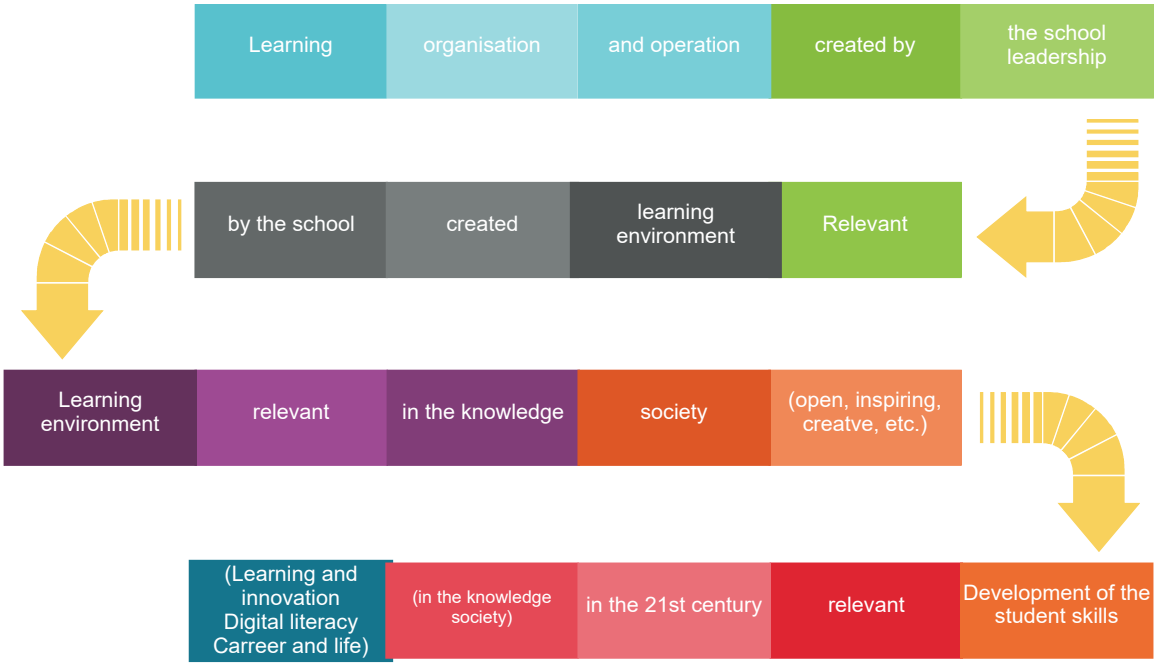


Figure 2: The effect mechanism of the school leadership on developing students' skills

Figure 2 introduces the leadership effect mechanism for students' competency development through factors that are influenced by school leadership. It means that school leadership has a strong – partly direct, partly indirect – influence on organisational values, culture, and finally the organisation's operations. Thus, school leadership can aim and support school development towards a learning organisation. This is the optimal organisational model, which can create a relevant and optimal learning environment in schools for students and equip them with the needed competencies. This means that the learning environment created by the school is in harmony with the learning environment requirements of the knowledge

society. Finally, this is the learning environment that is necessary for students to gather 21st-century skills so they can find their way in the knowledge society.

The conceptual framework of the research (Figure 1) helps us understand the logic for identifying school leadership competencies in harmony with the characteristics and requirements of the knowledge society. By going through the framework, we can understand which factors determine competencies and why the learning organisation model fits best in this environment. Figure 2 supports us in uncovering the effect mechanism of the system, when we must start from the leadership activities and behaviour, which influence the values, goals, and operation of a certain school, thus providing a severe effect on students' learning environment, and finally on the set of competencies that students can acquire in school. These two approaches complement each other like yin and yang. Together, the two form a system that, on the one hand, provides a theoretical framework for defining school leadership competencies and, on the other hand, supports their development and practical application by revealing the mechanisms of impact.

2.2. Description of the conceptual framework of the research

Next, I shall outline the conceptual framework of the research. I will analyse and interpret the framework elements described in Figure 1.

2.2.1. Learner competencies in a knowledge-based society

The school system has several functions that complement and sometimes contradict each other. It is possible to define these functions in different ways. Still, among them, we always find one that focuses on developing learners' personalities and transferring knowledge and literacy that are widely accepted at the time and in the given geographical space. (*Halász*, 2001).

A more precise definition of learning, supporting adaptation to complex and rapidly changing expectations, the harmony among social subsystems – with particular emphasis on the link between education, economy, and the world of work – naturally led to redefining the knowledge that the school was supposed to make available. The need for knowledge and the reproduction of mainly factual information in the industrial society was taken over by the need for integrated, contextual, and ready-to-use knowledge in the knowledge-based

society (*Sawyer*, 2008), which led to the operationalisation of the concept and was materialised in the form of competencies.

Defining learner competencies has long attracted international attention. This is demonstrated by the DeSeCo project[1] executed by the OECD, or the Lisbon Strategy based on the decision of the European Council in the year 2000, as a result of which the elaboration of key competencies[2] to be acquired throughout lifelong learning commenced and the European Parliament jointly with the European Council worked out a recommendation for member states on how to adjust learner key competencies into the national education systems with the aim to promote lifelong learning.

For my paper, I have chosen the Partnership for 21st Century Learning[3] model developed in the USA to interpret learner competencies. It was partly because it is based on a wide-ranging and intensive social agreement and partly because it is an operative and organic model used in everyday practice. I shall describe the model in detail, together with the content of the competencies based on *Fadel* (2009), in Chapter 5. Here, I shall list only the main competence areas and their subcategories (*Fadel*, 2009, 176).

- Learning and innovation: learning to learn and innovate, critical thinking and problem-solving, communication and collaboration, creativity and innovation
- Digital literacy: information literacy, media literacy, ICT literacy
- Career and life planning: flexibility and adaptability, initiatives and self-direction, social and cross-cultural interaction, productivity and accountability, leadership and responsibility.

The 21st-century competencies are not interesting because of their content in themselves but – as I mentioned earlier – because of the process that resulted from them. The model, which is not an idea but an operationalised system, can orient the strategy of a learning organisation

[1] See the webpage of the programme: https://www.deseco.ch/bfs/deseco/en/index.html, last checked on 28.03.2026.

[2] Key Competencies for Lifelong Learning. A European Reference Framework https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32006H0962&from=EN, last checked on 20.03.2026.

[3] See the webpage of the model: http://www.p21.org/, last checked on 20.03.2026.

and its daily activities. In addition, various tools, procedures, learning, experience-gaining, and training options promote their application. Their creators or developers are leaders in the business world and the world of education, as well as political decision-makers, whose aim was to make it available to learners so they can acquire the competencies necessary to manage successfully in finding jobs and to be successful in their personal lives as state citizens. The system that has been created this way operates as an organic creature, and it can continuously be developed through experience and free professional tenders. It is available for any state ready to integrate P21 into its education system. In 2021, there were 21 member states. Among the founders, we could find the federal state's Education Ministry and several prominent multinational companies (e.g. Apple, Cisco, Dell, Microsoft, etc.). This is a live system, as its website shows.[4]

This multiplayer process requires complex negotiation mechanisms and consensus, and the dynamic, evolving system that supports the application, not only through theoretical descriptions but also via specific tools – the proof of which is its webpage – has significantly impacted education policy and administration in several countries[5]. The competence framework developed by P21, i.e. the 21st-century competencies (as a well-defined group of competencies) is used in the education policy in Singapore[6] (*Pei-Ling Tan et al.*, 2017), Korea[7] (*Kim & Eom*, 2017) and Japan[8] (*Kimura & Tatsuno*, 2017) among others as an officially accepted system of framework and concept around which specific systems were built.

Next, I will start from the fact that the task of the school system, and of schools too, is to equip the coming generations with the knowledge they need to get on in the 21st century –

[4] See: https://www.battelleforkids.org/networks/p21, last checked on 20.03.2026.

[5] National Center on Education and the Economy: https://ncee.org/?s&_s=21st%20century%20skills, last checked on 28.03.2026.

[6] Ministry of Education, Singapore: https://www.moe.gov.sg/education-in-sg/21st-century-competencies, last checked on 21.03.2026.

[7] https://asiasociety.org/files/21st-century-competencies-south-korea.pdf, last checked on 28.03.2026.

[8] International Education News: https://internationalednews.com/2015/07/01/21st-century-skills-in-japan/, last checked on 19.03.2026.

in the broadest sense of the word – to make knowledge available to every child and young person.

2.2.2. The learning environment supporting the acquisition of 21st-century competencies

As shown in Figure 1, the learning environment is the next element of the interpretation framework. Here, we can pose the question: What characterises the learning environment which makes available opportunities that are suitable for developing the 21st-century competencies described in 2.1.1? This is discussed in depth in Chapter 6.

Developing 21st-century competencies requires a specified learning environment. If, for example, we look at the field of "Learning and Innovation", we can see that learning to learn requires thorough self-awareness, which can only take place if the learners have the opportunity during the process of learning to operate by themselves, to experience their own behaviour, to reflect on it, to assess the consequences of their behaviour, and to learn from these. See *Kolb's* (1976; 1981; 1984) model, that consciously builds on learners' awareness of the characteristics and the style of their own learning. Learning how to innovate (*Schumpeter*, 1939; *Balázs et al.*, 2011; 2015) requires an open and inspiring environment that welcomes the exploration and identification of new problems and experimentation through trial and error, because it is considered a natural learning path. Similarly to innovation, developing creativity also requires open and inspiring learning situations. Visuality plays an important role here, as do creative processes that build on cooperation (e.g., methods used in service design, co-creation, etc.). In the field of "Digital literacy", it is crucial to possess digital competencies (*Vuorikari et al.*, 2016), such as using tools, conducting targeted searches, and evaluating the reliability of and using information found on the internet. All this requires an enabling environment. Cooperation in the digital space and collaborative learning are also important (e.g., *Smith & MacGregor*, 1992; *Kagan*, 2010).

We could carry on listing examples, but it is already clear that the acquisition of 21st-century competencies requires a specific definition of learning and a particular interpretation of the teacher's role. The methods to be used by the teacher require an open, flexible, and modern technological environment that fosters cooperation and activities that can be integrated into the teaching-learning process in a professional, target-specific manner. The atmosphere of

learning is typically inspiring and creative. The mental environment outlined here, which is not the result of the teachers' individual and independent activities but one that relies on conscious, planned, and inspiring cooperation, requires a relevant physical environment as well. A key element of the learning environment is flexibility and smooth and fast adjustability to learning targets and activities. This physical space means an entirely different planning and execution process than how it evolved over history, where the fundamental objective was to draw learners' attention to the source of knowledge, i.e. the teacher.

2.2.3. A school organisation enabling the creation of the 21st-century learning environment

The third element of the conceptual framework of the research is the school organisation itself. Following the questions raised above, I am also seeking an answer to what characterises the school organisation as being capable of creating the learning conditions and the learning environment that enables learners to manage successfully in the 21st century.

Organisation science offers a wide range of tools to describe, characterise, and grasp the features of organisations. The focus can be on the organisations' structure, their strategy, the processes within them, the definition of the responsibilities and powers, the organisational efficiency, and their culture (*Galbraith & Kazanjian*, 1986; *Miles & Snow*, 1978; *Quinn & Rohrbaugh*, 1983; *Handy & Aitken*, 1988; *Schein*, 1992). *Morgan* (1986) describes the main features of organisations with metaphors: the organisation as a machine, a brain, a living organism, a culture, a political association, etc.

Three factors influenced my choice of the model, which I believe best enables me to depict an organisation that can optimise learning for learners and support the acquisition of 21st-century competencies. The first factor was the change that led to alterations in requirements for schools during a transition from an industrial society/economy to a knowledge society/economy. This – with the help of the results of learning science – transformed the definition of learning, i.e., the traditional type of learning based on a school that focuses on the knowledge, the learning, and the testing of facts was replaced by a deeper, contextualised, practical, and flexible acquisition of knowledge (*Sawyer*, 2008). The second factor was the complexity of the model, i.e., how well it can show and reflect the change, which is quite often rather controversial, that characterises the organisations in a fast and turbulently changing world. The third factor to mention here is the way how learning capacities and

characteristics are grasped. Based on source analysis, desk research, and own research projects, Chapter 7 describes the school organisation and its characteristics.

Referring back to various organisational models, schools can be classical, bureaucratically managed organisations, whose operations can be described as linear processes. They can function in a regulated and controlled manner. However, a mechanical organisation built on control and hierarchy cannot create and operate a learning environment that fosters creativity, learning innovation, acquiring intensive cooperation, critical, independent, and responsible thinking, and solving open problems. The reason why it is incapable of doing so because its traditions and the sanctioned violation of its rules do not give way to it. Thinking is directed at what has to be done and not what can be done in a given problematic situation. Suppose the school has the task of preparing learners to solve problems we have not yet unveiled. In that case, they need to apply procedures, tools, and methods that might not even exist yet, which creates a fundamentally new situation with new conditions for learning. At the same time, it changes the world of learning. Teachers who can manage uncertain situations, who find it natural to solve problems through trial and error, and who use modern technology to do so are the ones who can create/define open situations and inspire problems for learners, because they operate in similar ways. If teachers are people who manage uncertain situations well and are creative and cooperative themselves, they cannot thrive in a rigid and over-regulated organisation built on a strong hierarchy. An organisation that offers adequate learning opportunities for learners to acquire 21st-century competencies, together with a learning concept that enables this and promotes a learning organisation based on this, as well as teachers' activity system, is inevitably an open and flexible organisation that focuses on learning. For a school like this, it naturally follows to create operational processes and generate activities that promote the production, application, and dissemination of knowledge within the organisation. Without going into details, which actually happens in Chapter 7, an organisation like this is capable of analysing and evaluating its own practices, of continuously monitoring the expectations of its environment, of realistically weighing the necessity and achievability of these expectations, i.e., the organisation itself is characterised by a high degree of ability and willingness to learn, which means in short, that it is a learning organisation, i.e. its successful operation is guaranteed.

2.2.4. The school leadership shaping the learning organisation

The last conceptual framework element of the research is school leadership. The question is: what characterises a school leadership that establishes, develops, and operates a school organisation described above? Taking one step further: what competencies does a leadership need to possess in order to be able to create such an organisation? The fourth element of Figure 1 also contains the characteristics as well as the necessary competencies of a leadership capable of creating a 21st-century learning environment. It is important to note that here, it is not only the content of the competencies that are the focus of our interest but also the way they can be identified.

Similarly, to the case of organisations, there are several models used for leadership, with the help of which management styles (*Tannenbaum & Schmidt*, 1954; *Blake & Mouton*, 1964), leader roles (*Quinn & Rohrbaugh*, 1983; *Quinn et al.*, 1996), and behaviour competencies (DiSC[9], RDA[10]) can be identified. Measuring leader competencies requires a complex approach, for which the rigid-dynamic model of *Schratz* (2013, 28–30) can serve as a sound basis.

In its activities, leadership can focus on rules and traditions, expecting and controlling the observation of these procedures, protocols, and forms of behaviour by teachers. It may also focus on individuals, human relations, maintaining balanced, tolerant relationships, and trust. The positive experience and success of learning and the creation of the necessary organisational and environmental conditions can also be at the centre of leadership activities.

Going back to the conceptual framework of the research, what we in fact need to identify here is the competencies that a school leadership must possess in order to be able to form an organisation, as briefly described in the previous point. The leadership of an organisation that focuses on the creative and innovative solutions of open problems is necessarily characterised by a high degree of flexibility and adaptability. The turbulent change of its global and local environment requires leadership to have a clear-cut vision of the formation and realisation, which can only be feasible in close cooperation with the teaching staff.

[9] For a description, see: https://www.discprofile.com/what-is-disc/overview/, last checked on 19.03.2026.

[10] This model was used in the research. For a detailed description, see Appendix 1.

Leadership like this clearly understands the characteristic features of learning. It is aware of the fact that the only way learners can acquire 21st-century competencies is through an open, motivating and supportive environment, where the learning process is adjusted to the individuals and their groups. Therefore, it is necessary to learn continuously and to reconstruct learning processes, for which the leadership must create professional and organisational frameworks. A leadership like this builds the organisation's operation and development on facts, monitors its results, and establishes organised frameworks for teacher learning and knowledge sharing in order to be able to create and maintain a high-quality learning environment.

Chapter 8 provides a detailed description of leadership characteristics and their impact on the development of learners. In this chapter, we aim not only to draw up a framework that supports the optimisation of school leadership's activities but also to examine the procedure that is adequate for defining the competencies of the school leadership. The latter is important because the competencies necessary for successful operation are also changing in our rapidly changing world. New ones appear on the scene, while others disappear. The emphasis may shift between the existing or remaining ones. The definition and the related development of leadership competencies bear the features of a process itself, which can most be described with the help of the PDCA[11] model (*Moen & Norman*, n.d.) known in quality assurance and management.

[11] PDCA first appeared in 1950 in the lecture of Deming in Japan.

3. RESEARCH METHODS, MODELS USED AND THEORETICAL BACKGROUND

To provide a methodological basis for the research phases presented in my thesis, I considered it necessary to examine the content and methodology of research conducted for similar purposes. The research phases I have discussed all relate to the identification of individual or organisational competencies. Therefore, I have chosen research that has focused on the creation of competency frameworks, the development and application of competence profiles, or the study of organisational competencies, essentially the learning capacity of organisations. I aim to identify the methodologies of these studies and to present the methodologies of the research phases that are the subject of my thesis in light of these methodologies.

The study of the development of competency frameworks makes interpreting the concept of competence necessary. It is also a key element because, while the concept of competence is being used more and more extensively and frequently, with the increasing value placed on learning, the emergence of the idea of lifelong learning, the progress of the process of replacing the industrial model of society (in different ways and at different speeds in space and time) with the model of the knowledge society, there is still no clear definition and no consensus on its use. Therefore, interpreting the concept requires and implies a choice of scientific approaches. I will endeavour to carry out my decision in this regard clearly and consistently through the successive research phases of this thesis.

This chapter of the thesis, as the title suggests, deals in an integrated way with the methods used in the research and the models supporting the identification of leadership and organisational competencies, which form the theoretical background of the studies (and the developmental research phases). The close link between them has led me to consider it appropriate to present these traditionally separate areas in a single chapter. This approach is reinforced by the way I think about research in my field – more narrowly, organisation and leadership in education, and more broadly, educational science – and the role of research. In my approach, a significant part of education research can be classified as applied research, and the research phases discussed in my thesis can be understood as essentially development support and underpinning research activities that aim to contribute to the field of science and to use and apply the results in practice. In other words, my research seeks to generate and test new knowledge that is usable in practice and to provide evidence of the usefulness of

the developments. This approach, in turn, has profound implications for the way I think about research methodology, the specific activities and methods that I have used, or that have been adopted and applied by the R&D teams in each research phase at my suggestion. It necessarily brings the theory closer to its application. Finally, the fact that, behind the methods and tools applied in each phase of the research, there are well-established theories also confirms that it is worth discussing and presenting them in an integrated way.

As I stated in the objectives of the first chapter of my thesis, my research aims not only to define what competencies are expected of school leaders (and even more so of school leadership) in the knowledge society but also to present a method and procedure to define these competencies. In this sense, the methods used can be classified as knowledge-building rather than classical research methods. (We will see later that traditional methods, such as questionnaires or interviews, are also being modified, and methods (such as the workshop) are emerging to serve research and development purposes.) The methods I have applied or proposed during each phase of the research have departed from the traditional research methodology approach, whereby the researcher/research team formulates one or more research questions and related hypotheses and then uses appropriate tools to collect and analyse data, which is used to test whether the hypotheses are fulfilled, accepted, or rejected based on the data collected during the research. The methods and methodology applied were based on the involvement of the groups concerned in communication with them to gain a deep understanding of the subject under study, exploring the aspirations of the various interest groups, and then building on this to develop a common position, which led to the development of the target product (a competency framework, a learning organisation model for schools). It can therefore be described as a process of knowledge-building, model- and system-building, accompanied by a methodology to guide it. At the same time, in the case of programmes aiming at the development of competency frameworks related to the concept of competence, we can see that the methodological concepts are essentially similar to those I proposed for the implementation of the research phases and to the methodological framework within which I described the whole process.

In the following, I briefly present the content of the chapter. In the first subchapter, I will deal with understanding the concept of competence and, related to this, the development of competency frameworks, their purpose, outcomes, limitations, and methodological characteristics. I will try to place the research phases of my thesis concerning the development of competency frameworks with a significant scientific basis, particularly

regarding the methodological approach applied. Next, I will articulate why the activities I and/or my collaborators undertake in the context of the projects can be considered developmental research (and not simply development). Through this typification, I can/will define the methodological approach I deem appropriate to systematise and describe each phase. Therefore, in this chapter, I will discuss the methodological approach that can define each research phase within a unified framework, namely design-based research (DBR). I will present DBR as a research methodological approach in a focused way, briefly discussing its critique and offering suggestions for its development, to show why I have chosen DBR as a framework that allows for a unified description of the research phases. I will endeavour to clarify the rationale for my choice of models and methods (DDICR, RDA) and to explain how their integrated application led me to consider the possibility of summarising the research phases in design-based research. To do this, I discuss the methodology of the development-oriented projects (LLL-S-L, ICSL, LOM4S) presented in Chapters 1 and 2 in relation to the research presented. Finally, I address the organisational and leadership model (competing values framework) that can be used to describe the effectiveness and efficiency of organisational functioning and the functions of leadership, as captured in the diagram (Figure 1) illustrating the research concept in Chapter 2 and the effect mechanism of school leadership on the development of learners' competencies (Figure 2).

3.1 Competence frameworks – models, concepts, interpretations

In this subchapter, I deal with the concept and practical applications of competence and the competency framework. This conceptualisation is crucial for my thesis, as its primary aim is to identify the competencies needed to run a successful and effective school in the knowledge society. As I stated in the Introduction, it is a concept whose use is widespread, but which is subject to much professional debate and lacks a consensus interpretation and definition. In this subchapter, I aim to review the most important definitions and criticisms of these and, finally, to define the meaning of developmental research based on the research phases.

I do the same for competency frameworks. To establish the methodology, I have used/proposed, I felt it necessary to examine the content and methodology of research carried out for similar purposes. The research phases I have presented all relate to identifying individual or organisational competencies. Therefore, I have chosen studies that have

focused on the creation of competency frameworks, the development and application of competence profiles, or on organisational competencies, essentially the learning capacity of organisations. I aim to identify the methodologies of these studies and to present the methodologies of the research phases that are the subject of my thesis in light of these methodologies.

3.1.1 Concept and interpretation of competence

Understanding competence is of great importance for the world of learning and work and, through them, for education and the economy as social subsystems. In a knowledge society, these two worlds (learning and work) are increasingly interlinked, so the concept of competence can be described along similar or even identical descriptors in many respects. However, there may be significant differences in content. Chapter 5 focuses on the understanding of competencies for learners, while Chapter 8 deals with competencies relevant to school leaders. The link between the world of learning and the world of work is of particular importance to us because, as we have partially formulated in Chapter 2, this thesis aims to identify school leaders' competencies that create opportunities for the optimal development of learners' competencies through the shaping of school organisation. Thus, a system of competencies (those of school leaders) linked to the world of work ensures that the competencies of pupils (those who attend school) can be developed appropriately.

A distinction can be made between the common and the scientific understanding of the concept of competence. The former is more closely understood in the Dictionary of Foreign Words and Expressions, meaning competence (from Latin) as authority, jurisdiction, competence, suitability, aptitude, and ability. Authority and jurisdiction refer to decision-making (who has the right or authority to decide on a given issue); competence expresses the existence of expertise (e.g., someone can fix a broken washing machine); finally, suitability, aptitude, and ability refer to the capacity to act, to solve specific tasks or problems.

For a scientific interpretation, we start with the definition given in the Dictionary of Pedagogy. It says: *"competence (suitability, dexterity) is essentially an intellectual (cognitive) property, but motivational elements, abilities and other emotional factors play an important role."* (*Báthory & Falus*, 1997, 266).

3.1.1.1 The emergence and evolution of the concept of competence

It is worth briefly discussing the genesis of the concept and its changes. The concept of competence and its link with behaviour was embedded by an American psychologist, *John C. Flanagan*. He is credited with developing the Critical Incident Technique (CIT) (1954), which he used to identify and classify the behaviours that lead to success and failure. Flanagan was a pioneer in aviation psychology, working for the US Air Force during World War II and helping train pilots. Later, along with other psychologists, he founded the American Research Institute to expand his research in the area of linking behaviour, activity, and performance. As a result of his research, he concluded that the primary purpose of job analysis is to determine what factors are necessary, or otherwise critical, to perform a job. These extend to all observable human activities that can be used to make inferences and predictions about the quality of an individual's work and performance (*Marjani*, 2017, 172)

Those who work on competence are perhaps most associated with Noam Chomsky. Chomsky distinguished the concept of language competence as a general, language-independent, essentially innate characteristic (language acquisition) from language performance, the way we use language in everyday life, with limitations and often mistakes. He understands competence as implicit knowledge, non-reflexive, and non-conscious. It is a general and innate characteristic activated by environmental influences and leads to (language) performance. He defined language use and language learning as the acquisition of behaviours characterised by diversity and openness (as opposed to closed, list learning) (*Chomsky*, 1965, 2006). According to Chomsky, language learning does not mean the learning (memorisation) of a large number of rigid procedures and sentences but the acquisition of a set of rules (generative learning) that enables the individual to formulate and behave in an almost infinite number of language forms, adapted to the situation. Thus, we do not learn a language but acquire a linguistic competence that enables us to produce a variety of linguistic performances (*Halász*, 2006, 8).

The next milestone was the work of David McClelland, who carried on and extended *White's* work, calling human qualities and characteristics competencies (1959). In his study, *McClelland* (1973) examined the predictive effects of intelligence and aptitude tests on the performance and success of students in later life (high school, university). Based on extensive analysis, he concluded that the validity and reliability of these tests were influenced more by beliefs than by factual evidence. He concluded that it would be more

important to develop tools to test the competencies of those involved rather than these tests, based on observing those involved in the course of their work and the information this could provide. This was confirmed by his studies, which showed that, in the most general sense, the knowledge needed for successful work activities can be acquired through training and support in implementing the project. In other words, the skills needed to work effectively can be acquired through learning. McClelland's work and the McBer Consultancy (later Hay Group), which he co-founded, significantly impacted further developing and applying the concept of competencies. In a 1973 study, he argued that competencies were much better predictors of success at work and in other areas of life than traditional intelligence tests or selection tests. Here, he emphasised the importance of personality traits and studying an individual's behaviour. In addition to conventional cognitive skills and knowledge, such as writing, reading comprehension, and numeracy, he defined characteristics such as leadership, communication, self-improvement, goal-setting and motivation, values and interpersonal skills. He essentially laid the foundations for competence-based selection and training. This is reflected in *Marjani's* (2017, 173) study: *"Most importantly, once these behaviours separating exemplary performers from the average one are known, they could be taught to others* (*Bolden & Gosling*, 2006). *In this line of thinking, McClelland reminds us that determination of individual performance should go beyond academic performance as there are other personal factors that should also be relied up on, those characteristics were christened 'competencies' and can easily be taught to others."*

Building on the work of McClelland, *Boyatzis* (1982) further developed competency-based assessment and development. He created the Job Competence Assessment procedure and instrument to distinguish between outstanding and average managers. He considered competencies as characteristics of the individual (personality) causally related to the individual's job performance. These competencies can be developed throughout the life cycle.

Parry's definition is similar (1996), defining competence as the interrelated knowledge, skills, and attitudes that determine an individual's attitudes toward work, responsibility, and performance. These characteristics can be measured and developed.

Spencer & Spencer (1993, 9) also used a similar interpretation of competencies as *"the basic, defining characteristics of a person that are causally related to effective and/or superior performance at the criterion level"*. The pair of authors is credited with levelling competencies, the so-called iceberg model. Competencies, as fundamental characteristics of

the individual, were classified into visible and hidden categories. The former includes skills and knowledge, and the latter contains motives (driving forces), personal characteristics (physical and emotional reactions to given situations), and finally, the self-concept (attitudes, values, self-perception) (ibid., 10–12).

Also, *Spencer & Spencer* have formulated the presence of a causal link between competencies and outcomes. According to their interpretation, in competencies, there is always a driving force, a motive, a personality trait, and a self-image, which motivates action, and this action leads to the outcome. In the cited literature, the relationship is illustrated by the following diagram (ibid., 13)

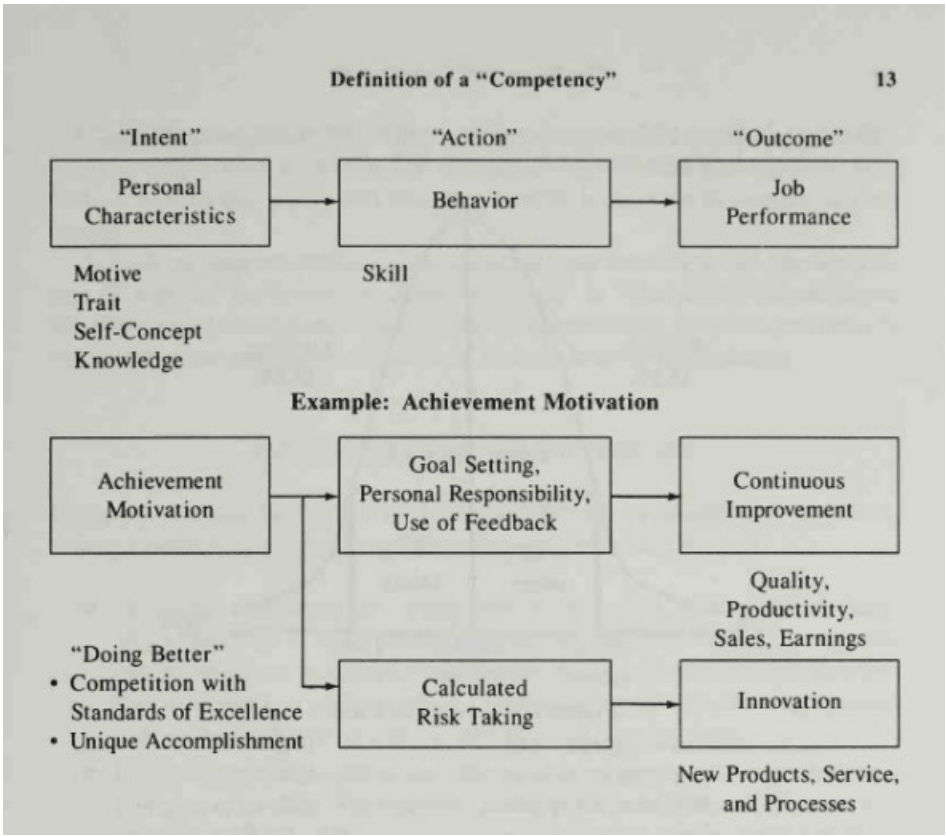


Figure 3: Spencers' definition on competency; Source: Spencer & Spencer (1993, 13)

Spencer & Spencer's approach is also essential for us because, in developing the competency framework, we define behaviour as a form of reflection and manifestation of competence. It can be observed, described, influenced, i.e., developed. In essence, this serves as the basis for defining both individual and organisational competencies during the research phases.

Quinn and colleagues (1996, 15–26) link competencies to different – often contradictory – leadership roles. These roles are expressed essentially the same way across varying levels of leadership (e.g., interpersonal competencies), but sometimes require different knowledge and skills (e.g., planning). The development of competencies is closely linked to behaviour. This approach will also be vital for us because the competing values framework is suitable for simultaneously capturing and describing the competencies of leadership and organisation.

In Spencer & Spencer's iceberg model, competence levelling has already appeared. As our knowledge of a subject increases, we find that after defining a competence, it is structured in a partly hierarchical way – typically related to psychological foundations, and through this to the description of the self and the personality – and broken down thematically into content categories. A fundamental question is whether competencies can be described with general validity or can only be defined in terms of the individual or, where appropriate, the organisation. Many other questions can be raised about competencies, but this is perhaps the most critical because a positive answer presupposes that, despite the extreme differences between human societies, groups within them, cultures, lifestyles, and the way of life in particular communities, it is possible to capture those characteristics that are common and generally valid. I will return to these issues in the context of the interpretation and development of competency frameworks. I will now present some interpretations that enrich our knowledge of competencies and, at the same time, orient the interpretations used in the research phases.

The interpretation and practical application of competencies have been fundamentally shaped by the DeSeCo project launched by the OECD (Defining and Selecting Competencies: Theoretical and Conceptual Foundations). The project complemented and supported OECD measurement and assessment programmes such as IALS, PISA, ALL. It aimed to provide a solid basis for measuring competencies and for supporting learning and teaching decisions about what to focus on in training, learning, and teaching. At the same time, it has undertaken to interpret and clarify concepts (competence, key competencies, skills, knowledge) and their interrelationship. To this end, it sought to develop a consensus-based understanding of competencies and key competencies, defining competencies as a set of skills that, when activated, enable individuals to meet the individual and societal expectations they encounter in life. Competencies have both cognitive and non-cognitive components. The expectation-oriented, functional approach is complemented by

understanding competencies as internal mental structures (abilities, dispositions, etc.). While competencies are defined as domain-specific elements, the project defined key competencies as the characteristics necessary for individual well-being, success, and a well-functioning society across many areas of life. For the latter reason, key competencies depend on the values preferred by society. Finally, the project identified three broad categories of key competencies, namely: a) autonomous action, b) interactive use of tools, and c) interaction in heterogeneous social groups (*OECD*, 2002; *Rychen*, 2003). The DeSeCo project has had a significant impact on how learning competencies have subsequently been defined and measured (see PISA).

3.1.1.2 Competence and competency – holistic and specific, task and behavioural approach

Uncovering the literature dealing with school leaders' competencies, we frequently encounter both competence and competency (and their plurals competences and competencies) in English-language academic literature. Although the two terms are often used interchangeably, academic research has gradually developed subtle distinction, particularly in human resources, leadership studies, and education.

Based on the literature studied, it can be concluded that the concept of competence represents a general approach and offers a holistic interpretation. In this case, it refers to a person's general ability and suitability for a task or role. In the case of school leadership, we can use this concept to assess whether the leader is capable of leading the school effectively and achieving the set goals in a complex, changing environment. We can also use the concept of competence when discussing the dynamic system of a leader's or leadership's numerous abilities. This could be the ability of school management to create optimal learning conditions for students to acquire the competencies necessary in a given context (e.g., in a knowledge society).

Based on the literature, we can use the concept of competency when referring to a person's specific activities, actions, performance, behaviour, and attitude. In this case, the subject of our study is observable, measurable, and developable. Based on this approach, we can say that competencies serve as building blocks for a general competence.

In the case of school management, such an element could be, for example, strategic competence (knowledge and understanding of the concept of strategy, knowledge of

procedures for developing strategy, recognition and acknowledgment of the importance of strategy).

So, while competence allows us to judge whether a person is suitable for a complex task or role, competency allows us to examine what specific skills, abilities, and behaviours we can identify in an individual when performing a given task.

To sum up, for terminological clarity, I use competency to refer to specific, assessable components of leadership practice and competence to refer to the holistic professional capability of school leaders. At the same time, in my analysis of the literature, I will retain the authors' terminology.

After numerous interpretations and attempts at definition, it is worth examining what similarities and differences can be found in interpreting competence in space and time. This is supported by the fact that in English there are two terms for the concept: competence and competency. Referring to the literature he has reviewed, *Wong* (2020, 96–97) defines the first as a task-oriented approach, while the second as a person-oriented approach. The first focuses on the outcome of work, and the second on behaviour and its characteristics. The difference in terminology reflects different roots, approaches, and models.

One was developed in the United States, focused on behaviour (competency), and aimed to find out what makes an employee highly successful in their job. In more detail, it analysed the behavioural characteristics of high performers, the types of behaviour that differ from the average, and their drivers (such as motives, motivation, personality traits, and values). The prominent representatives of this trend were, as we have seen earlier, *White* (1959), *McCelland* (1973), later *Boyatzis* (1982), and *Spencer* & *Spencer* (1993). The behavioural approach was strongly linked to organisations by identifying employee or managerial activity characteristics that led to outstanding performance and profit. The identification of leadership characteristics was strong in the American model, as shown by the fact that the American Management Association itself was engaged in creating a competency model.

Based on the analysis of job descriptions, the English model aimed at defining the expected standards (competence) and was essentially based on functional principles. It is no coincidence that the competence-based approach is linked to Vocational Education Training (VET). The transformation and development of VET aimed to establish occupation-specific competence expectations, standardising and measuring them to help employers and individual work organisations find and train the right employees. This approach has been

based on analysing individual occupations and jobs, and the definition of standards has been essentially based on such analyses. This is how the National Vocational Qualifications were developed in England, Wales, and Scotland, as well as how the Management Standards were developed, taking into account the analysis of a range of disciplines. Competence-based training has been deeply debated and has met considerable resistance across education and academia in general. However, the practice spread slowly, and its approach became more nuanced.

While in the US, we have seen the emergence of functional, job-related competencies alongside behavioural competencies, in the UK, models based on occupational competencies have been complemented by behavioural competencies. As we saw earlier with the interpretations of competences, there are now areas of competences, sub-competences within competences, etc. Here we see that there is a differentiation of understanding and that competences in different domains (cognitive, functional, personal, etc.) are beginning to be grouped (see *Cheetam and Clivers'* five-dimensional framework), which was the basis for a report on the Department of Education and Skills on the future competence needs of managers (*Le Diest* & *Winterton*, 2005, 34–36).

Based on these, the American approach has been called input-approach (behavioural competency as an input, the determinant of an individual's organisational performance). In contrast, the English approach has been called output-approach (the job description of the job determines the standards that the job entrant is expected to meet) (*Jamil*, 2015; *Le Diest* & *Winterton*, 2005; *Hoffmann*, 1999).

3.1.1.3 Conceptual interpretations in continental Europe

In continental Europe, the French and German approaches have mainly dominated and influenced the interpretation and application of the concept of competence. In France, this began in the 1980s and intensified in the 1990s. There was a strong emphasis on practical application (development of methods and tools for HRM), followed by theorising and critique. The state encouraged the use of a competency-based approach and replaced the occupation-based framework of the central employment office with a competency-based one. It has also impacted the procedures used by companies, which have been based on competency-based assessments of individuals rather than qualifications. The initiative to assess competencies independently of employment or workplace development planning was

introduced as a personal, individual right. In particular, competence-based pay was introduced in some heavy industry companies.

A study by *Le Diest and Winterton* (2005) found that the English/US and French interpretations of the concept converged on several points (the UK interpretation of functional competences and Hay Group's use of soft competencies). However, the French interpretation is typically considered more general. Although no consistent model of competences has emerged in France, users of the concept have reached consensus on three key components. These were knowledge, experience, and behaviour.

In the German interpretation, we observe that, while the notion of competence was always latent, the focus was on the input to learning rather than the output of acquiring a profession. The notions of qualification and competence also co-existed in the German system. Qualification basically indicated that an individual was able to perform the tasks required by a profession in concrete situations (thus strongly practice-oriented). In contrast, competence had a more holistic meaning, encompassing not only occupational knowledge and skills explicitly related to the profession, but also general skills (*Arnold et al.*, 2001, 176, cited in *Delamare & Winterton*, 2005, 37). German competence analysis grouped competences, distinguishing between subject-related competences (Fachkompetenz), personal competences (Personalkompetenz), and social competences (Sozialkompetenz), which were further subdivided into sub-competences that sometimes overlapped (e.g., The balanced presence of these three categories was considered to be a prerequisite for methodological and learning competence (Methodkompetenz and Lernkompetenz) (*Le Diest* & *Winterton*, 2005, 36–38).

Le Diest and Winterton (2005, 39–41) argue that multidimensional frameworks are needed to describe competences rather than unidimensional ones. We can also observe convergence between the US and UK models: while in the US behavioural competencies were complemented by functional (occupation, job) and cognitive competencies, the UK cognitive and behavioural competencies complemented the occupational (functional) competencies model. In continental Europe, a more holistic model than the previous ones emerged, described along the dimensions of knowledge, skills, and behaviour. On this basis, the authors conclude that a two-dimensional model is the best way to capture the concept of competence. One focuses on the occupation or the person, while the other distinguishes between conceptual and operational approaches. See Figure 4.

	Occupational	*Personal*
Conceptual	Cognitive competence	Meta competence
Operational	Functional competence	Social competence

Figure 4: Two-dimensional competence model; Source: Le Diest & Winterton (2005, 39)

The three elements of the typology shown in Figure 4 (cognitive, functional, and social competences) align with the French interpretation and fit well with the triad of knowledge, skills, and attitudes prevalent in the training world. Among the four groups of competences, metacompetence (including the ability to learn) is distinguished as a prerequisite for acquiring the other three competences.

The authors conclude the study by arguing that a coherent, consistent description of competences is needed, for which a multidimensional approach appears most appropriate. The global challenges to labour mobility, workplace learning, and non-formal and informal learning in general, which result in changes and developments in workforce competences, require a comprehensive understanding of the concept.

3.1.1.4. Debates, problems around the interpretation of competence

Despite repeated attempts, no generally valid, essentially uniform definition has been found by researchers, validated by science, and accepted in practice. This is reflected in research conducted in the European Union since the turn of the millennium. Based on *Winterton* (2011), I will highlight, without claiming to be exhaustive, some approaches that, despite their apparent contradictions, still influence the use of the concept of competence today.

The study examines the relationship between competence-based VET, learning outcomes-based higher education, and competence as an EU policy instrument. It concludes that, following the establishment of the European Qualifications Framework and the European Credit Transfer System for VET (ECVET), there is a need to develop a coherent system of

skills, competences, qualifications, and occupations that transcends national and sectoral specificities and links the worlds of work and education.

In the introduction to his paper, the author addresses the conceptual ambiguity (skills and competences are often used synonymously), articulates the need to keep up-to-date knowledge in the field, and refers to the conflict between the world of education and training and the labour market, namely the mismatch between qualifications and the most common knowledge and skills they promise and the expectations of the labour market.

Economic incentives (such as mobility or linking qualifications and competences), political intentions and expectations (standardisation of qualifications, credit transfer, etc.) have led to the creation of new programmes. According to the author's analysis, Europe has seen education and training reform as an essential means of increasing competitiveness. This idea was to be facilitated by the introduction of competency-based training in the individual countries, which followed different models, mainly building their national systems on versions of the British, French, or German models. The launch of the *European Employment Strategy* (1997) and the declaration of the *Lisbon objectives* (2000), which aimed to make the EU the most competitive region in the world by 2010, naturally called for programmes to develop the workforce and increase its mobility (see the Action Plan for Skills and Mobility). The interpretations used by the EU in launching these programmes continue to reveal problems of interpretation. These are reflected in the following elements of *Winterton's* study (2011):

- In the context of Education and Training 2010, the development of key competences for lifelong learning has been launched, with knowledge, skills and attitudes as descriptors, with the addition that these elements are those that facilitate performance in specific situations (e.g., work environment), while key competences are those that are generally necessary for individual fulfilment, social inclusion, active citizenship and employment.
- In the New Skills for New Jobs project, experts noted that there was still a lack of an EU-agreed competences model, so they adopted the descriptors defined for the Lifelong Learning project (knowledge, skills, attitudes). However, they added innate and later acquired physical and psychosocial characteristics, thus confusing input conditions with output competences.

- In preparation for the New Skills for New Jobs, a group of experts added to the ambiguity by defining skills as both a general, overarching concept and as a part of itself and a component of competence.
- According to the ESCO (European Skills, Competencies and Occupation) taxonomy, skills, competences, and capacities complement the formal qualifications-based approach in the dialogue with employers.

In essence, the problems of definition are reinforced by the specific dictionary produced under the EU programme, the DISCO (European Dictionary of Skills and Competences). As the name suggests, skills (often used in the sense of abilities) are separated from competencies. In contrast, the Education and Training programme defines competencies as a triad of knowledge, skills, and attitudes. The DISCO website[12] provides the following information: The DISCO Dictionary provides multilingual, peer-reviewed terminology for classifying, describing and translating skills and competences. It is compatible with European tools such as Europass, the European Skills, Competences, Qualifications and Occupations (ESCO), the European Qualifications Framework (EQF), and the European Credit Transfer System for VET (ECVET). It also helps with international comparisons of skills and competences for applications such as CV and e-portfolio preparation, job advertising and placement, and descriptions of qualifications and learning outcomes.

The literature review suggests that there is no single understanding of competence, while its use is extensive and growing. It is used simultaneously in academic research, education and training, and corporate practice. Although Le Diest and Winterton's two-dimensional model is sophisticated, it has not been widely adopted in practice. The triad of knowledge, skills/abilities, and attitudes is considered the most characteristic, possibly complemented by autonomy and responsibility. These are seen as descriptors of competences. In addition, competences are most often described in some kind of domain grouping or breakdown in the different models and systems. This could be the one we have seen in the German system (functional, personal, methodological competences) or a breakdown by the sub-domains of a specific field (e.g. management and leadership).

[12] http://disco-tools.eu/disco2_portal/, viewed 28.01.2024.

3.1.1.5. Interpreting competences in the research phases

At each research stage, two factors determined our understanding of competency. We linked competency to behaviour, which aligns with the American model. According to our interpretation, behaviour is an active manifestation of competencies (*Abari & Baráth*, 2010, 8–9; *Kirkham & Révai*, 2013, 23–25). The presence, existence, and functioning of competencies can be captured in two ways. In the process, behaviour, and outcome in the product, while these two are naturally interlinked, since a given set of activities leads to a given outcome or result. If we want to take an example from the world of schools, this could be the formulation of the school's strategy and pedagogical principles. In managing this process, the leader can demonstrate their competencies in strategic leadership through their activities, their functioning – i.e., behaviour that can be observed, characterised, described – and the document (product) that results from the series of activities. Based on *Spencer & Spencer's* (1993) understanding, it is accepted that behaviour influences, essentially determines, the performance achieved in the work, so that by improving and modifying behaviour, the effectiveness and success of the work can be increased. The second factor is the measurability of behavioural characteristics, i.e., the measurement of behavioural competencies. That is why we have chosen the RDA model.

To describe the competencies, we have chosen, as *Parry* (2006) does, descriptors that can be used to describe the competencies without contradiction. These descriptors are knowledge, skills, abilities, and attitudes. We will see later that they can be used to capture both individual and organisational competencies.

Finally, it is also important to note that most competency models have defined dimensions or components of competencies based on a given definition (e.g., *Cheetam & Chivers*, 1996, 1998; *Le Diest & Winterton*, 2005; *Boyatzis*, 2008) and interpreted these in terms of specific behaviours. We have followed a different path. As a starting point, we chose to define the behaviours (actions, activities, attitudes) of successful leaders in their profession (carried out by consensus by representatives of stakeholder groups in a facilitated workshop). Based on these, we defined competencies and then described them along the selected descriptors.

3.1.2. Competency frameworks and their development

As we have seen in the previous section, the interpretation of the concept of competence was inspired by the need for practice, aiming to increase the performance of the organisational person and, through this, the organisation's operation and production (in a figurative and concrete sense). Like the concept's origin, the creation of frameworks has also started from two directions. Competency frameworks have been partly organisation-specific and profession-specific, although generic frameworks can also be found. The former were strongly linked to the specific organisation's needs, and the latter were more generic. The human resource management trend has reinforced the generalist, and the management trend has promoted the particular definition.

We believe the two strands can be combined to create frameworks that require adaptation in specific areas and professions. These can be adapted and used by individual organisations according to their own needs and status. As will be discussed later, Central5 is essentially such a system.

3.1.2.1. Model and framework

Before we go any further, it's worth revisiting the clarification of concepts, although here we are in no easier position than with competence. Practices based on the application of competences (selection, training, personal development, training development, and the associated assessment) have naturally led to the emergence of constructs that structure and organise competences, such as competence models and competence frameworks (we understand Central5, which will be discussed later in this paper, to fall into the latter category). In this case, too, there is no single interpretation or definition. In practice, many people use the two terms synonymously, or define one as the other (a model is a framework…, a framework is a model…). In her book, a prominent expert on the subject (*Shangi*, 2004, 2016) interprets the concept of competence and presents a detailed procedure for developing competence models and, based on these models, for creating a competence framework to be integrated into the HR system of an organisation. In the book's third edition, she deals in detail with the operationalisation of the development of frameworks, as well as

the definition and interpretation of behaviour indicators. *Ennis*[13] (2008, 5) defines the competency model, citing *Fogg* (1999), as a descriptive tool for identifying the competencies required to function in a specific role in a job, occupation, organisation, or industry. A competency model is a behavioural job description that must be defined for each occupational function and job role.

In my understanding, after examining several models, the competency model is a general understanding, an approach that helps us to think about individual and organisational success and the knowledge required to achieve it. It contributes to creating a common language within the organisation and/or profession, conveying the cultural characteristics and expectations necessary to function in the profession/organisation. Models such as Spencer & Spencer's iceberg model or Quinn et al.'s competing values framework (here, interpreted for leadership). The former focuses directly on behaviours and, thus, the competencies they represent. In the latter, the focus is on leadership roles and the competencies associated with their successful performance. A similar model is Le Diest and Winterton's two-dimensional system. The competency framework, where appropriate, is based on a model (see, for example, Shangi) and is more detailed, elaborated, concrete, and fundamentally application-oriented. It is often, if not necessarily, organisationally linked. When developed for an organisation, frameworks usually specify the knowledge, skills and abilities, attitudes and behaviours expected for each job and at different levels of management. In many cases, the framework can serve as a basis for assessment, and development interventions can be built on it to improve the performance of the individual and, through this, the organisation.

Regarding the developmental purpose of the competency frameworks, there are many similarities in what stakeholders want to use the frameworks for. A wide range of application options can be found in the literature (*Muhammad et al*., 2021; *Chiang et al*., 2018; *Shangi*, 2016; *Rodriguez et al*., 2002). The following list illustrates the most common ones:

- The selection of the workforce, with a particular focus on managers.
- Facilitate workforce integration into the organisation (expectations, norms, behaviours).

[13] Workforce Analyst, Federal Government in Washington, D.C.

- Setting clear and precise performance expectations that are understandable to the employee.
- Supporting the professional performance assessment, developing and implementing competence-based assessment systems (e.g., 360-degree assessment).
- Laying the foundations for individual development.
- Developing training programmes defining competence-based expectations (learning outcomes).
- Talent management.
- Designing and delivering competence-based training in the workplace.
- The targeted linking of jobs, roles, and the competencies needed to perform them successfully.
- Use of performance, merit-based rewards.

The goals in the list can be directed at an organisation (typically a large corporation or multinational organisation). They can be targeted at an industry or discipline, including not only the competitive sector (*Ennis*, 2008), but also the public sector (*Chiang et al.*, 2018; *Marjani*, 2017; *Ennis*, 2008; *Rodriguez et al*., 2002); subsystems and organisations such as education or health (*Batt et al*., 2021).

I found it essential to review the above and to interpret the concepts, as this allowed me to place the constructs in the context of my research. My thesis presents a competency framework (Central5 and an organisational competency model, the learning organisation model of schools). Central5 serves both sectoral and organisational purposes. At the sectoral level, it allows for a common concept and model for assessing school leaders with the same expected key competences[14]. At the organisational (institutional) level, it is a framework that requires adaptation. Defining organisational priorities in the main areas is necessary, based partly on sectoral expectations and partly on organisational objectives (the institution's pedagogical programme and strategy). The learning organisation model (LOM4S) could, in principle, be used similarly. It can serve sectoral objectives, enabling management to encourage schools to become learning organisations.

[14] Within the framework of the school supervision system, the model of management evaluation in Hungary has been developed for Central5. The key competencies are the same as in Central5.

An example of this could be Wales, based on the OECD Learning Organisation Model[15], where schools were required to develop their operations in line with this model. However, the primary aim of the model we are developing is to provide conceptual and operational support at the organisational level. Conceptual in that the model offers a framework for developing the school as an organisation. Operationally, it supports this through diagnosis and analysis.

3.1.2.2 Methodology for the development of competency frameworks

After reviewing the genesis of the concepts, their interpretation, and the uncertainties and contradictions this entails, let us briefly review the methods and procedures used to develop competency frameworks. It will help to situate the methodology of the research phases discussed in my thesis within the range of scientific methods.

I have selected five studies from nearly 20, which I compare in the following table. I have tried to present a variety of approaches and objectives and show how these are achieved through different interpretations of competence and methodologies. Table 2 includes the author(s) and the year, the purpose of the research and development, a brief interpretation of the competence, and the principal methodologies used by the researchers.

Table 2: Development of competency frameworks – comparison

Author (year)	*Objectives of the framework*	*Interpretation of competence*	*Methods used*
Marjani, R. (2017)	Improvement of the quality of the civil service, analysis, application, and development of the Tanzanian civil service management competency framework	knowledge, skills, abilities	Interview, focus group, Delphi method

[15] See for example: https://www.oecd.org/education/school/school-learning-organisation.pdf, viewed on 28.02.2024.

Author (year)	*Objectives of the framework*	*Interpretation of competence*	*Methods used*
Sudhindra et al. (2021)	Design competence assessment and development of a competency-based assessment framework to enable this	knowledge, skills, abilities, intentions and attitudes	UK Council's double diamond, a harmonised and linked application of quantitative and qualitative methods.
Chiang et al. (2018)	Developing a model and tool for measuring competence levels	knowledge, skills, personal characteristics, behaviour	Mixed methodology, qualitative-based quantitative studies, modified Delphi method for consensus building
Midhat, Ali et al. (2021)	Development of a generic framework	all the factors that influence work performance (knowledge, experience, soft skills, motivation, emotions, behaviour)	System development based on statistical analysis and panel analysis of existing frameworks, combining Delphi and the nominal group method
Rodriguez et al. (2002)	Description and presentation of the development of a model for the public sector	skills, abilities, behaviours, and other characteristics that an individual needs to possess in order to successfully perform job roles and functions; identify areas (learning ability, adaptability, effective communication, interpersonal relations)	MOSAIC: a flexible, multi-purpose, questionnaire-based analytical tool and model for collecting information on different occupations and groups within occupations. The model contributes to the development of a common language on competences.

All the studies in Table 2 concerned the development and/or analysis of competency frameworks. What they have in common is that they have thoroughly examined the development of the concept of competence and its purposes. The literature analyses and explorations have drawn on the same sources to a large extent and in a logical manner. Thus, McClelland, Boyatzis, Spencer & Spencer, Sparrow, Le Diest & Winterton appear regularly in the references, on whose work I have based my discussion of the concept. Although the

understanding of competence is not precisely the same in framework development and assessment studies, I typically find knowledge, skills and abilities, attitudes and behaviours in the definitions.

Another common feature is the need for scientific grounding in the development and evaluation processes. While the primary aim of the competency frameworks being developed or evaluated is to increase the quality and effectiveness of work (this applies to management as well as to other work areas and functions, tasks, and professions), the studies – and the research behind them – aim to examine and develop with scientific rigour and appropriate methods.

There are also many common elements in the framework development research regarding the methods used. All of them are characterised by the analysis of the relevant literature and its use in interpreting the concept of competence. Because of the complexity of the field, a mixed research methodology is accordingly typical. There are differences in emphasis, as some research is based on statistical analysis of large databases (e.g., *Marjan*, 2017; *Muhammad et al.*, 2021), followed by qualitative methods in the study or development. In other cases (e.g., *Chiang et al.*, 2018), qualitative data collection is the starting point, followed by quantitative data collection. Typically, research that uses the Delphi method in its original form tends to follow this direction.

Another common feature of the research is the involvement of a wide range of target groups in the study of the framework (or the system under evaluation) to be developed. They include practitioners in the profession or field, employers, trainers involved in developing the competence, etc. Another common feature is that decisions on the relevant competences, their components, and the framework itself are often based on a search for compromise or consensus. In all cases, the method is based on communication, debate, discussion, and exchange of views, which can take many forms. These may include service design techniques (see design-based research), focus group interviews, and various adaptations of the Delphi method. Overall, we can say that interactive, evidence-based methods based on group work can be found in all the research studies examined (see methodological column in Table 2).

Finally, it is worth noting that all the research presented here was characterised by being a knowledge-building programme rather than “classical” or traditional research. They have contributed to understanding the concept of competence and to applying frameworks based

on it in the public and profit sectors. In addition to a solid scientific basis, these research studies have a fundamental aim and mission: to generate and transfer new knowledge that can be applied in practice and lead to results that improve the quality of the functioning of individuals and organisations. As such, this research has served as a bridge between theory and practice.

3.1.3. Methodology used during the research phases

A detailed description of the methodology and the adaptation of the models used is presented in Chapter 4. This section aims not to show the methods in depth but to demonstrate that the methods used in each research phase align with the scientific research practices that characterise the development of competency frameworks. I will focus on this in the following by presenting the methods used in each research phase. Firstly, I examine one particular issue, workshops as a research method. Secondly, I will focus on further similarities between the methodologies introduced for developing competency frameworks and the methodology we used in our research phases.

3.1.3.1. Workshops as a research method

Workshops have long been seen as a development tool or method. However, we should consider the change in the status of the workshop as it is more often used as a research method, especially in situations where interaction among stakeholders is important and the outcome requires discussion and agreement on complex issues. It is supported by *Ørngree and Levinsen* (2017, 70), who argue in their paper *"that workshops provide a platform that can aid researchers in identifying and exploring relevant factors in a given domain by providing means for understanding complex work and knowledge processes that are supported by technology"*. The authors provided a comprehensive view of the changing status of the workshop, how it has evolved from a place where things are made or happen, where problems are solved, to a research method for identifying participants' expectations based on their interests and collecting relevant, valid data. Although Ørngree and Levinsen focus on e-learning in their study, we can find several other examples of workshops used as a research method. Some of these are presented below. The examples come from different topics, and workshops have been used for various purposes. The common theme of the examples is that they all served research purposes.

As in the case of the models presented under section 3.1.2.2 – see Table 2 – it was of great importance in each phase of the research that the behaviours (individual or organisational) reflecting the competencies and based on these, the structure and the concrete components of the competency framework were arrived at in a consensual way after in-depth discussions. This was done through targeted workshops adapted to the characteristics of each research phase. The workshop, as a form of activity, can also be used as a research method, as confirmed by the cited research (Table 2).

Dolan and Liebenberg present their study, which uses photo-elicitation interviews to uncover the relationship between social inequalities and students' experiences in higher education. In the conclusion, they mention a Canadian study of Indigenous youth on the importance of collaborative design. The authors describe the situation where the researcher used a workshop as a method: *"Furthermore, once youth were engaged in the research process, an active workshop-type process of thematic analysis was engaged in with participants to establish foundational frameworks for findings… Collectively these processes ensured safe, reflective research spaces for youth to engage in critical reflection on their lived-experiences."* (2019, 115).

Lange looks at the impact of the internationalisation of educational research and examines two crucial factors – power relations and sociological gaps as methodological challenges. Without going into detail about the research and its findings, I would like to highlight one issue regarding the methodology used. Lange gives an example of how the risk of sociological gaps can be reduced. The method she described included conducting a workshop to collect data. *"…the insider knowledge was of particular importance for how data were collected during the whole research process; for example, data were collected by means of workshops and interviews and, in addition to questionnaires, context data were also analysed."* (2019, 284).

3.1.3.2. Comparison and conclusions regarding the applied methodology

Having discussed the workshop as a research method, I can return to the conclusions drawn from research aimed at developing (or assessing) competency frameworks. We will see that the methods used in the different research phases are in solid harmony with those that appear in the cases analysed in section 3.1.2.2.

For each phase of the research, a literature review and analysis were carried out as part of the developmental research. One of these results was an interpretation of the concept of competence. We have chosen the most common definitions: knowledge, skills and abilities, and attitudes. Behaviour was defined as a manifestation of competencies. In line with this, we used methods to identify behaviours and procedures based on these methods to identify competencies and group them to develop a framework.

The methods used to develop the competency framework align with those outlined above. For all three research phases, the demand-driven competency development model served as the basis for the investigation and data collection[16]. In line with the research-based programmes for the development (or assessment) of competency frameworks described above, an essential element of this was the involvement of representatives of key stakeholder groups in identifying the behavioural characteristics on which the competencies were based. Thus, the identification of school leadership competencies involved active leaders, their employers, educational supervisors, teachers, and, where appropriate, parents. In the case of the learning organisation model for school, the participants included school principals, teachers, organisational development consultants, evaluation experts, and educational researchers.

Last but not least, quantitative data collection and analysis were used in each research phase. This was done partly through questionnaires and the RDA model, which quantifies behavioural competencies, describes them in professional/organisational profiles, and compares them. These methods were presented in an integrated, organically linked manner. Therefore, it can be argued that a mixed research methodology characterises the research phases[17] .

In the first chapter, I presented the three research phases, two closely related (LLL-S-L, ICSL), while the research supporting organisational model development (LOM4S) was spatially and temporally separated and conducted on a different sample. I found that the three research phases together can best be described as a design-based research methodology

[16] For a description of the original model and its adaptation, see Chapter 4.

[17] This statement is supported by the detailed description of the methods of the research phases in the following chapters.

grounded in service design. The rationale for this is presented later in Chapter 3, where I analyse DBR, present its critical approach, and explain why I consider it an inclusive methodological category that covers the research phases in my thesis.

3.1.4. Competency frameworks – critiques, reflections

I find it necessary to address the critique of competency frameworks because this paper's ultimate goal is to demonstrate the creation of such a framework. Thus, the fundamental question is how well the result stands the test of science and practice. The former is primarily related to conceptual foundations and validatable results, while the latter is mostly about applicability.

The literature on critical approaches has a similar richness as that on competencies and competency frameworks (*Jamil*, 2015; *Ennis*, 2008; *Bolden & Gosling*, 2006; *Bolden et al.*, 2003; and others). Critical approaches are diverse, but several common points are worth highlighting below. The list is not prioritised, but we will see that all of them are significant. I will endeavour to reflect on how these have been addressed during the research phases following the formulation of the critique.

First. The concept of competence is unclear, fraught with many internal conflicts, and sometimes refers back to itself (tautology). Different disciplines (psychology, management, HR, organisational science, political science) have different approaches to competence, and their definitions strongly reflect the interests and aspirations of each field (*Burgoyne*, 1993; *Hoffmann*, 1999). The problems of defining the concept have been discussed in detail in the earlier parts of Chapter 3. Its existence is undisputed and remains so to this day. During the research phases, it was agreed that the concept of competence should meet three requirements: a) It should be scientifically sound and consider the debates on interpretation. b) It should be unambiguous and clearly formulated. Examples and interpretations should support the formulations. c) The application of the concept should be consistent throughout the research phases. As a result, as I formulated in section 3.1.3, we have decided to use the interpretation of knowledge, skills, abilities, and attitudes. This decision is reinforced by the concept of learning outcomes, which has become common and accepted and ultimately helps define learners' competencies; it is essentially based on the same (complemented by the categories of autonomy and responsibility).

Second. Competency frameworks focus on the individual, the first-line leader in the case of organisational leadership, and thus disconnect them from the environment in which they exist, operate, and work (organisation, staff, changing world) (*Bolden & Gosling*, 2006). The methodology used and the way it was implemented during the research phases avoided this problem. This was reflected in the fact that, to identify the competencies of school leaders, the process involved all relevant and important actors who had to agree on the activities and behaviours that reflected those competencies. The focus in which these attributes were sought was the successful school in the knowledge society. In this way, both the broad context (society, technology, global issues, etc.) and the narrower context (local society, the school itself) were considered with a future-oriented approach. The working format – a facilitated workshop – ensured that the process would follow the original objectives and that the results would be comparable across different groups in different countries.

Third. Another problem was that the frameworks set expectations for individual managers. These often become atomised lists of activities that are far removed from the complexity of leadership. It is thought to standardise leadership activities, which are essentially the same and independent of organisations and different countries. This leads to a rigid, mandatory tick-box list or a formal scaling of these list items (*Bolden* & *Gosling*, 2006, 153). The risk is undoubtedly significant. The expectations placed on the manager can easily lead to a large number of requirements reflecting very high expectations, which can lead to formal compliance. There is also a high risk when a vast number of expectations (competency elements) are displayed. The solution – which can be found in many places in practice – may be to interpret the expectations not for the first-line leader but for the leadership, i.e., the expectations should be covered by a leadership team. The second element in addressing the problem is a holistic view of leadership, a vision and vision of processes, which also provides a guide to what expectations of leadership become salient in a given organisation in a given state (see *Mourshed et al.*, 2010). Finally, the third element is the indispensability of adaptation. During the research phases, the problem of differences between organisations and countries was addressed through in-depth, consensual discussions of the surveys, data collection, and results for each country. At each stage of the development of Central5, the results were presented to school leaders, with whom we had in-depth discussions not only on the relevance of the content but also on its feasibility and deliverability.

Who can meet the expectations it sets out? This question quickly led to the approach that Central5 sets out expectations not for an individual but for leadership. Finally, the third

element was the need to adapt. Although Central5 contains only five domains and 25 key competencies, this provides an easy and quick overview. However, there were hundreds of competence elements along the descriptors (knowledge, skills and abilities, attitudes). The latter made it unavoidable that in a given organisation (school) where Central5 was to be applied, priorities had to be set, selecting the competency elements related to the key competencies that were important in that organisation. This process strengthened self-awareness and helped to make informed decisions, building on this for targeted applications.

Fourth. The problem of measurability. A common criticism was that elements of competence, in the case of leadership, and the leader's characteristics were chosen to be included in the competency framework, which was easy to measure. However, successful, effective leadership requires several qualities and attributes that are difficult to define and measure, typically soft skills (*Jamil*, 2015, 45-46). Again, this is a challenge that should not be underestimated. However, it can be addressed by applying appropriate research methodologies. Babbie's work on social science research reflects that areas such as compassion can be explored with proper preparation, thoughtful operationalisation of the concept to be investigated, and well-designed measurement procedures and instruments (*Babbie*, 1989/1996, 2007). On this basis, it is safe to assume that important soft skills in leadership can also be measured. During the research phases, a targeted instrument and model, the RDA[18] , was used to measure behavioural competencies.

Fifth. The relationship between competencies and learning. There is also a critical approach – see *Buckingham* (2001) – which questions the learnability of behaviours, in sharp contrast to the Spencer & Spencer model. It should be added that accepting Buckingham's position would be to admit that human behaviour is not malleable and cannot be shaped, at least not in adulthood. This is not only in contradiction with the Spencers' model of competence but also with positions in behavioural science and pedagogy. On this basis, adult education would essentially be limited to acquiring knowledge, since active action and shaping mindsets and attitudes can be identified through changes in human behaviour. Acquiring these competencies would not be possible if behaviour could not be changed. This also contrasts with everyday practice. This is particularly true in the 21st century, when the focus

[18] See a brief description in this chapter and a detailed description in the Appendix 1.

has shifted to developing soft skills in general and to a high degree for leaders (creativity, fact-based decision-making, collaboration, etc.).

Sixth. Frameworks are inadequate to keep pace with changing expectations in a rapidly changing world (*Caldwell*, 2003). This statement is true if we think of rigid, bureaucratic applications, of which there are many examples. However, this is not necessarily the case. The functional analysis technique of job functions may entail the risks mentioned here. Risks can be avoided by using alternative development methods, such as service design methods or demand-driven competence identification during the research phases. Regular review of frameworks can adapt expectations to a changing world.

Finally, a general observation. Most of the criticisms are valid if the conditions are met (…if…then…). We can think of conditions such as the lack of a holistic approach to leadership, or the interpretation of competencies as a rigid checklist, the separation of the leader from the people he/she leads, or the neglect of soft skills (teamwork, cooperation, etc.), or the disregard of ethical and moral standards. Notably, this is not necessarily a feature of competency frameworks but rather an indication of their development and/or application deficiencies.

To sum up, the critiques of the concept of competence and the development and functioning of competency frameworks are important and valuable because they draw our attention to the wrong paths and dead ends that are easy to walk into. However, they can be avoided through consistent and professional development and application. This is referred to in a thorough study by *Bolden et al.* (2003). The study, which provides an overview of leadership theory, leadership models, competency frameworks, and their interrelationships, offers a thorough account of the area under study. It introduces different leadership models and styles, examines the emergence and evolution of leadership competencies, and then analyses several competency frameworks, including those of large corporate organisations, sectoral for-profit and non-profit organisations, and public sector organisations. After presenting and analysing the results and critical approaches, the authors conclude that there is a need for a transformation and change in competency frameworks. The concluding questions of the paper point in the direction of such a transformation (e.g., shouldn't socially and ethically acceptable forms of behaviour be proposed, or should a kind of leadership charter be created? Shouldn't we question leadership styles, approaches, behaviours, and methods to expose their weaknesses rather than look for the Holy Grail of leadership? [*Bolden et al.*, 2003, 40]).

These questions – and others in this paper – are precisely orienting us towards a flexible, adaptive, holistic competency framework.

Finally, one more example. In the UK, the National College for School Leadership was established in 2000 as an NGO funded by the state to provide high-quality development and training programmes for school leaders. After several transformations, its functions were taken over by the Department of Education.[19] The current legislation provides a competency framework for school leaders. It is not mandatory, but it is widespread. The framework uses descriptors of knowledge, skills, and behaviour. The content of the framework is regularly reviewed to keep it in line with the changing world.

By reviewing critiques of competency frameworks and linking them closely to leadership, I aimed to demonstrate that they are not only of historical significance but also suitable for describing leadership competencies in the knowledge society, and to build on this to develop leadership. The topic also raises some other questions. These can lead us further from our focus.

3.2. General methodological approach

In this subchapter, I address three questions. First, I will explain why the research phases examined in this thesis can be considered developmental research. Next, I will deal with design-based research, briefly and purposefully reviewing its origins, characteristics, and critique, which are justified by the fact that I consider DBR as a methodological framework to integrate the research phases into a coherent system. The last section will describe the standard methodology used in each research phase.

[19] For a brief history of the organisation, its aims and functions, its transformation and the way it will carry out its tasks after its dissolution, see: https://discovery.nationalarchives.gov.uk/details/r/C17394, https://en.wikipedia.org/wiki/National_College_for_Teaching_and_Leadership, https://www.gov.uk/government/publications/national-standards-of-excellence-for-headteachers/headteachers-standards-2020 (downloaded and viewed on 27.02.2024.)

3.2.1. Research phases as developmental research

Each research phase is based on the demand-driven identification and development of competencies (individual and organisational) and the analysis of personal and organisational behaviour. A key question may be whether research phases can be considered as development or developmental research from a methodological perspective. Given the genre of this thesis, there is a reasonable expectation that the phases presented should be considered as research activities. However, it would have been possible to produce a product within a purely developmental programme using similar or even identical data collection methods and techniques, which in the first and second phases essentially constitute the definition of a framework of competencies for school leaders. However, it would not have been necessary to examine in depth the profiles of school leadership competencies in each country, nor would it have been essential to explore the relationship of these competencies to school autonomy, nor would it have been necessary to make policy recommendations based on research. These activities already show the presence of developmental and design-based research. In the second phase, building on the results of the first one, it would have been sufficient to correct the competency framework. In this phase, on the other hand, we looked in depth at the extent to which the leadership characteristics that the professionals involved in the development process considered crucial were reflected in the final results. To do this, we used a behavioural competency model, RDA, as a tool. By using this model, we were able to demonstrate concretely and accurately that the expectations of those involved in the leadership profession and of teachers and decision-makers in contact with it are reflected with a high degree of accuracy in the final description of the competency framework. The validation of results in this way clearly shows the presence of research activities. It is also supported by the fact that the countries involved in developing the competency framework have tested the product of the development, and the results have been examined, analysed, and reflected on the framework's applicability. This also required research methods and can be identified as an element of design-based research.

Identifying the activities as developmental research purposes is also strengthened by the fact that the elaboration and documentation of the methodology used for development encourage and simultaneously enable the monitoring and further development of the developed product, as well as its adaptation to changing needs. Furthermore, the methodology developed means creating transferable knowledge, i.e., it can be used to identify competencies in other areas. An example of this is the third phase, which aimed to develop

organisational rather than personal competencies. Returning to the question of whether we are talking about development or development-oriented research, it is worth looking at the third phase itself. Here (in the third phase), if our sole aim had been to develop a new learning organisation model for schools, it would have been sufficient to create the model itself, based on the results of previous literature, studies, and a diagnostic study of the schools concerned.

In contrast, we carried out an extensive quantitative and qualitative study across the schools involved in the R&D programme. This allowed us to demonstrate that the theoretical (synchronic-diachronic) model meets and essentially covers the (nuclear) model that could be drawn from the school studies. The theoretical model has thus been validated using scientific tools and methods. The qualitative studies focused on the application and applicability of the model. They allowed us to link the descriptions in the learning organisation model to real, actual school processes and activities. On this basis, the research phases presented in this thesis can be classified as developmental research.

3.2.2. Design-based research – genesis, interpretations, critiques

Design-based research (DBR) is a relatively young research methodology. Its novel approach – the expectation of practicality and contribution to scientific theories – particularly their combined feasibility – has generated much debate. Although these debates have not been settled, it can be argued that DBR is now an accepted, widely accepted research methodology.

Design-based research is strongly linked to the study of learning, which has always focused on the effectiveness of student learning and how to improve it. The emergence of DBR is often attributed to Ann L. Brown (educational psychologist and former president of the American Educational Research Association), who, together with her colleagues, developed teaching methods that improved the quality of student learning. Her research led her to the conclusion that students with learning difficulties could not use metacognitive strategies. *Brown* initially conducted laboratory experiments in her field and gradually approached the changes that led to field research. In one of her seminal articles (*Brown*, 1992, 141), she argued that her research at the time was primarily concerned with transforming classroom learning so that students could become the masters of their learning rather than being required by teachers to do tasks. She also wrote about moving from classical learning theory, which focused on rigorously controlled laboratory experiments, to studying classroom

processes. *"My training was that of a classic learning theorist prepared to work with 'subjects' (rats, children, sophomores), in strictly controlled laboratory settings…. I trace briefly how I moved from the classical psychological position of concentrating on a theoretical study of the learning processes of individual students to a concentration on conceptual change in teachers as well as students, to setting up a classroom ethos that would foster self-reflective learning, and finally to bigger concerns with technology, curriculum issues, and assessment."* (*Brown*, 1992, 141, 143). She aimed to contribute to the development of what was then called the design experiment as a method for learning research that would produce results for practice while meeting scientific expectations. See: „I attempt to engineer interventions that not only work by recognizable standards but are also based on theoretical descriptions that delineate why they work, and thus render them reliable and repeatable." (*Brown*, 1992, 143). Regarding the study, she defined: „The main point of this article is that learning theory has undergone major modifications even within the cognitivist period of the last 20 years, and methodological changes are needed to reflect these developments." (*Brown*, 1992, 144). Brown's work provided a strong foundation for the further development of DBR, accompanied by challenges and pitfalls.

Many researchers saw the new direction, which they called design experience or design research, and eventually settled on the name design-based research, as one that could bring a new, innovative research approach to educational research. An essential feature of this is that it starts from practice and reflects on a practical problem. At the same time, the research methodology contributes to the development of scientific interpretation and theories. Researchers working on the new methodology and its development, such as Brown with her experiments on the development of learning to learn, have achieved significant results (*Collins*, 1992; *Reeves*, 1999; *Design-Based Research Collective*, 2003; *Bannan-Ritland*, 2003; *van den Akker et al.*, 2006).

Reeves (2006, 26) defines the basic characteristics of DBR as follows:

- *"addressing complex problems in real contexts in collaboration with practitioners;*
- *integrating known and hypothetical design principles with technological affordances to render plausible solutions to these complex problems; and*
- *conducting rigorous and reflective inquiry to test and refine innovative learning environments as well as to define new design principles."*

Reeves described the DBR process as follows:

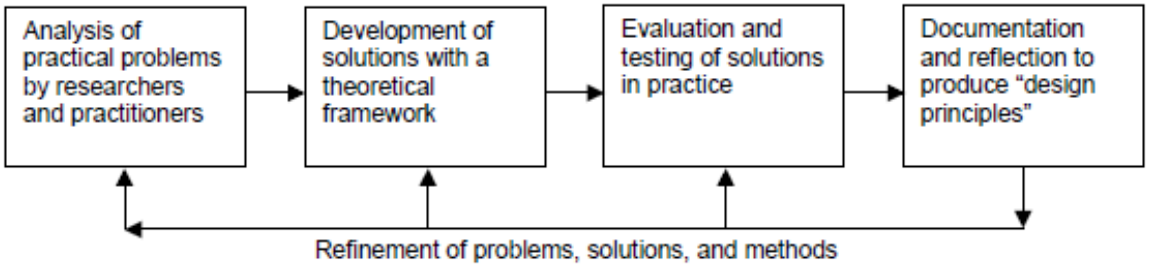


Figure 5: The DBR process; Source: Reeves (2000, 25)

Van den Akker and colleagues, referring to previous research, defined the following characteristics (*van den Akker et al.*, 2006, 5):

- *"Interventionist: the research aims at designing an intervention in a real world setting;*
- *Iterative: the research incorporates cycles of analysis, design and development, evaluation, and revision;*
- *Involvement of practitioners: active participation of practitioners in the various stages and activities of the research;*
- *Process oriented: the focus is on understanding and improving interventions (a black box model of input-output measurement is avoided);*
- *Utility oriented: the merit of a design is measured, in part by its practicality for users in real contexts; and*
- *Theory oriented: the design is (at least partly) based on a conceptual framework and upon theoretical propositions, whilst the systematic evaluation of consecutive prototypes of the intervention contributes to theory building."*

Many similar diagrams or descriptions of processes and characteristics could be cited from other authors. However, it is already apparent from the above that different researchers (or groups of researchers, see Design-Based Research Collective) agree that DBR seeks answers to complex problems rooted in reality, can be broken down into phases, described as a process, tests the solution, and refines it in steps; and is characterised by a solid theoretical and practical orientation.

If we then look for a definition of DBR, we can find several definitions related to the evolution of the methodology. These definitions are closely related to the characteristics

described above. The term itself varies considerably since, as we have seen in Brown's work, it is called design experiment. However, it is also used to refer to design research (or educational design research), development, or developmental research. In the following, I will use the terminology of the respective authors, irrespective of the fact that they may ultimately be referred to as DBR.

Plomp (2010, 9) starts from the problem in his definition. He formulates educational design research as a research approach that seeks answers to complex problems arising from educational practice for which there is no clear guidance on how they should or could be solved. Educational research design can be seen as a methodology that systematically organises design, development, and evaluation into a system of interventions to solve complex problems. These interventions can include programmes, teaching and learning strategies, curricula, and systems design. Responses and solutions to problems also increase knowledge about the nature, design, and development of interventions.

Barab and Squire (2004, 2) used a general definition, stating that *"design-based research is not so much an approach as a set of approaches, to generate new theories, objects and practices that are relevant to learning and teaching and have the potential to influence learning and teaching in naturalistic settings".*

One of the leading figures in DBR, van den Akker, a researcher in the field of curriculum development, has interpreted the methodology in a discipline-oriented manner. According to him, design (or development) research is: (a) pragmatic (practice-oriented and user-focused); (b) prototyping-based (iterative, using formative evaluation); (c) communicative and relationship-oriented (thereby creating compromise between stakeholders); (d) professional development supportive (integrative, involving individuals and the organisation in learning). As van den Akker puts it, such research can become more promising through knowledge creation. Specifically, *"Design or development(al) research is a research approach that incorporates some of these characteristics, and it becomes even more promising by adding the element of knowledge growth to it."* (*van den Akker*, 2010, 43).

Finally, focusing on the form of evaluation used in the research (formative evaluation), *Nieveen* (2010, 89) defined design research in education as *"...the systematic study of analysing, designing and evaluating educational interventions in order to solve complex educational problems for which no ready-made solutions are available and to gain insight in key design principles."* In line with the dual purpose of DBR (practice-focused, advancing

scientific theory), he also classified the results of this type of research into two groups. Firstly, well-based interventions (practical application), such as programs and processes, serve to solve complex problems. Secondly, a list of principles for theoretical contribution and knowledge creation, such as the purpose of the interventions, their characteristics, design guidelines, the conditions of interventions, and argument theory (ibid). *Nieveen* (ibid) argued that: *"In order to reach both types of output (high quality interventions and design principles), design researchers carefully combine design and research activities resulting in an iterative development approach."* We can see that Nieveen – with its focus on formal evaluation – uses a DBR interpretation that is practically the same as that of others.

The following is an overview of the key features of the development, spread, and impact of DBR.

In his study, *Zheng* (2015) aims to map and analyse the literature on DBR from 2004–2013, using 162 selected journal articles. The analysis provides a comprehensive overview of four research questions based on studies by key authors (*Braun*, *Cobb et al.*, *Collins*, *Anderson & Shattuck*, *McKenney & Reeves*, and others). Based on the selected studies, the following areas were examined:

- Which age groups (demographics) were targeted for the DBR studies?
- What research methodological approaches were used in the DBR?
- What interventions do you plan to take based on the phenomena identified?
- What results have been identified in the DBR studies examined?

For each of the four research questions, the researchers also compared the first and second periods of the studies (2004–2008, 2009–2013, 401).

The most important findings of the research can be summarised as follows: the studies focused mainly on higher education age groups. In terms of learning environment and methods, the role of distance learning has increased, and face-to-face learning has decreased. Researchers have used predominantly qualitative methods (or mixed methodologies) in their studies. The number of interventions was mostly one-off, i.e., changes were made in a single cycle, and the impact was often not re-examined. The duration of the studies was typically one year. The latter two reasons are mainly due to a lack of resources. Measured outcomes were primarily related to the learners' cognitive development; attitudinal or motor skills were rarely examined.

Finally, the researchers made four recommendations based on the analyses: (a) Increase the reliability of DBR-based research (objectivity, validity, reliability); (b) Increase the number of iterations (in line with the DBR philosophy); (c) Generalise conclusions from the local context requires a lot of attention; (d) Pay more attention to design activities that produce exciting results (design activities) in the context of DBR. Finally, the authors conclude that further development of DBR is needed to ensure it produces replicable results usable in practice.

However, An Introduction to Educational Design Research (*van den Akker & colleagues*, 2010) presents several concrete examples and procedures for the application and methodological underpinning of DBR.

Anderson and Shattuck (2012) examined the essential characteristics of DBR as a research methodology, its application and diffusion indicators, and the challenges of experience in educational research. They used open sources, basing their research exclusively on articles and studies (they did not consider book chapters or conference proceedings on the subject, even when cited). They examined the three most crucial citation indexing systems (Google Scholar, Web of Knowledge, Scopus). They chose Google Scholar based on Harzing's opinion. Harzing's software (Publish or Perish) was used for the analysis. Between 2003 and 2012, the five most cited articles per year were analysed (only two were found in 2002). It was found that the interest in DBR and the number of studies on DBR increased intensively during the period under study. The researchers analysed: where such research was most often carried out (geographical aspect); what topics were covered and what interventions were made (content and intervention aspect); subject studies (curricular aspect); and the extent of fine-tuning (interaction aspect). Finally, the authors identified four areas in which research using DBR has yielded results (opportunities to improve learning, important new understandings of learning outcomes and the learning environment, improvements in student outcomes, and improvements in attitudes, motivation, and cognition (epistemology). Although the research has not provided measurable results on "what works", it has contributed to a deeper understanding of the learning environment, the factors influencing implementation and the nature of interventions. The authors conclude that DBR in education is a growing trend, with the US standing out geographically, particularly for its implementation in K-12 contexts. Most of the articles reviewed by the authors confirm that the interventions have brought changes in student outcomes and attitudes. They also increased our understanding of the relationship between successful testing of interventions

and practice. However, the extent to which the results achieved are suitable for widespread dissemination is unclear. Nonetheless, the authors express cautious optimism based on the spread of the methodology and the promising results. The study confirms the applicability of DBR in complex learning contexts, while calling for further research.

Moore et al. (2023) published a study to clarify the purpose and conditions for the use of several novel research methods so that researchers can argue for the choice of a particular method when choosing a methodology, as a lack of this or inaccuracies can easily lead to the editorial board of the selected journal rejecting the submitted article. DBR is one of the methods examined. The authors give a brief overview of the origins of DBR, citing the leading researchers (*Brown*, *Reeves*, *McKenney* and others), and then describe its main features. The following points may be worth highlighting from the study about DBR. The application of the method, while its advantages include adaptability and flexibility, is subject to strict requirements. A thorough exploration based on previous research, problem identification, and a solid empirical – and, to a large extent, qualitative – line is essential. The results should both serve to address the identified problem and contribute to theory building. Two further elements are worth highlighting. The first is iterativity, the refinement of intervention methods based on trial and intensive formative evaluation. The other is the involvement of stakeholders, working with them, which the authors describe as development not for them but with them.

The two meta-analyses and methodological studies discussed here have contributed to a more precise definition and interpretation of DBR and have confirmed it as a research methodology that can be effectively applied to the exploration, investigation, and solution-finding of complex problems in the field of education.

Even as the methodology is increasingly used, it is worth paying attention to the critical approach and to the problems and risks revealed by studies on DBR so far. One important criticism relates to the expected reproducibility of research, i.e., that one set of studies in one location may not be equally effective for another set of studies (*Collins et al.*, 2004). The most common criticism concerns the failure to identify an important feature of DBR in some studies. An example of this is the lack of attention given to the development of the theoretical framework (*di Sessa & Cobb*, 2004). A similarly important issue is the implementation of iterations and the number of iterations, which is often not achieved due to a lack of resources. Another frequent question is how to distinguish DBR from similar research methods (e.g.,

action research). Another question that has repeatedly arisen is how to verify the validity and reliability of DBR results (e.g., *Barab & Squire*, 2004).

Finally, it is worth mentioning that there is another important source of the application and spread of DBR. This is service design – first mentioned by Vargo and Lusch in 2008 – which has emerged from service marketing and has now become a methodology in its own right. What we now call service design is defined by *Baráth and Cseh* (2016, 445), based on *Vargo and Lusch* (2014), as follows: *"Service Design, as a multidisciplinary approach, is the integrated, coordinated organisation of people, processes and infrastructure involved in service to enhance the outcomes and experiences for users."* Service design is based on intensive and thorough research. It is characterised by co-creation, involving all stakeholders in the design process. There is a strong use of qualitative methods, with particular emphasis on visuality and the release of creative energies. Development is interactive, with prototyping followed by testing and, typically, multi-stage correction and refinement, in which targeted evaluation plays an important role (see *Stickdorn et al*., 2018).

To sum up, DBR has become a well-known and accepted research methodology, with established basic characteristics and rules that help determine whether a given research can be classified in this category from a methodological perspective.

3.2.3. Models and methodology applied in the research phases

In section 3.2.1, the rationale for considering the research phases as developmental research was presented. In section 3.2.2, the DBR was presented, with its principal attributes delineated. The methodology will be employed as a framework for the research phases aimed at developing personal and organisational competency models. This section will continue by presenting the methods and models mentioned in section 3.2.1 and their role in implementing the research phases. Subchapter 3.2.3 introduces the applied research methods and tools. It provides information on integrating qualitative and quantitative methods that enable the complex, turbulent world of the school and its leadership to be grasped in a sensitive and sophisticated way. The demand-driven competence definition, in conjunction with the behavioural competencies, serves as the cornerstone of the dissertation, establishing the relationship between the various research phases and their respective outcomes. This approach requires integrating qualitative and quantitative methods. I then illustrate the practical application of the demand-driven identification of competence requirements

(DDICR) and the demand-driven competence development model (DDCDM), demonstrating their adaptability and relevance. Subsequently, a concise overview of the Role Diagrammatic Approach (RDA), a formative evaluation tool, is provided. Finally, the Competing Value Framework (CVF) is presented as a model for investigating organisational effectiveness and culture, as well as the role and characteristics of leadership.

3.2.3.1. Demand-driven approach – description and adaptation[20]

The changing link between work and learning is demonstrated by the fact that the labour market defines more and more precisely and accurately what competences are expected from individuals in various jobs and positions, and at the same time, the role, the task, and the responsibility of the individual are also increased in their own self-development process. As a result, what also changed is the role of the sector that enables the preparation of the individual and supports learning, thus creating a bridge between the world of the individual and that of work.

In developed countries, we can increasingly see that the various players of society, i.e., the world of work, trainers and researchers, the state, and the civil sector, establish clearly defined standards for workers in various sectors and people fulfilling various positions. Defining these standards is aimed at targeted training, further training, the coordination of individual and organisational aspirations, and achieving successful operation.

Defining competencies at a system level can be a pioneering example, and it was realised in Great Britain after 2000. The business sector initiated the change because it was dissatisfied with the skills and competencies underpinning the different qualifications. It led to the establishment of a nationwide program, which divided the world of work into 25 sectors. Each sector had a Sector Skills Council that defined competence expectations for that sector. This process was based on the so-called *Leitch Review* (2006), which was the most comprehensive analysis and strategic document on skills at the time. This process determined the development of the strategic and operational levels in Britain for several years.

[20] This part is the adaptation of one part of Baráth (2014): *New ways of defining teacher competences.*

One of the 25 Sector Skills Councils was Lifelong Learning UK, which played an outstanding role and encompassed five areas: community learning, further training programmes (non-university programmes for over 16s), higher education, library, archive and information service, and work-based learning. These played a vital role in training specialists in other sectors.

Defining the required competencies for trainers and teachers who work in the lifelong learning sector is based on qualitative and quantitative research results. The latter was supported by already existing databases as well as new data. The procedure covered the following:

- The analysis of a wide range of professional literature.
- The definition and analysis of existing standards and sector-specific data sources.
- Talks and interviews with the key stakeholders of the sector.
- A wide-scope questionnaire study with service providers and employers working in the sector.
- Future planning workshops (LLUK, 16–26).

I adapted the LLUK model to meet the project requirements. Within them, we developed competency profiles for school leaders and schools as learning organisations. Naturally, the 1-2-year-long projects have rather different conditions than the nationwide development programme in Great Britain. We conducted a broad range of studies across the professional literature, the mixed research technique, and – mostly – the investigation of the needs defined by the interest groups.

In light of the description of the DDCDM, I provide an overview of the key characteristics of the adapted model[21]. It is first necessary to emphasise the similarities between the adaptation and the various research phases. Secondly, a detailed account of the specific elements used to develop the competency framework for school leaders and the learning organisation model for schools must be provided.

[21] This part is mostly based on a part of Baráth (2013*): Methodology of the competency framework development.*

We focused on the DDCMD features built on real needs that can be justified from several perspectives. We also conducted a wide-scope analysis of the relevant literature in each research phase. Lastly, we applied a mixed research method during the LLL-S-L and ICSL development processes to elaborate on a new competency framework for school leaders and the learning organisation model for schools. It is worth noting that an essential characteristic of the OECD Skills Strategy (*OECD*, 2012) is that it appreciates the demand (utilization of skills) against the supply (skills development). This shift of emphasis in the leading international processes justifies the application of a corresponding demand-driven development model. However, the OECD Skills Strategy speaks about human skills, and it is possible to transfer the approach to the world of organisations.

The following section summarizes the main characteristics of our demand-driven development model applied to the development of competency frameworks for school leaders. Behind the description of these characteristics, this section provides insight into how the adapted process worked.

a) The development of a competency structure describing a given profession or job (in our case, that of a school leader) and the definition of expectations for practising this profession or job are built on selecting the target groups that use the knowledge represented by this profession and involving them in the process of development. These target groups, being employers or persons influencing the job description, practitioners or trainers of future practitioners, know from experience what knowledge and know-how are necessary to be able to practise the profession successfully.
b) Competency expectations are defined through dialogue and consensus among the target groups that use professional knowledge. The target groups listed in point a) obviously have different experiences and approaches concerning the profession. The practitioners of the profession can determine precisely what and to what extent they have to have expertise in order to be efficient. Employers and those who influence the content of the profession can formulate what results they expect from practitioners, and what their expectations are in terms of activities and attitudes. The trainers, experts, and consultants can judge how (with which methods) a future practitioner can be trained and prepared to acquire the expected knowledge, how a practitioner can be developed, and how long it takes. The representatives of the target groups formulate their expectations necessary to practise the profession together,

building on the consensus that emerged from a joint discussion and debate. This situation inspires the participants to argue for their viewpoints using facts, and at the same time, the consensus forces them to consider other people's arguments. Therefore, the decision-making integrates several views in a balanced way, represents a consensus grounded in reality, and focuses on the future. This process goes far beyond the simple collection of data and the personal expectations of the participants towards successful school leaders. This is intensive knowledge creation, during which participants are not only encouraged to understand the expectations of other stakeholders but also have to rethink their own expectations, thereby deepening their understanding of these expectations. For this reason, the expectations formed in this way do not simply answer the "What" question (what they should know, what they should be able to do, what values they should follow), but also the "Why?" In other words, the intensive discussion in the group leads to the roots: What is the role of the school leader in the knowledge society? What is the purpose and meaning of his/her work?

c) Competency expectations are defined by describing the behaviour, activities, and attitudes of practitioners in the profession, because competencies manifest in the behaviour (activities, actions, and attitudes) of individuals. (All these lead to the products or results, which are born from the actions and activities oriented by the values and attitudes. This way, the products and results behind the behaviour are the other categories that prove the presence and existence of the competencies.) Behaviour is the manifestation of active and functioning competencies. Moreover, behaviour can be described, observed, and developed; thus, by developing the behaviour, we develop competencies. A behaviour-based competency definition can easily be related to the effective and targeted use of competencies in a work context and to targeted development in this context. Going even deeper, behaviour can be identified through observing how tasks are performed. What kind of behaviour can be matched with specific tasks? In our case (developing a competency framework for school leaders) the main question is how these tasks can be related to the development of students' 21st-century competencies.

d) The analysis of relevant literature and the integration of knowledge and experience derived from it constitute key pillars of development design. Literature can provide guidelines for content development, for the structure of the planned competency framework, and for how to describe competencies.

e) Finally, a key element of the development model is measurability and comparability. As soon as we have a detailed description of the competencies, several questions arise: To what extent do those preparing to learn the profession, those teaching the profession, or those practising the profession possess the competency kit considered optimal? How does that change with time? What effect do the methods and processes aiming to develop competencies have on the development of the individual? etc. We need to apply qualitative and quantitative evaluation methods to answer these questions.

All significant aspects of the DDCDM can be observed in the context of the LOM4S project. A comprehensive examination of pertinent literature was conducted during the research phase, and it was necessary to develop an appropriate questionnaire for the target groups. Similar to the development of the competency framework for school leaders, the workshops played a pivotal role during the research phase. These activities enabled a profound understanding of stakeholders' perspectives, facilitated consensus-based decision-making, and enabled data collection.

Adapting the demand-driven competence development model to the research phases demonstrates that the approach and model employed across the three research phases are consistent with the original approach. Nevertheless, the DDCDM is fundamentally consistent with DBR. This is evidenced by the following:

The most significant aspect of the DBR approach is its focus on addressing complex problems deeply rooted in practice. In contrast to other methodologies, there is no clearly defined procedure for solving these problems. The original DDCDM (see above) postulated that an institutional system of education and training would be responsible for defining and targeting the development of the competencies required by the world of work. The system of establishing sectoral councils within the British R&D programme, along with their activities, provides clear evidence of a methodology for solving a complex problem.

- A further examination of the characteristics of DBR, as defined by Reeves and van den Akker, reveals that the implementation and application of DDCDM involves a deep, multifaceted, and participatory analysis of the problem at hand. The objective is to effect change and intervention.
- The process involves discourse and the formulation of theories (see, for instance, the Leitch Report), intending to contribute to the theoretical advancement and further

development of the subject matter (in this case, the definition of workers' competencies for the sectors of the economy).

- The activities of the sectoral councils, the examination of the results obtained, and the continuous development of the system demonstrate the iterative approach and its practical application and applicability. The implementation of the model is contingent upon stakeholders' active involvement and participation in the process.
- The application of the model depends on the provision of comprehensive and transparent documentation.

In conclusion, the DDCDM is in accordance with the established definition and characteristics of DBR. This also applies to the procedures that have been adapted and applied to the case of the research phases, as reflected in the characteristics of the adaptive model. The most contentious and pivotal aspect of the development research we have implemented is the utilisation of iteration. The project period of one to two years and the available resources did not permit multiple iterations. Nevertheless, both the school leadership competency framework and the learning organisation model produced models that, following the logic of DBR, can be considered prototypes, which will be tested and corrected. Chapter 4 provides further evidence that the DBR can be viewed as the methodological basis for the three research phases as a whole. This is evidenced by the comprehensive description of the methods and tools employed during the research phases.

In Subchapter 3.2.2, the Design-Based Research (DBR) methodology was presented, and its widespread acceptance as a scientific approach was demonstrated, including in the field of education and learning. Section 3.2.3.1 introduced the demand-driven competence development model (DDCDM) and demonstrated its compatibility with the design-based research (DBR) methodology. Furthermore, it was shown that the adaptation of the DDCDM retained the fundamental characteristics of the original model, thereby establishing that the specific methodologies employed to implement the research phases were based on it. The chain of correspondence described here allows for the methodological description of the research phases using the DBR. Consequently, the DBR, a scientifically accepted research methodology, can be considered the methodological framework for the research phases.

Consequently, the assertion that the DBR can be regarded as the methodological framework for the research phases is predicated upon the mindset, the approaches employed in developmental research, and, in many instances, the specific methods. Nevertheless, this

does not imply that the research phases were designed on the basis of the DBR. I do not intend to ensure that every single activity of the research phases adheres to the DBR in minute detail. Nevertheless, I plan to demonstrate where it is necessary and relevant that it fits the DBR.

3.2.3.2. The Role Diagrammatic Approach

The model selected was the so-called RDA model (Role Diagrammatic Approach), which, according to its creators, is an integrated tool built on the holistic approach and the structured description of human behaviour (*van Harten & Wolbers*, 2005). It enables the user to identify an individual's effective and ineffective behaviour features against a point of reference, i.e., the job profile, and to identify development possibilities. The RDA enables the drawing up of competency maps for individuals, groups, and organisations and the comparison of their profiles. This way, we can measure how well one profile (e.g., a person) matches another (e.g., a job or an organisation). It is also possible to compare the intended competencies of a training programme with the achieved results. The application of the RDA can support the improvement of the self-understanding of individuals, organisations, and their sense of reality. (See the detailed description in Appendix 1.)

The model makes it possible to characterize the behaviour (of a person or an organisation) through:

- three dimensions: dynamic-stabile, relation-content orientation, leading-operational roles;
- four quadrants: these are defined by the first two dimensions as cooperative, extravert, autonomous and organizing;
- eight semi-axes: each quadrant includes two semi-axes, one representing the leading role, the other the operational role. (See Figure 6)

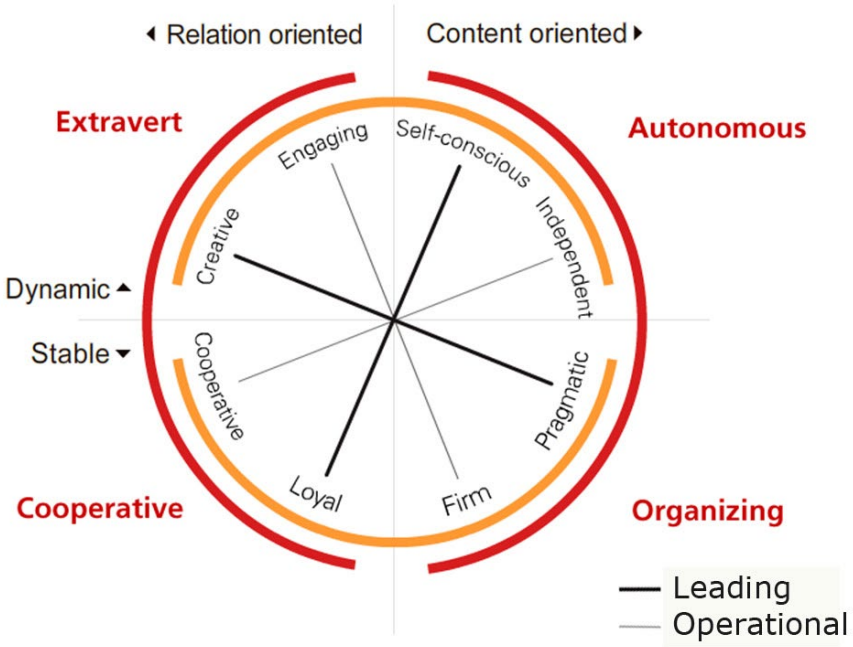


Figure 6: RDA dimensions, quadrants and axes

During the developmental research phases, using RDA was primarily employed to assess personal and organisational (behavioural) competencies, thereby facilitating their comparability. As will be demonstrated, it was possible to compare the studied profiles with those assumed to be optimal. This primarily served to assess competencies and, building on this, to implement developmental interventions. In a second instance, the stakeholders' identified competence needs and expectations were compared with the final product produced during the development process. In this manner, the RDA permitted the assessment of the extent to which the final product aligned with the initially defined expectations, thereby determining its validity.

The RDA is a model that was developed initially by Dutch experts and subsequently adapted for use in Hungary. The adaptation process involved translating the original toolkit. This entailed translating the questionnaires used to assess behavioural competence from Dutch and English into Hungarian, testing the results, discussing them with experts, testing them on a small sample, and finalising them. I was the principal expert involved in this process from 2006 to 2008.

3.2.3.3. Competing values framework[22]

The competing values framework (CVF) model was developed empirically, and it is used to judge how effective an organisation is in a complex manner. Depending on the given situation, organisational effectiveness may require different values to be taken into focus, and this is where the term 'competing values' comes from. The model can be described along three dimensions. The dimension of organisational orientation reflects introversion or extroversion, micro and macro processes, and the well-being of the individuals within the organisation and that of the entire organisation. The second dimension reflects the attitude of the organisation to change and the characteristics of the internal organisation, ranging from a control-based structure to a flexible one. The third dimension of the model, defined by Quinn and Rohrbaugh, focuses on the tools and processes used to realize the organisation's fundamental values and objectives (*Quinn & Rohrbaugh*, 1983). The advantage of the model is that besides the organisation, the roles and functions of its leadership can be presented in the same structure (*Quinn et al.*, 1996).

This model is a continuously updated, organically developed system widely used in organisational research and development, including for diagnosing organisational culture (*Cameron & Quinn*, 2011).

In the following, I will focus on two dimensions of the CVF, introducing the main features of the model based on *Quinn, Rohrbaugh, and their fellows'* work (ibid.)

The first dimension is the internal-external orientation, which varies from the well-being and development of individuals within the organisation to the well-being and development of the organisation as a whole. The second dimension reflects the attitude of the organisation towards change and the characteristics of its internal organisation, ranging from structures based on control to flexibility. It is also interesting for our research which tools and processes, and with what results, the organisation uses to meet its fundamental values and goals.

[22] This part is the slight modification of Baráth (2000): *Effectiveness in public education: Models and aspects of leadership.* It includes an extension of the present-future model.

The researchers who developed the model examined the characteristics of the four basic models (types or perspectives) and found that quality does not relate significantly to any of the basic models, while it is part of all of them. This led the researchers to conclude that quality should be a central criterion standing at the centre of the whole model (*Quinn & Rohrbaugh*, 1983).

According to the approach of Quinn and Rohrbaugh, the question is not *"which of the four types or basic models belonging to the CVF is equal to the given organisation?"*, but rather *"to what extent are the characteristics of these four types recognizable and present in the given organisation?"* These types – along with the leadership roles associated with them – are presented in the following section.

- The Human Relations Model (Clan) puts the most significant emphasis on flexible operation and internal relationships. During the operation of the organisation, cohesion and morale are those tools that most ensure the result: the development of human resources. The model provides the members of the organisation with the possibility of individual growth and good interpersonal relationships. In this model, the leader is a facilitator and mentor. In the facilitator role, the leader fosters collective effort, builds cohesion and teamwork, and manages interpersonal conflict. In this role, the leader is process-oriented, with his/her main task being the building of teamwork. As a mentor, his/her main task is the development of individuals in a helpful way.
- In the Open Systems Model (Adhocracy) flexibility and willingness to act – the tools, with the help of which the organisation meets its goals of obtaining resources, external support, and expansion – also have an even greater importance. The members of this type of organisation have tremendous and broad scope freedom in organizing their work, usually with external support attached. But all these involve uncertainty and the pressure of taking risks and responsibility. In this model, the leader is an innovator and a broker. As an innovator, his/her main task is to facilitate adaptation and change. As a broker, he/she works mainly on the external acceptance of the organisation.
- The Rational Goal Model (Market) aims for high productivity and economical operation, for which it uses planning and goal-setting as tools. In this model, individual goals are directed by organisational goals. High performance is required, which is required with appreciation by the well-coordinated management. The leader

is a director and a producer in this system. As a director, he/she clarifies expectations through processes such as planning and goal setting. As a producer, the leader is task-oriented and work focused.

- Finally, in the Internal Process Model (Hierarchy), stability and monitoring have a decisive role. This model is served mainly by the well-organized information system and communication as tools. It provides clear task-setting, strict rules and, at the same time, predictability and safety for the members of the organisation. In this case, the leader has the role of monitor and co-ordinator. During monitoring, the leader is expected to know what is going on in the unit, see if people comply with the rules, and see if the unit meets its targets. As a co-ordinator, the manager maintains the structure and flow of the system (*Quinn et al.*, 1996, 14–19.) The connections of the basic models and the roles and competencies of leaders are shown on Figure 7.

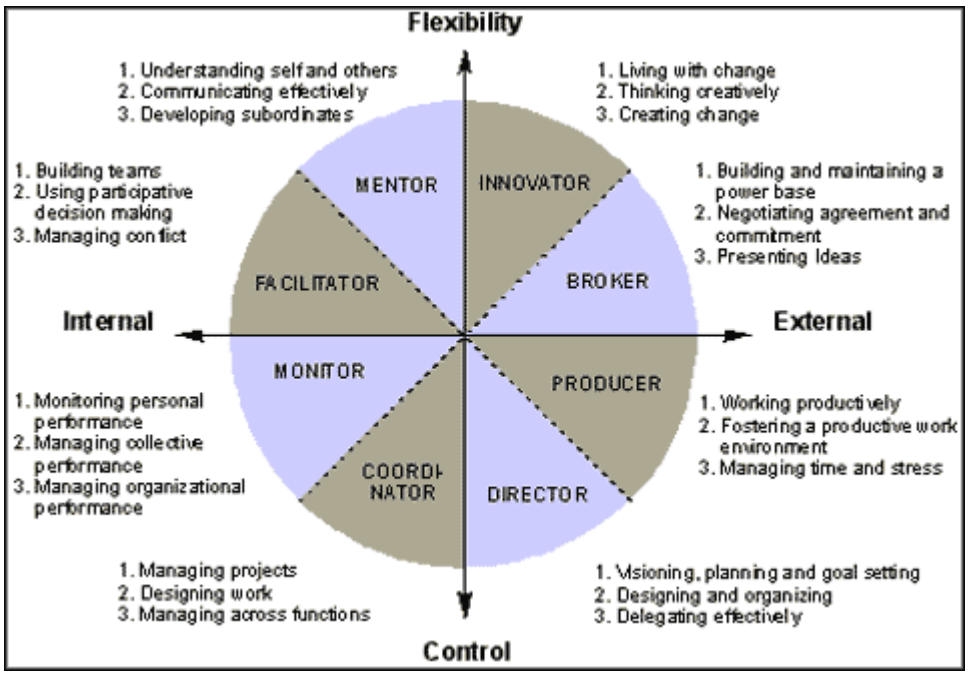


Figure 7: The competencies and the leadership roles in the competing values framework. Source: Quinn, R. E. (1988). Beyond Rational Management, San Francisco: Jossey-Bass Inc., p 48. cited by Quinn et al. (1996, 16)

These four models do not appear exclusively in any organisation. However, there are several examples when the characteristics of one model become dominant in an organisation – including educational organisations. It does not seem unnatural that the features of the Open Systems model characterize most élite city schools. These schools are characterized by the

precise setting of objectives and achievement-centeredness. They are managed with a firm hand. Both students and teachers are pressed to strive for the best possible results (subject results, competitions, further studies, language exams). In the case of schools, stability, predictability, and control are often manifested as order, discipline, and traditionalism. Here, it is essential to follow the rules and fit in with the proper level of hierarchy. On this basis, it is not difficult to recognize the traditional Hungarian school. On the other hand, features such as strong informal relations, the appreciation of individuals, and the emphasis on the whole personality instead of on cognitive development characterize schools organized based on alternative pedagogies (e.g. *Waldorf*, *Freinet*, *Montessori*, etc.). Conflicts are talked out here, and although there are official forums, interpersonal relationships are dominant. Since everyone is involved in this, these schools are characterized by strong cohesion and the feeling of belonging together. In the Hungarian school system, some vocational institutes (e.g. schools taking part in the World Bank programme earlier or working closely with big firms (especially car factories nowadays) seem close to the Open Systems model. Due to the nature of vocational training, these schools have extended relations not only in the educational system but also in the competitive and service sectors. For these schools, obtaining support and taking risks are appreciated. The characteristics of these schools' operations are often closer to the forms of organisational operation than to the characteristics of traditional educational institutes.

Results in the four models or types can be seen as of primary value. It is easily discernible that the values presented in the four models are complements of one another in many cases. In other cases, they are counterpoints: this is where the name *competing values framework* comes from. One of the fundamental values of the Human Relations Model is flexibility: which connects it to the Open Systems Model. At the same time, considering its orientation (the way it concentrates on internal processes) and its relationship to structure and monitoring (since it is flexible), it is the counterpoint of the Rational Goal Model.

Similarly, the Open Systems Model, with its orientation towards the external environment and its flexibility, is a counterpoint of the Internal Process Model that is built on a solid hierarchy and strict monitoring and concentrates on relationships within the organisation. At the same time, with its sensibility and openness to the environment, it is connected to the Rational Goal Model. This latter is related to Internal Process Model by a similar approach to control, while the Internal Process Model, with its extroversion, has a common system of values with the Human Relations Model (*Quinn & Rohrbaugh*, 1983). So, the system of

effectiveness formed by the four models is based on the harmonized attraction and repulsion of the components.

The CVF can also be used to set development goals following diagnosis. As stated above, we should not expect any of the models that make up the CVF to be dominant, but the question may be what kind of map of the organisation, its effectiveness and culture can be drawn based on the four sub-models that make up the CVF. This diagnosis can be made with the right tools – questionnaires and interviews – based on their results. Once this has been done, the organisation's representatives can decide where they want to be in a given period (e.g., in 1-3-5 years), i.e., what kind of map they want to draw for themselves with the help of the CVF. By comparing the two states – the present and the desired future – development goals (strategic and operational) can be derived, and a development plan or programme can be developed to achieve these goals (see Figure 8). This can be linked to the DBR logic.

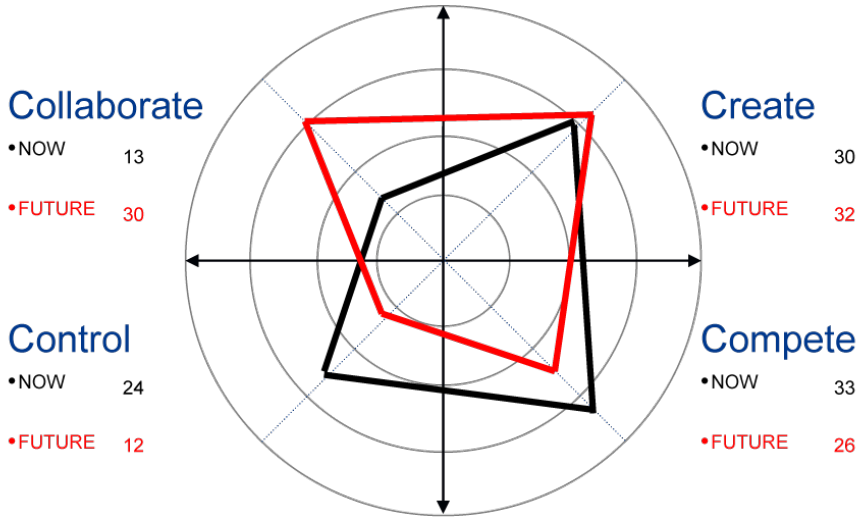


Figure 8: CVF present-future model,
Source: Cameron & Quinn (n.d.): The Competing Values Culture Assessment[23]

The competing values model originated in the business world to improve the effectiveness and efficiency of organisations. It has been widely used as a model for studying and

[23] https://www.boom.nl/media/8/download_pdf_culture_assessment_workbook.pdf, downloaded: 29.04.2013.

developing organisational culture. I undertook the adaptation of the model to the world of schools in the mid-1990s, and in 1997, I conducted nationally representative research into the effectiveness and efficiency of schools. The research was based on the application and adaptation of the CVF (*Baráth*, 1993, 1997b, 1998, 2000). I have applied the model and the tools I have adapted in several R&D programmes.

We chose the RDA as a behavioural competence model and the CVF as an organisational efficiency and culture model (which is also suitable for describing leadership roles within the same system) because they are sensitive models; thus, schools and their members can be characterized in a sufficiently detailed manner. Further, the quadrants of the CVF and of the RDA can easily be related to each other. It makes it possible to analyse the relationship between behavioural competencies, organisational characters, and leadership roles.

Chapter 3 provided an overview of the theoretical foundations of the research phases and presented their common methodological framework. This necessitated a comprehensive examination of the concept of competence, including its historical development, the various perspectives on its interpretation, and the methodologies used to analyse it. This enabled us to define the interpretation of competence in the research phases in light of these considerations.

The following sections examine how competence models or frameworks have been developed in cases that meet scientific research standards. Identifying these factors enabled an assessment of the alignment between the methodological procedures and solutions employed in the research phases and the scientific expectations.

Finally, this chapter presents the models employed in the research phases and their adaptation. The subsequent chapter provides a comprehensive account of the theoretical and methodological foundations, accompanied by a detailed description of each research phase and an overview of the tools employed. This is intended to confirm further the classification of the research phases (developmental research) and the choice of DBR as the methodological framework. The structure of Chapter 3 and the in-depth treatment of the methodology are also justified by the aim of the thesis, which is to define the competencies of an effective school leader in the knowledge society and to define a possible method for the process.

3.3. Conclusions – theoretical background and models applied

This chapter provided an unconventional theoretical underpinning for the research phases. The primary aim of the chapter was to interpret the concept of competence, focus on the debates surrounding it, and then use this as a basis for defining the concept used in the research phases for individuals and organisations.

Chapter 3 was designed to explore the methodologies used by researchers who have carried out research with a similar aim, i.e., to develop a competency framework for a well-defined area or a profession. This helped us demonstrate that the methodology used to conduct the research phases in this thesis aligns with that of other research with a similar aim.

In this chapter, I have also shown that the research phases can be considered as developmental research, which, taking into account the interpretation and description of the DBR, can be integrated into a coherent framework through the DBR.

Finally, in this chapter, I have discussed the models used to apply the personal and organisational studies. The theoretical background of these models has also been explored. Overall, the theoretical and methodological underpinnings of the research phases discussed in this thesis have been discussed in a coherent manner. Thus, the chapter provided the theoretical and methodological basis for the research concept defined in Chapter 2 (see Figure 2).

4. PROCESSES, TOOLS, DATA COLLECTION, SAMPLE

One of the objectives of Chapter 3 was to demonstrate that the research phases can be structured using DBR. Chapter 4 is a logical continuation of the preceding chapters, in which the tools used in the research phases, the sample used for data collection, the sampling method, and the rationale behind it are described in detail. This chapter diverges from the conventional approach in that it not only presents the instruments and samples but also provides detailed information on how they are used. In order to achieve this, it is first necessary to describe the instruments used in the research phases. However, it is first essential to consider the research phase as a process. The objective is to demonstrate that the process itself functions as a tool during the developmental research phases. This will be of particular importance in two respects. Firstly, in the description of the workshops implemented during the research phases, it is important to note that the workshop method plays an important role in each phase.

Further elaboration can be found in sections 3.1.2.2 and 3.1.3.1. Secondly, the description of the process provides additional evidence that this developmental research is fundamentally aligned with the philosophy of DBR. In particular, the process demonstrates the iterative refinement of products, a key feature of DBR. This is also addressed several times in Reeves' definition. Subsequently, the specific tools and the sample are presented in accordance with the process description. Where appropriate and pertinent, I will discuss the DDCDM sub-classification in the context of the respective research phase.

4.1. Methods for sampling

The selection of samples was a pivotal aspect of the research process. A comprehensive account of each phase is presented in the corresponding section. Nevertheless, the general approach is outlined herewith. During the research phases, in line with developmental research and DBR as the methodological framework, the interpretation of the sample differs from that in traditional research. Although representative questionnaire-based data collection occurs in phase 3 (LOM4S), we typically involve participants in the research phases who, based on their knowledge and experience, are expected to make the greatest contribution to discussions of specific topics and questions.

As I mentioned above, workshops played an essential role in every research phase. Given that standardised workshops constituted a pivotal method within the model-building process (competency framework, learning organisation), selecting participants who could contribute to the research in an informed and meaningful way was paramount. It was more appropriate to the workshop genre to focus on identifying the most suitable participants rather than on representative samples. We therefore sought the participation of professionals with outstanding knowledge in their respective fields (education administration, school leadership, teaching, organisational development, etc.) who were expected to bring new approaches to the discussions.

I read a study by *Gábor Halász* (2019, 152), whose findings inspired my thoughts regarding the sampling. In this text, the author discusses the distinction between net fishing and whale hunting, which pertains to the contrast between the research's breadth (net fishing) and depth (whale hunting). In this context, it refers to the process of selecting the literature on previous researchers that serves as the foundation for the research in question or planned research. The selection of literature for a given research project is, of course, different from the selection of respondents (individuals) for a given topic in order to answer a research question. Nevertheless, the study inspired me to consider whether these metaphors could be used during the research phases to present and interpret the sample selection process.

In the following, I will therefore interpret the metaphors used in Gábor Halász's study (net fishing, whale hunting) for selecting samples in developmental research and, using these metaphors, present examples of sample selection.

It is necessary to determine which individuals should be asked specific questions. The data collection may be conducted via a questionnaire or a qualitative method. The metaphor of net fishing can illustrate the concept of selecting a representative sample. In this context, the objective is to ensure that the sample selected for data collection accurately reflects the population, thereby ensuring the validity of the results and conclusions for the sample and the population as a whole. In many instances, however, this is an expensive and time-consuming process that is not feasible for the researcher given the resources available, or even unnecessary, as other methods may produce the same or even better results. The other metaphor (whale hunting) means, in our case, that data collection needs to find those responders (experts in a broad sense) who have deep knowledge and experience in the field under scrutiny. Typically, this was the situation regarding the workshops we conducted across the research phases.

The development of a competency framework for school leaders (Central5) employed whale hunting as the primary methodology. The objective was to identify the individuals or entities who were expected to provide pertinent responses to our inquiries. To illustrate, we asked when a school leader in the 21st century would be considered successful and effective. What characteristics define a successful leader? What are the appropriate behaviours, functions and goals for these individuals? What tasks should they undertake, and what behaviours should they exemplify? In the case of a learning organisation R&D, the primary focus was on the intelligent combination of net fishing and whale hunting. The former was represented by a stratified, representative sample of schools involved in the R&D project. In contrast, the latter was represented by deep-drilling case studies, whose subjects (schools) were selected based on their outcomes and experiential knowledge, as well as their motivation to explore and understand more deeply the characteristics and drivers of learning organisation functioning.

In such cases, it is beneficial for the researcher or research team to comprehensively understand the individuals who should be interviewed and involved in the research. In most cases, the objective is to identify individuals or organisations that are presumed to possess substantial knowledge and experience in the subject area under investigation. Where relevant, they significantly impact their environment based on their visibility and professional acceptance. This method can be identified with the metaphor of whale hunting. In essence, this approach has been employed throughout the research process.

Specifically:

- The project was designed to identify the competencies required for effective and successful school leadership in the 21st century. In order to achieve this objective, a series of workshops was held with a range of stakeholders, including principals, local and national decision-makers, teachers, and, when it was possible, parents. The workshops examined and debated the characteristics of effective and successful school leadership, as well as the activities and behaviours expected of leaders. The selection of invited participants was based on the experience of researchers in the country concerned to ensure a diverse range of perspectives. The data collected in the workshops was employed to infer the competencies encompassed by the expectations.

- Similarly, when the model developed by the research team was subjected to further testing, the model and its content were tested once more with carefully selected actors.
- In developing the learning organisational model, as described in section 4.3.3, we assumed that schools with medium to high organisational learning capacity could be either consistently successful (above average) in teaching their own students or consistently improving their results. Furthermore, schools could be identified by a team of experts with a deep knowledge of the region as a whole, based on both experience and evidence, as institutions that had been active in various development and innovation projects and had achieved evidence-based results in a more extended period (approximately 10 years) preceding the launch of the R&D project.

In conclusion, the model employed by Gábor Halász to justify the selection of the literature studies inspired me to interpret the metaphors of sample selection during the research phases. This interpretation might align well with the applied methodology (DBR).

4.2. Tools for developing the first version of the competency framework in the LLL-S-L

The LLL-S-L project aimed to develop a competency framework for school leaders. The overarching question was how to define competencies that could be practically applied to successful school leadership in a rapidly and turbulently changing knowledge society. This problem definition facilitated the exploration of concepts and the identification of potential research and development approaches. The process commenced with the selection and comprehensive examination of pertinent literature.

Upon my proposal, the international team of experts accepted the use of the DDCDM as a methodological basis. RDA was selected as the behavioural competency model to measure competencies and ensure comparable results. This decision was preceded by an in-depth and detailed discussion, during which the scientific soundness of the model and its applicability in practice were examined. In order to ensure that the participating researchers could apply the methods professionally and safely, it was necessary to use a methodology that required personal experience. It was essential to identify and involve the actors in cultivating the school leadership profession. This was an indispensable element of the DDCDM and also

enabled the research phase to be described using the DBR. One of the principal methodologies employed in implementing the DDCDM was the standardised workshop. This methodology facilitated engagement and collaboration with stakeholders, addressed the central research question of what constitutes the key factors that contribute to the success of school leaders in the context of the knowledge society, facilitated mutual understanding of perspectives, and ultimately facilitated the formation of consensus on these matters.

A questionnaire survey supported refining the school leadership competency profiles developed through the workshops. Furthermore, the questionnaire survey enabled the examination of the relationship between relevant competencies and school leadership autonomy.

The description provided may also be used to indicate whether the developmental research activities can be classified within the DBR process as defined by Reeves (see Figure 5).

4.2.1. Workshop for grounding the competency framework of school leaders

The workshop I planned (see the detailed description in Appendix 2[24]) aimed to uncover the expectations towards school leaders who are able to carry out high-quality work in 21st-century schools. The participants included three main interest groups: educational decision-makers (at different levels), who can be considered as users of school leaders' expertise; acting school leaders; and teachers. The participants were inspired to articulate what school leaders should know and how they should act and behave to become successful in their jobs. The composition of the participants aligned with the demand-driven approach covered all interest groups, which may have had partly similar, and partly different views on school leadership roles and tasks, etc. They were carefully selected to ensure broad and deep knowledge and experiences regarding the school leader's job. (The selection procedure can be considered as "whale hunting" way of sampling, applying the metaphor interpretation under 4.1.) The facilitator of the workshop ensured participants communicated with each other, engaged in a deep discussion about the school leader's job, and reached a common agreement. I have to stress this feature of the workshop – as a tool to gather information –

[24] LLL-S-L – workshop plan for Hungarian school leaders' group.

because the applied method led not only to gathering the individuals' (participants') recognition of the expectations but also inspired and supported them to make common decisions about them. It shows that the researchers (as the facilitators of the workshops) also fulfilled the role of reflective practitioner (*da Silva & Ciolan*, 2019, 26). This process provided a reasonable guarantee of achieving a set of expectations that can serve as a strong basis for developing the competency framework. It is worth mentioning here that later, using the behavioural competency model, we could provide evidence regarding the relevance of the data (expectations) gathered in the different workshops.

The workshop did not aim to identify competencies but to describe the actions and behaviours the participants recognize as essential to becoming successful school leaders in the knowledge society. The main points of the workshop were:

- Defining the goals of the workshop
- Identifying and agreeing on the expectation (a list of inspiring questions, using query cards)
- Defining the behavioural expectations and actions that characterize the school leader's job (production: a list of sentences that describe the requirements).
- Weigh the sentence list and select the most important elements of it.

After the workshop, the participants revised and rethought the sentence list. Also, they could communicate freely with each other. The final list of sentences provided a detailed description of the optimal behaviour of the school leaders, which served as a basis for elaborating a leadership profile. The process description clarifies how the workshop – as a tool for gathering and applying information – served the purpose of research and development. The process description highlighted that the workshop delved to invite all stakeholders whose viewpoints were essential to form the competence expectations towards school leaders. The employed method naturally led to the active involvement of the participants. The workshop material – program, questions, etc. – is firmly grounded in the studied theories and previous research results. All these underpin the fact that the workshop and its implementation fit the DBR. (See *Reeves* process description on Figure 5).

The participating countries – the leading experts – received a detailed description of the workshop. During one of our common meetings (a peer learning activity for the experts'

team), I led a workshop for the expert group[25]; this way, they gained firsthand experience with how the workshop plan works. However, the leading experts in every country could freely decide whether and how to use it. There were quite significant differences regarding the application. Some countries organised focus group interviews, and others kept to the original workshop plan. As a result, it was possible to draw up a leadership profile based on the workshops for some countries, but not for others.

4.2.2. Survey for developing and comparing competency profiles for school leaders – concept and structure of the questionnaire

Using the knowledge we filtered from the workshops, I developed the concept of the survey and – based on that – the questionnaire (see Appendix 2[26]) – fitting it also to the RDA model –, which was aimed to gain information on the first version of the competency framework, having been developed based on the results of the national workshops.
The questionnaire supported finding an answer to the following:

1. According to the views of policy and decision-makers/school leaders, how well does the defined competency framework cover the main competency areas crucial for an effective school leader in a knowledge-based society?
2. What are the proportions of the framework?
3. What activities and ways of behaviour do the respondents find important, and to what extent are these present in the daily practice of school leaders?
4. How similar or different is the competency framework found necessary by decision-makers and school leaders in each country?
5. What are the differences between the different groups of leaders? (e.g., level of education, size of residence, experiences gained in developments, etc.).

The structure of the questionnaire ensured both the comparability and the flexibility. The questionnaire was divided into four parts. The first to third parts were used in all countries

[25] Peer Learning Activity and Expert Workshop, Brdo, Slovenia.

[26] LLL-S-L – concept and questionnaire.

(these had been established from analyses of the literature on professionalisation and the results of the national workshops held in Hungary). The background questions were mainly the same everywhere, but some elements – e.g., the status of the leaders – had to be adjusted for each country.

1. Questions concerning the competency framework (for the analysis of its suitability and complexity).
    a. Importance, absences, ratios, etc.
2. The analysis of leaders' operation, behaviour
    a. The main characteristics of behaviour are defined using 32 statements (importance and presence in practice).
    b. With the classification of 2×8 characteristics chosen from the 32 characteristics, the analysis of the inner coherence of the previous choice is conducted.
3. The perception of one's own educational system regarding the level of autonomy
    a. Global perception is based on the leaders' autonomy in operation.
    b. Perception is based on different areas: management, educational plan/programme, perception of the employer, and rules regarding the institution.
4. Background questions.
    a. Personal data: Sex, age, level of education, leadership experiences, participation in leadership training, experiences in school improvement (national, international programmes).
    b. Institutional data.

The answers supported the fine-tuning of the competency structure. It provided a basis for understanding the further steps necessary to translate these clear-cut expectations into everyday practice, so that they can influence leader selection, training, and further training. They also provided an answer to what link there is, if any, between the extent of autonomy experienced by those involved and leader competence expectations in a given country. Further, they indicated what those involved think is necessary for quality leadership management.

The selection of the sample followed the requirements of the demand-driven competence development model. It was not representative in some countries. The sample consisted of

active directors (headteachers) and, whenever the opportunity was given, decision-makers. The individual states defined the planned sample size. Typically, in the case of directors, it was between 30 and 200, while in the case of decision-makers, it was between 10 and 50.

The analysis of the questionnaire will be provided in Chapter 8.

4.3. Tools and processes for developing the Central5 competency framework in the ICSL

The research phase followed a process similar to that introduced in 4.1, as the problem rooted in the practice was the same (developing a usable competency framework for school leaders). The literature review conducted within the framework of the LLL-S-L was updated. The theoretical framework was practically the same. It combined the demand-driven approach with the description of the behavioural competencies of the school leadership, applying the RDA. The development phase involved the detailed elaboration of competencies (knowledge, skills and abilities, as well as attitudes) based on refined expectations for school leaders. It included a fine-tuned iteration while the final version of Central5 was produced. Lastly, every country could decide how to pilot the newly developed competency framework. It also included the validation of the final competency framework. The main results will appear in Chapter 8.

I mentioned in Chapter 2 that my dissertation aimed not only to uncover the relations starting from the relevant students' competencies to arrive at the school leaders' competencies but also to introduce and evaluate a methodology that serves such development. This is why I consider it important to provide detailed information about concrete methods – such as workshops, desk research, etc. – and to describe the development process. You can recognise the process as a special tool that helped us realise the primary purpose of the project: to develop a competency framework for school leaders. The process also serves as a tool to support transparency in the research. It provides evidence of coherence among the goals, methods, activities, and results. The process and the main research activities introduced here again fit the DBR characteristics.

While in the LLL-S-L research phase preceding the ICSL project, the emphasis was on a quantitative approach relating to doing a comparative survey and analysing the data – applying both traditional statistical methods and a behavioural competence model, the RDA

– in the course of the ICSL, the emphasis moved to a more qualitative approach (*Denzin & Lincoln*, 1994). Significantly, and importantly for the phenomenon being studied (school leader competencies), it was determined by the group that a grounded theory approach – the discovery of theory from data (*Glaser & Strauss*, 1967) should be the dominant modus operandi recognising that in social sciences there is a tendency to utilise both qualitative and quantitative approaches as appropriate to the phenomena being studied. The comparability of the data and results was ensured by the quantitative methods (survey) in the LLL-S-L; this was replaced by the applied process in ICSL and validated using the RDA to compare the results.

4.3.1. Desk research and analyses of the professional literature

The research, described in 4.2, that we carried out in 2010 (in LLL-S-L) led to the definition of national school leadership profiles and the identification of school leadership competency areas. However, we were unable to elaborate on a detailed competency framework.

The literature review referred to this phase of the OECD Skills Strategy (*OECD*, 2012), which firmly supports distinguishing between formal qualifications, and the real skills people acquire and use to succeed in their work. It also focuses strongly on the use and utilisation of skills. The strategy shows harmony with the definition of demand-driven competency. The OECD Skill Strategy has a significant impact on the processes of the European Union regarding the skill development issues reflected in the communiqué, "Re-thinking skills". This document impacts the effective management of competencies and does not leave the world of schools and school leadership intact.

There are two characteristically different ways to analyse the possibilities of working out and implementing a new competency structure for a job, i.e., that of school leaders. I am going to summarise the main features in the following table.

Table 3: Models of development strategy

Theoretical model	*Empirical model*
Analysis of the literature, national cases, and national characteristics	Analysis of the relation between education and the world of labour, as well as literature, cases, etc.
Development of the competence structure	Survey of the requirements of stakeholders, building a competence structure on them
Characteristics of the process: fast, coherent, close	Characteristics of the process: slower, turbulent, open

The theoretical model was based on the knowledge and experience of highly qualified experts who know the scientific field well and the features of a specific job as well. The expert group conducted the necessary investigation, mainly desk research and document analysis. It is also possible for them to have a consultation with representatives of the practice field, but this is not a systematic or structured process; it is merely an opinion that might influence the experts' decision. The process is relatively fast as it does not require extensive and deep data gathering or broad discussions with stakeholders. The process is also coherent, as the experts must agree on the basics; if they do, they would have a clear, mostly agreed-upon path to follow. Lastly, one considers this strategy closed, as relatively few external factors can influence the process or the results.

The empirical model broadens the analysis by considering a specific job within the context of the world of labour, investigating trends around – and not only within – the profession. The most crucial difference is the relationship with the job stakeholders. It is considered essential to identify and involve them. The demand-driven approach aligns with this requirement, as applying the DDCDM requires that every actor who influences the job be involved in the process (aimed at developing a competency framework for a specific job). These actors are then invited to discuss their requirements and come to an agreement. The process usually needs both quantitative and qualitative methods, and developers (experts) and the actors' representatives communicate frequently. The process is inevitably time-consuming. The discussion can lead to new approaches and spark new debates. Thus, the process is turbulent. Due to the broad range of involved actors, it remains open.

The empirical model clearly shows the features of the DBR. The research phase we carried out within the framework of ICSL followed the empirical model of elaborating a new competency framework for school leaders. Consequently, the research phase was based on the DDCDM; thus, the DBR serves as a methodological framework for this research phase.

To define the competencies, we gathered expectations from the target groups through interactive workshops. We then brought together the lists of expectations from the participating countries, structured them, and thus created an international set of expectations. Building on this set, we defined the knowledge, skills, and attitudes that school leaders must acquire to meet the expectations. What follows is a more detailed account.

4.3.2. Workshops for uncovering the expectations towards highly professionalised school leaders in the 21st century

Here, I present how we gathered the crucial characteristics for successful leadership – the key knowledge, actions, and attitudes needed for successful school leadership. Figure 9 illustrates the process by which the competency framework was developed.

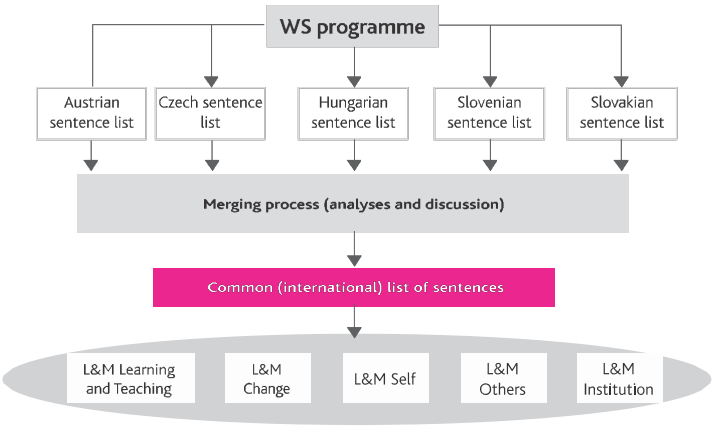


Figure 9: The flowchart of developing and clustering the demands towards school leaders

Figure 9 shows that the workshops served the purpose of gathering the expectations from the stakeholders, who were invited to formulate their expectations according to their own point of view and own role (leader, decision-maker, etc.) by answering the question: what makes a school leader successful in the 21st century. It was crucial to make it clear and accept that throughout the discussion, they had to maintain their role and the viewpoint they

were to represent. This situation encouraged participants to express their viewpoints, which could differ from and even contradict those of others. Moreover, the situation facilitated participants in realistically formulating their expectations, focusing on the future, and in understanding and accepting that others' opinions are just as relevant as their own.

Unlike the applied process in LLL-S-L, the workshops were standardised[27] in the ICSL. (See the description of the workshop I developed in Appendix 2.[28]) The application of the model of the demand-driven development of the competency framework meant that in each participating country, we invited actors who are directly or indirectly users of the school leader's knowledge. These target groups were the following:

a) Active school leaders: those practising the profession and are faced with strategic and quotidian challenges, and thus for whom it is vital to possess the knowledge and know-how that make them successful in their job.
b) Educational decision-makers: those who can influence educational policy at a local or national level, and those who are responsible for the selection and appointment of school leaders, and thus for whom it is important to be able to formulate the expectations related to school leaders clearly.
c) Teachers: those at whom the leading activity of school leaders is directed, those who realise the pedagogic objectives of a school in partnership with the leaders and in accordance with the frames set by the governance of the given country, and thus for whom the characteristics of leadership (knowledge, expertise, and intentions) constitute a factor influencing their own possibilities at work. Therefore, it is essential for them to know what a successful leader is like in the 21st century.
d) Besides the three main target groups listed above, we also invited (where it was possible and to a feasible extent) educational experts and organisational development consultants who participate in the training or development of school leaders and become thus concerned by defining and interpreting competencies, as it can serve as the basis for effective and efficient training and development. Moreover, where possible, we invited parents who had experienced the quality of leadership through

[27] The standardisation was the result of the learning process based on the experience and reflections of the LLL-S-L project.

[28] ICSL – workshop.

their children. This experience allowed them to identify what they were satisfied with and what they were not, as well as to articulate their needs in relation to which leadership could play a role in their satisfaction.

The workshop participants discussed the characteristics of a successful school leader in the 21st century in heterogeneous groups. As a result of the structured debate, participants formulated a list of sentences, based on their common agreement, whose elements describe the functioning, behaviour, activities, and typical attitudes (towards things, situations, ideas, etc.) of a successful leader. At the end of the workshop, participants weighted the expectations and highlighted the most critical 20% of the list. The description of the workshop indicates that it facilitated the identification and response to a complex, practically identifiable problem with the active participation of a diverse range of stakeholders. This is consistent with the DBR methodology.

4.3.3. Content analysis and formulation of the competency structure

Based on the mixed research method, the research phase conducted in LLL-S-L identified areas of school leadership competencies (*Baráth*, 2010, 67–95). However, these competency areas were redesigned in ICSL, considering the latest international literature and building on the content analysis of the sentence list. The expert team thus defined the following competency areas:

a) Leading and Managing Learning and Teaching
b) Leading and Managing Change
c) Leading and Managing Self
d) Leading and Managing Others
e) Leading and Managing the Institution

Figure 9 shows that the next step was to merge the national sentence lists, including expectations for school leaders. With the assistance of one of my colleagues, I carried out the first step of this process, which required analysing the national sentence lists, filtering for repetition, and making slight corrections, with the authorisation of the national experts who led the workshops. The product was the common international sentence list, which included all expectations that arose during the national workshops.

After that, the international expert group conducted a thorough content analysis of the common sentence list and, applying the knowledge, skills, and abilities and attitudes as descriptors, formulated a detailed competency framework as follows.

Each element of the international sentence list describing the competency expectations was then assigned to the above areas in a clear, unequivocal way (each sentence was assigned to only one of the five areas), again through several rounds of negotiation among the experts. This process made it necessary to understand and clarify why a certain expectation should be assigned to a particular area. The outcome of the process was a clustered list of sentences within the areas "Leading and Managing Learning and Teaching" to "Leading and Managing the Institution". After clustering, a second content analysis was required: sentences describing the same expectation within an area were marked, as were those that needed clarification. The joint agreement of the experts, following a negotiation process consisting of several rounds, resulted in a reduced sentence list containing 251 sentences, compared to the original 500[29].

The last phase of the development process was to determine the competencies within each area along the three descriptors: knowledge (K), skills (S) and attitudes (A). In order to prevent the occurrence of redundancies and repetitions (the same knowledge, skill, or attitude appearing on multiple occasions within an area), the sentences were initially grouped according to their content within each area. Subsequently, the definitions of K, S, and A were established for each group of sentences. This phase was carried out in two steps: first, the experts agreed on the procedure and tested it in the framework of an expert workshop. Second, each area was assigned to a pair of experts (from different countries).
The following description of knowledge, skills and attitudes was used:

- Knowledge: knowing what and where – propositional (and locational) knowledge – Starting with "he/she knows…/is informed about…"
- Skills: knowing how to and applying self to that – procedural (and practical) knowledge – Starting with "Is able to/is experienced in…"

[29] See the final, structured sentence list with statistics here: https://qualitas-my.sharepoint.com/personal/qualitas_qualitas_hu/_layouts/15/onedrive.aspx?id=%2Fpersonal%2Fqualitas%5Fqualitas%5Fhu%2FDocuments%2FQualitasOD%2F2026%2FNem%20projektek%2FBarath%5FEKKE%5FNTDI%5Fdoktori%5Fanyagok

- Attitudes: values, dispositions and principles – personal (and psychodynamic framework) characteristics – Starting with “He/she accepts…/is committed to…/is open to…/considers important…”

The final step was again a comprehensive analysis of the structure, aimed at eliminating overlaps across areas (e.g., the same knowledge, skill, or attitude item appearing in more than one area) and ensuring the coherence of the final structure. This last phase was also a multi-round negotiation, and the outcome was based on consensual decision-making. The above-described process ensured that all the initially formulated expectations were incorporated into the final competency framework and aimed to create a well-balanced, proportionate structure both among and within the areas. This part – similar to the previous one and the following – aimed to introduce the research tools to the process itself. As the dissertation wants to describe a methodology for developing and updating a competency framework, the realisation process can also be considered a tool. The description of the process provides a clear illustration of the iterative steps, thereby confirming that the methods and procedures employed are in accordance with the DBR as a methodological framework.

Later, in Chapter 8, I will briefly describe the competency framework itself and provide analyses – applying the RDA as a behavioural competency model – regarding how the original expectations – that arose during the workshops – fit the final result to the Central5.

4.4. Tools and processes for developing a learning organisation model for schools

The objective of the research phase conducted during the third project relates to the research phases described in 4.2–4.3. In this case, again, the aim was to identify and define the competencies. However, this time, the subject of the examination was the school organisation itself. The research phase took place in Szeged, in the southern Great Plain region of Hungary, within the framework of Szeged University’s Mentorháló 2.0 (Mentor Network 2.0) programme, the general aim of which was to improve teacher training and the quality of education. A vital element of this programme was to develop a learning organisation model for schools and to provide the institutions involved in the sub-project with professional support in operating as a learning organisation.

As in the previous two research phases, the focus was on a complex problem rooted in practice, which researchers, developers, and practitioners had identified. The initial inquiry was to identify the type of educational institution (school) that would facilitate students' learning in an experiential, successful, and effective manner while efficiently employing resources. The response to this query was that the school should be conceptualised as a learning organisation. This led to the intention to develop a model, namely a learning organisation model for the school.

The research phase was firmly grounded in theoretical principles. A comprehensive and exhaustive examination of the professional literature was conducted, during which several studies were produced[30]. That served as a foundation for subsequent research and development. This phase also entailed a comprehensive organisational diagnosis of the educational institutions participating in the R&D project (*Baráth & Cseh*, 2011). The theoretical framework for the R&D project served as a compass during the realisation of the complex tasks and activities, as outlined in the next section. This provided a foundation for the research phase and for engaging and involving the schools, ensuring that the developments remained on track and that the research was conducted properly. The activities of the development or prototyping phase can be identified in the elaboration of the learning organisation model. This resulted in the description, systemisation, and grouping of the schools' behaviour operating as learning organisations, as well as the establishment of the synchronous and diachronic model of the learning organisation (see Chapter 7). Finally, the training and regular consultancy services for schools, based on a diagnosis and a learning organisation model, reflected the features of the assessment phase. The service was oriented towards the medium-term organisational development plan. The institutions implemented the plan for a limited period. The questionnaire study could also be linked to the evaluation phase to validate the learning organisation model developed. The entire process was meticulously documented, including the stated objectives, the methodologies employed, the activities conducted, and the attained outcomes.

[30] Horváth, László (2014): *Knowledge management in learning organisation*; Schnellbach, Máté (2014): *The role of networks in understanding learning organisations.* The studies prepared for the project have not been published.

The description of the development research phase is consistent with the approach outlined by Reeves in his description of the DBR process (see Figure 5), which aligns with the methodology of DBR as a third phase.

4.4.1. The concept of the learning organisation research

The fundamental objective of the research and development was to create a learning organisation model, the realisation of which will lead to results and success achieved via joyful learning for all participants in schooling. It will also contribute to the growing effectiveness and competitiveness of the school. What we expect from the model is to enable us to interpret the characteristics of an efficient and successful organisation in a public education environment, and to provide a suitably applicable framework for empirically exploring the links between organisational conditions and institutional effectiveness, and the development of institutions from a learning organisational perspective. As a result of the endeavour to achieve effectiveness and success, the learning and teaching process has been the focus of the model, which made it necessary to identify the elements of organisational operation that impact the effectiveness of education and the renewal of pedagogical processes. We wanted to find the answer to the question of what organisational conditions can promote and hinder the methodological renewal of schools and the growth of learner effectiveness. As a result of achieving the fundamental objective of the R&D programme, in addition to developing the model (research element), the model's implementation element (development element) has been emphasised, i.e., the complex organisation development support of schools. Thus, the research and development elements of the project have synergistically assisted one another.

In order to develop the model, we explored the theoretical background of learning organisations and studied the relevant research. Figure 10 shows what factors were prominent as input for the learning organisation when creating the model (*Senge*, 1990; *Silins*, *Zarins & Mulford*, 2002; *Watkins & Marsick*, 1996; *Pol et al.*, 2012) and what influenced the efficiency of the link between leadership and learning outcomes (*Louis et al.*, 2010; *Day et al.*, 2009). To articulate a precise definition, we distinguished among the concepts of organisational learning, the learning organisation, and the professional learning community. Several of the research projects confirmed that the schools characterized by the attributes of a learning organisation tended to react more promptly to challenges; their

efficiency increased (*Corcoran & Goertz*, 1995; *Issacson & Bamburg*, 1992; *Louis*, 2006; *Silins, Zarins & Mulford*, 2002; *Strain*, 2000; *Schechter*, 2008). Trust, cooperation, and workplace learning became key elements of the organisational culture (*Horváth*, 2015). In addition, network operation was considered essential (*Hidding & Catterall*, 1998; *Huber,* 1991).

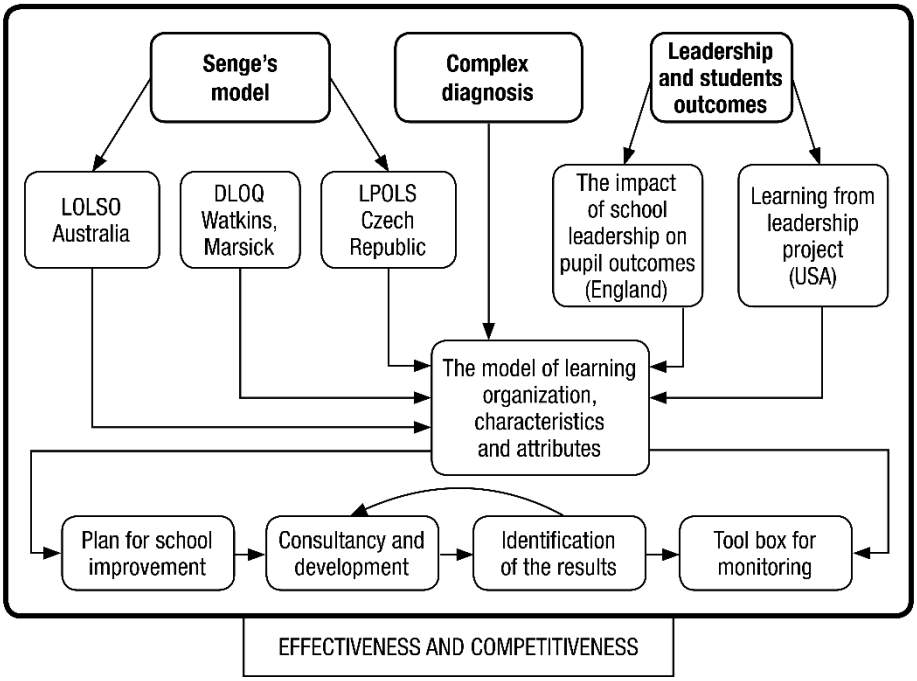


Figure 10: Concept of developing a learning organisation model for schools
Source: Baráth, T. (2017, 1188), own editing

In addition to studying the professional literature, experience had a decisive role in developing the model. This meant a complex organisational diagnosis that amalgamated the SWOT analysis prepared by schools as a self-diagnosis, the organisational culture and efficiency analysis built on the competing values framework (*Cameron & Quinn*, 2011), and the exploration and analysis of the behavioural competencies of the organisation's key players (*Baráth*, 2013). The learning organisation profile drawn up during the diagnosis served as the empirical foundation for developing the model. (see *Baráth*, 2015).

According to the concept, the learning organisational model built on the integrated processing of the above sources together with the diagnosis was meant to assist each institution in coming up with its own development plans, the aim of which was to enable the institutions within a period of 5-6 years to reach the learning organisational operation considered optimal for themselves. In order to ensure the practical application of the research

findings and to provide feedback for further developing the model, the concept involved supporting the implementation of the institution development plan through specialized training and flexible, situation-specific consultancy.

4.4.2. The aspects and methods of selecting a sample

Selecting the sample played a crucial role in realising this research phase. Here, we applied a multi-aspect, layered sampling process. The National Competency Assessment in Hungary, which is compulsory for institutions, is a full-scope performance assessment for the given school grades (6–8–10) in the given competency areas (reading, comprehension, and maths). It provides reliable results on schools' learning performance. The aim was to select 15 schools that demonstrated significant effectiveness and organisational learning outcomes, and another 80 institutions that achieved identifiable, documentable progress in this field.

From as many as 762 schools in the Southern Great Hungarian Plain region, we needed to select a sample that aligned with the R&D objectives. Based on the longitudinal research by *Day et al.* (2009), the main criterion for sample selection was the *National Competency Assessment* results over three years (2008, 2010, 2012); the three measurements, together with the period, provided a suitable basis for selecting well-performing schools. Those institutions were involved in the sample that consistently demonstrated above-average or improving results over the three-year period. Besides the effectiveness of the competency assessment, among the criteria that layered the sample, we could find geographical location (in the region and within it, in the counties and districts), the coverage of the area, as well as the type of school (primary and secondary schools). We also tried to ensure that the sample was colourful from the maintainers' point of view, i.e., besides the prominence of state-run schools, there was a place for church and NGO-run schools. This criterion was considered only when selecting schools with identical specifications, but we did not aim to ensure a wide range of representation of various maintainers. Finally, especially when choosing the 15 schools, it was an expert decision to enrol schools that were potentially suitable for inclusion in the sample based on their successful participation in developments, their innovative capacity, and their experience with the organisations' learning capacity. During this procedure, we based our decision on the schools' active and successful (documentable) participation in innovative programmes in the decade preceding the R&D project.

The method of sample selection described above was necessary because of two reasons. The development of the learning organisation model made it necessary for us to find prominent and/or developing institutions in their performance, demonstrated in the examined time period. We could presume that these institutions can and wish to provide a suitable learning environment for their learners. The innovative experience shown in the decade preceding the research phase indicated the institutions' organisational culture that placed continuous development at the centre, i.e., knowledge about organisational learning. We could expect these institutions to be able to judge the organisational behaviour features we identified as learning organisational attributes during the creation of the theoretical model. Later, when layering the sample based on school types, we could see whether the model we developed was relevant for the various school types in the same way. Within the region, geographical coverage (county, district) played an essential role in ensuring there was one school in the vicinity of the entire district that gained experience in learning organisational R&D, thus that school would be able to assist other schools. The relatively even distribution of the schools selected for the sample was essential to ensure network operation from the aspect of the development process that supported schools in turning into learning organisations.

For the leaders and representatives of the 15+80 institutions selected in the layered sample – with the support of the maintainers – we held county conferences, during which I introduced the learning organisational R&D programme, the expectations towards the institutions, and the support we could offer during the research and development process. The directors have one week to negotiate with their staff and decide whether they wish to join the programme. All 15 schools accepted our invitation to participate in the programme, while out of the group of 80, 67 schools opted to join. Luckily, this change showed an even distribution within the counties, so it did not distort the entire sample. We identified the two school groups (15 and 67). Based on the selection aspects of the sample, the group of 15 schools was considered to have high-level experience in learning and development (later: HlES), while the group of 67 schools had medium-level experience in those fields (later: MlES).

4.4.3. Workshops and expert decisions in forming the learning organisation model

During the execution of the LOM4S, one of the key methods applied was holding workshops, which enabled us to identify, describe, and systemise the schools' behaviour as

learning organisations (organisational behaviour). At the same time, the workshops also served the purpose of data collection, professional debate, and decision-making. We held eight workshops to develop and validate the model. I designed the programs and led these workshops. Each workshop programme included the objective of the given occasion, the tasks, the expected results and outcomes, the delegation of tasks within the team, the tasks to be completed between workshops, and the methods of communication, negotiation, and decision-making.

The chart describes the model development process (Figure 10), and its description explains that in the 82 institutions involved in the research phase, a complex organisational diagnosis was established. It aimed to identify each school's status in terms of becoming a learning organisation. For this, we needed to create a frame of reference, i.e., defining and describing the schools as learning organisations' behavioural characteristics. This description, i.e., the elaboration of the organisations' characteristics, was built on the same behaviour science principles as the procedures described in Subchapters 4.2–4.3. for defining leader competencies. The description of the organisational behaviour was detailed in a list of sentences compiled by a team of education scientists, organisational development consultants, coaches, assessment experts, and practising school directors. As a result of a multi-round process, a sentence list describing the operation of a learning organisation emerged, which relied on a wide-scope analysis of the professional literature, processing of relevant research results, and the personal knowledge and experience of the expert team members. Several external experts were invited to review, complement, and weigh this list. Based on the decision made by the research and development team, a description of organisational behaviour was born, which – with the help of the RDA – enabled us to identify a learning organisation profile that can serve as a frame of reference during the complex diagnosis. (The experts standing the diagnosis compared the profile of each school with the learning organisational profile prepared according to the list of sentences, and then they concluded the possible and desired development directions).

Following the establishment of a foundation for the intricate diagnosis, the subsequent workshops served to refine the learning organisational sentence list. This was achieved by reviewing and supplementing the targeted professional literature and the experiences gained during the diagnosis formation. The objective of this iteration was to finalise the sentence list, which subtly described the learning organisational characteristics. The sentence list was structured, the learning organisational competency areas were identified and described, the

theoretical model (synchronous or diachronic) was determined during the workshops, and subsequent interactive procedures were conducted between the workshops. Similar to the previous two research phases, the workshops constituted a fundamental methodology for realising the research work (creating and validating the learning organisational model) and development (implementing the model created) in the 82 schools participating in the project. Based on the structured sentence list (see Appendix 2[31]), the last two workshops enabled us to draw up a questionnaire whose two main aims were to validate the theoretical model and develop the learning organisational operation of the schools participating in the R&D project.

4.4.4. Questionnaire – validating the learning organisation model

As a result of the workshops, as a research method described in Subchapter 4.4.3, another research tool was born in the form of a questionnaire. Next, I shall briefly overview its structure and role in developing the learning organisation model and that of the institutions.

The questionnaire was divided into four sections. The first introductory section contained questions about the respondent and the institutional background, which helped identify the school's geographic location, type, size, pedagogical orientation, age, gender, position, and qualification. Regarding the analysis itself, these details allowed us to develop a multi-aspect one.

The central part was the second section of the questionnaire. The first part of this section contained statements about the school's operation, its values, system of networks, developments, and innovations, and their impact. The second part of this section contained statements that were articulated based on the synchronous and diachronic model. This part focused on the two fundamental objectives of the questionnaire: the validation of the model and the support of the schools' development. What made the first objective achievable was the fact that we invited respondents to rate the statements on a 4-point Likert scale according to their importance for a school operating as a learning organisation. I suggested using an even scale because it allowed us to make a clear distinction between the rather important and

[31] Learning organisations behaviour – sentence list.

the rather unimportant opinions or statements for an organisation. Because the respondents found the statements important, we could infer the validation of the created model (synchronous-diachronic) enabled by the sample selection (see Subchapter 4.4.2). In the case of these questions, we also invited respondents to judge how typical each statement was for their own school. Based on this latter, we could infer the extent to which the respondents considered their own school a learning organisation. The extent and pattern of this promoted relevant, targeted development tailored to the institution. This was also supported by a set of statements, based on which – according to the given criteria – the respondents judged whether their own institution showed a deteriorating, improving, or stagnating operational tendency in the five years preceding the examination.

The third part of the section examined general leadership principles, leadership style, the roles represented by leadership, the priorities that determine leaders' operations, and time use. This section – particularly in the case of leadership roles – was based on the competing values framework model. This section allowed us to compare the learning organisational and leadership characteristics later.

Finally, the fourth section contained statements about respondents' views on performance and the significance of the factors that affect performance. Lastly, based on the competing values framework, their ideas of an ideal school were examined. This section helped us link the characteristics of learning organisation, and competitiveness.

The questionnaire was prepared for three sub-groups: the school director, their deputies, and teachers. The questions about the learning organisational operation were the same for all three target groups. At the same time, the questionnaires for the deputies and the teachers were supplemented with questions on the organisation of learning, applied teaching methods, and the subjects and classes taught.

4.5. Conclusions – Processes, methods, tools, sample

Chapter 4 is closely linked to Chapter 3. In line with and concerning the theoretical and methodological frameworks discussed above, this chapter describes the process of each research phase. In doing so, we defined the process itself as one of the tools that supported the justification for describing each research phase within the DBR framework. We also had a dual purpose in describing the methods, the specific instruments, and the sample selection.

On the one hand, to show that the procedures, methods, and instruments used fit into the framework presented in Chapter 3. On the other hand, to make transparent the specific activities that enabled each research phase. As before, I have also indicated which activities and products were my personal responsibility during the design and implementation of the research phases, and which I was involved in as a team member during the research phase.

5. LEARNING AND STUDENT COMPETENCIES

This chapter aims to draw up the competence model for students in the 21st century. It is a challenging task to do for an extended period, and naturally, it is impossible to give an exact description that would be valid from the beginning to the end of the century. That is why, first, it is crucial to deal with the effects of changes on the interpretation of learning. Understanding the forcefield of learning and schooling uncovers the main factors that influence the requirements for schooling on behalf of society and, as a part of that, the world of work. It seems possible to conclude those essential competencies for personal and societal success.

This paper sets out to identify the competencies of successful school leaders in the context of the knowledge society. In order to achieve this aim, it is necessary to examine the factors that shape the competencies students require to thrive in a rapidly evolving society. This is crucial, as the school leader will be responsible for establishing an appropriate learning environment for students. This way, the chapter supports the first element of the research concept (see Figure 1). Although this chapter is a digression, it brings us closer to answering the research question.

For this reason, the chapter briefly overviews the social and economic learning environment, analysing the changes driven by factors such as complexity and globalisation. After that, it summarises the relation between learning and work. Before introducing the P21 model, it expounds those forces, based on *Fadel and Trilling* (2009), which formed the concept of learning. This chapter also addresses the future of education and – in harmony with it – the future of competencies needed by the student entering the world of work based on the OECD Learning Compass. Embedded in this, I refer to the role of student agency as a crucial tool for students to be able to navigate their learning process. This chapter prepares the elaboration of the next one, focusing on the relevant learning environment for students to learn enjoyably and successfully in school.

5.1. Societal and economic environment of learning

The changes taking place in the world have fundamentally transformed the role of knowledge and learning, both for an individual and for the functioning of society as a whole. The birth of knowledge-based societies made lifelong learning a part of everyday life. The

speed at which information can become outdated or novel, the rapid pace at which new vocations are created, together with the knowledge they require, the technological, social, and organisational changes, and their pace all make it indispensable for us to learn new things and adapt to the changes that take place around us. The nature and the content of these require a fundamental shift in how we adapt and think. In the following, I want to stress four aspects that significantly influence the meaning of learning and profoundly change the ways and methods by which relevant knowledge can be acquired. These are the exponential changes, the increasing complexity of education, globalization, and the role of new technology. Moral questions filter all these.

5.1.1. Exponential changes

We can find examples of the exponential nature of changes in many fields of life. One of the most famous examples is the demographic changes from the 18th century to the present and the projection of the future. Figure 11 shows a clear exponential trend, which is coming to its end this century.

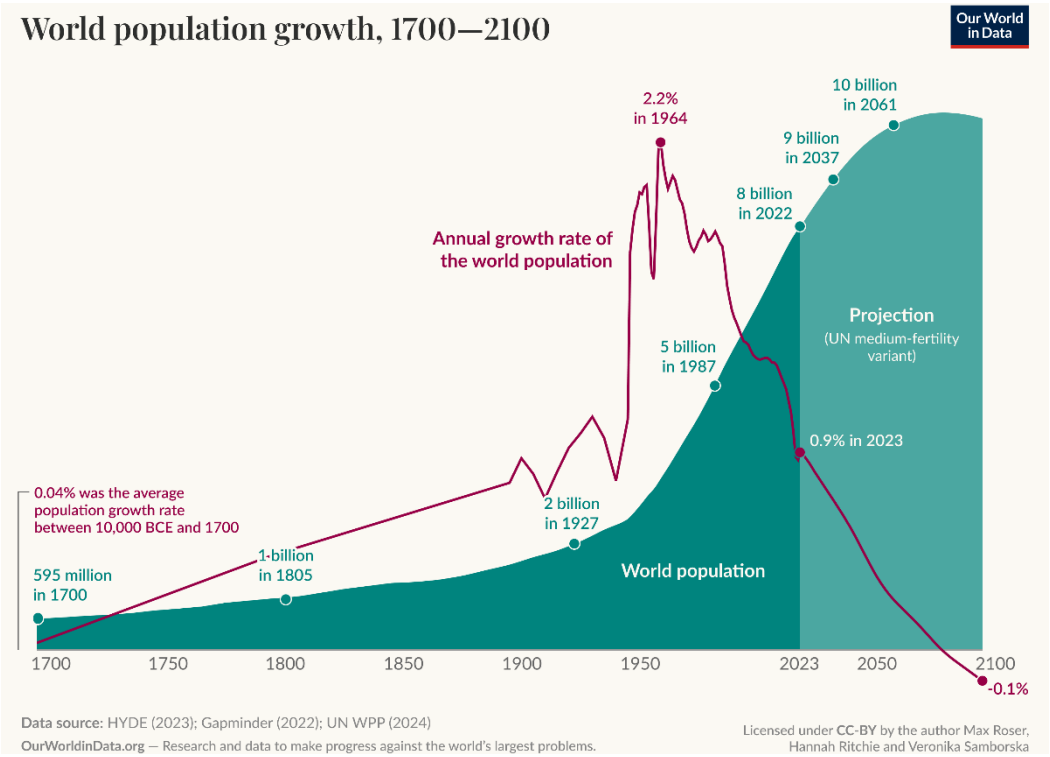


Figure 11: World population – exponential growth,
Source: https://ourworldindata.org/world-population-growth-past-future, downloaded 28.03.2026.

Another example comes from Iceland, where a study examined the proportion of students in higher education relative to the total population of 20–24-year-olds. They predicted an exponential rise from the 1911–1970 figures, which was confirmed. See Figure 12. (*Jónasson*, 2012)

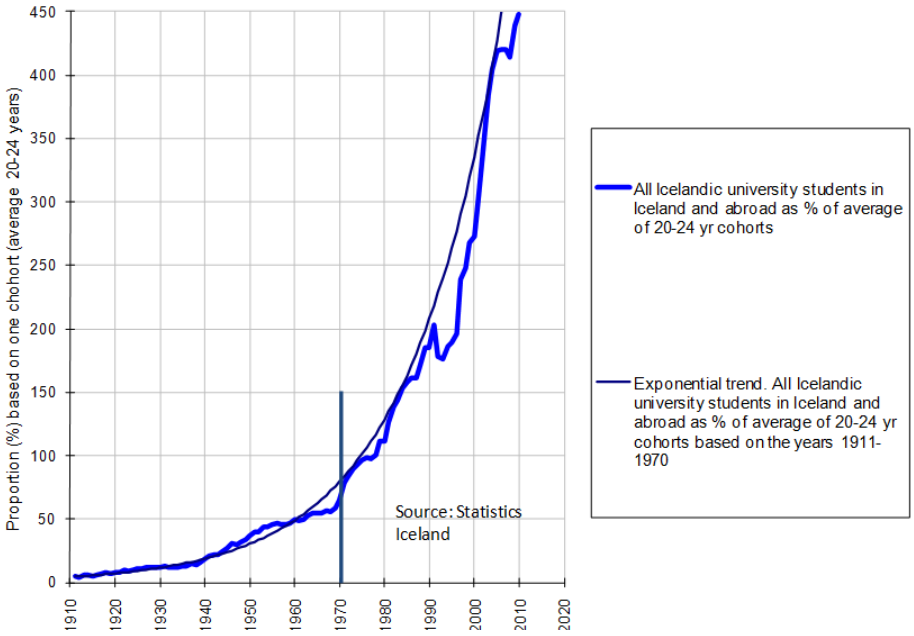


Figure 12: Higher education: enrolment in Iceland 1911–1970–2010

We could go on to mention the example of ICT technology. Gordon Moore, the co-founder of Intel, forecasted that the number of transistors used in integrated circuits would double every two years, an exponential growth rate. Later, it was referred to as Moore's law. Another example is the measurement of computer performance, for which FLOPS (floating-point operations per second) are used. FLOPS also shows an exponential increase. The

Expert-Exchange compared the processing power of computers and other devices between 1956 and 2015. The growth of change is trillion-fold, and its pace is exponential[32].

The pace of change has a crucial influence on learning, from the required competencies of students to those of school leaders, as shown in the process introduced in Figure 1. The accelerating pace of change and the exponential growth in the quantity of available knowledge inevitably impact learning. The capacity to learn, navigate the vast and growing amount of information, identify relevant knowledge elements, and establish connections between them has been significantly enhanced. This overview is not intended to encompass all the elements of learning that are undergoing transformation. This illustration aims to demonstrate why exponential change is becoming increasingly important in learning and determining the skills that must be acquired.

5.1.2. Complexity

Even from the aspect of learning, the complexity of our world, which is connected to the rapidity of change, is an essential factor. With air travel, an epidemic can rapidly spread from one continent to another, and new viruses can emerge in new environments, but medical treatments for these might not yet be known. Both uncover the cause of a new epidemic and develop a treatment that leads to complex processes[33].

We can experience a similar phenomenon in the economy as well. The financial crisis, which started in the USA in 2008 when the secondary real estate sector securities devalued and grew into a socio-economic problem, illustrates that the complexity and the speed of changes require new approaches and methods. Such a world would have been impossible to imagine 50 years ago. Today, however, even in the global financial world, such complex networks have formed, resulting in a linear distribution of these impacts, and their consequences are more difficult to predict than in previous crises. Complexity is used in two ways: first, as a

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[32] See the details here: https://pages.experts-exchange.com/processing-power-compared. Visited on 04.01.2019.

[33] I wrote this part during the first part of 2019. After that – through the COVID-19 pandemic – we had to experience the reality of these thoughts. We could think about the development of the vaccine, the crucial decision to save lives and keep working in our society; the process of vaccination, etc., are all very complex issues.

feature of the financial system, and also, how the complexity theory can support the prediction of future events, handle the arising conflicts, and work out tools which fit the complexity of the financial system. Complexity supports us in establishing better predictive systems and understanding deeper the long-lasting effects of crises (e.g., *Landau*, 2009; *Gaber, V., Gaber, S.* & Gruevski, 2019; *Battison et. al*., 2016; *Steindel*, 2009).

When discussing complexity, we should also discuss the content and concept of learning. Formerly, learning was understood as an individual activity, but now, in addition to individual learning, there are increasing possibilities for learning within a group format. Linking the intra-individual processes with the intra-group processes makes learning itself more complicated than previously thought (e.g., *Kirschner F., Paas & Kirschner, P.A.*, 2009). This is also reflected in the fact that, besides what we now call formal learning, non-formal and informal learning are recognized as necessary, and the need to link them in a system also emerges. By now, one of the most significant challenges in leading school learning is the extent to which knowledge is learnt through the formal learning process (e.g., *Colardyn & Bjornavold*, 2004).

As a result of the complexity of the knowledge society and the exponential changes that characterize our age – and probably even more so, our future – the role of schools is also changing. While before, it was typical for students in various types and levels of schools to prepare for specific, well-known professions, now schools need to assist their students in preparing for jobs that are not known at the time of their training or prepare them for solving problems that have not even been recognized. This influences the essence of learning, how we view learning, and the learning management technologies and methods that can be applied efficiently. As a consequence, these changes have a significant impact on teacher training, its content and its methods, as well as on schools where teachers work.[34]

[34] The COVID-19 pandemic showed an example for this. While several governments decided – to save people's lives – to lock down an area or the whole country; introduced curfew thus school and universities had to switch to online education. This pressure has resulted greater changes during some months than earlier during years in the digitalization of schools.

Lastly, focusing directly on education, there are several phenomena which show the complexity of learning, teaching, and schooling based on *Halász's* (2007) analysis:

- The governance and regulation of the educational system. It is connected to *Herbert Simon's* (1982) bounded rationality theory, which holds that we should decide on matters and bear responsibility for issues we cannot fully understand or control. One of the most critical questions is how this identification supports the governance of the societal sub-systems.
- Images of the future, possible scripts of schooling. It is not possible to lead organisations or governing systems without vision. Forecasting the future requires a different way of thinking than the way used in daily life. Because of the complexity and fast-changing world, it is impossible to predict the future. There is much more to develop scripts about what the future might bring to our societies. One of the most significant contradictions is that schools are formally future-oriented institutions, while they have less future focus than other organisations in the other sub-system of society. School leadership significantly influences the level of future thinking, and this fact shows the unique – not only professional but also moral – responsibility of both acting and future school leaders. Thinking about the complexity of the teaching profession has a great impact on the possible level of standardization of the profession itself.
- The heterogeneity of the students' population. The differences in aspirations, competencies, prior knowledge, values, behaviour, etc., increase the complexity of the teaching-learning process. Acting as a source of knowledge for students or becoming their counsellor, coach, or supporter dramatically increases the complexity of the applied methods, required behaviours, etc., on the teachers' side.
- The intricacy of the learning process. We understand the complexity of the learning process much more deeply than we did 30 years ago. (See 5.2.)
- Assessment of the students' performance – from the knowledge to the competencies. While assessing students' factual knowledge was a relatively simple process, investigating students' skills and attitudes and using the data to improve students' learning process on individual and group levels is a necessarily more complex issue.
- From simple accountability to intelligent accountability. Without describing the noun itself (see *Milliband*, 2003*; O'Neill*, 2013), it is essential to refer to the possible

models of accountability and how much they serve to understand the endless variety of human learning.

- The complexity of the development policy. Last but not least – following (among others) Fullan's theory – the reform of the education system needs attention. *Fullan* (1993, 1999, 2003) dealt with the change and reform of educational systems. The complexity was one of the main topics of this series. Another critical element to be mentioned is the moral aspect of change and reform.

The complexity of the world, including education, requires a different way of thinking and, therefore, a different teaching and learning process. It means that complexity itself affects the competencies learners need to acquire and how they acquire them. Understanding complexity thus brings us closer to defining the learning competencies relevant to the knowledge society.

5.1.3. Globalization

Dealing with the effects of globalization on education can easily lead to a long list of issues. It is not a goal to make a comprehensive analysis of these issues, but rather to identify key elements that have (or should have) an impact on education. The three areas that were selected as examples are demographic change, the role of the value chain in manufacturing, and the role of information in our lives.

Demographic changes significantly influence schooling and, more generally, learning needs across different societies. The lifespan extension is the radically different dispersion of the different age groups among countries and continents (Figure 13). Students should know, understand, and be prepared for those changes that are/will be generated by these changes (such as social security and personal responsibility, the changing role of learning in the lives of humans and organisations, etc.).

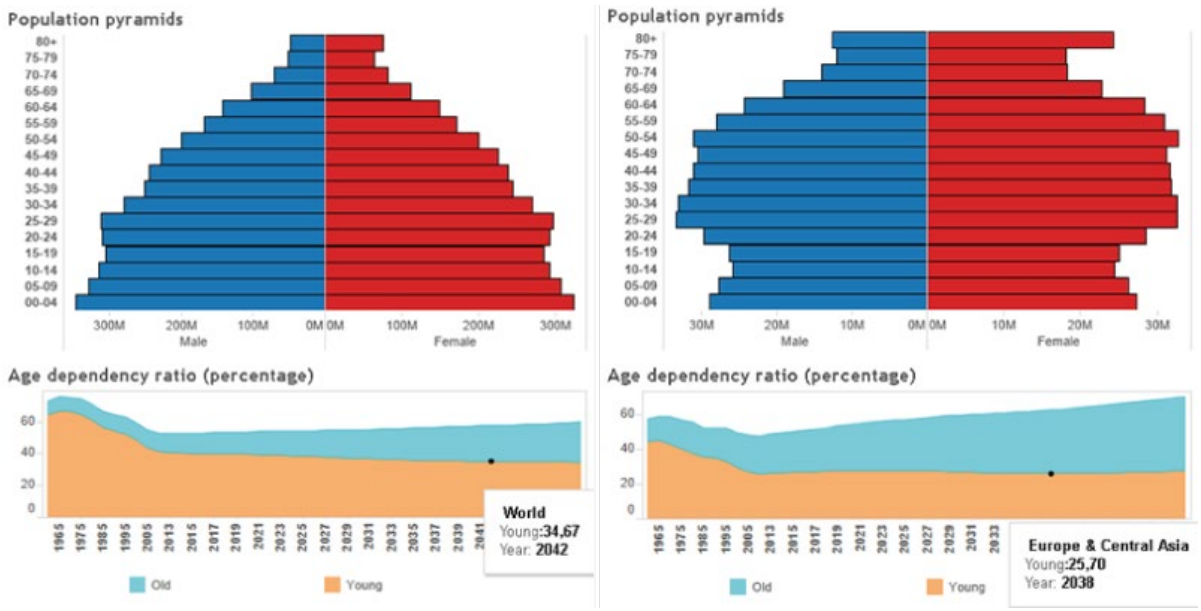


Figure 13: Population pyramid – World and Europe;
Source: http://datatopics.worldbank.org/health/population

Among others, such questions arise regarding the increase of the lifespan: what competencies help students in life to keep and develop their learning abilities and motivation; what is the role and responsibility of schools in preparing students to find goals for themselves when they become retired and have 20–30 years left in their lives? While the total population of the world still increases, there are significant differences among continents and countries. We have to face – especially in Europe – that many countries will lose a considerable amount of population (above 15% until 2100), and the ratio of the different age cohorts will change profoundly (*United Nations,* 2017). These questions have a strong relation to the moral aspects of leadership.

Innovation, inspiring new services, and manufacturing complex products (e.g., aeroplanes) require cooperation among firms and harmonised production processes, leading to the formation of value chains[35]. The place where individuals, organisations, and even countries

[35] We experienced – as consequence of the COVID-19 pandemic – the vulnerability of these value and production chains. When China – from where specially the developed countries got raw material and products – locked down the trade, cancelled the air travel, etc. many countries had to reduce industrial production. This brought to the fore the shortening of production chains, the appreciation of local production.

are engrossed in the value chain significantly shapes their future possibilities (see Figures 14 and 15). The new generation should understand these processes, as it is crucial to be prepared to enter the world of work.

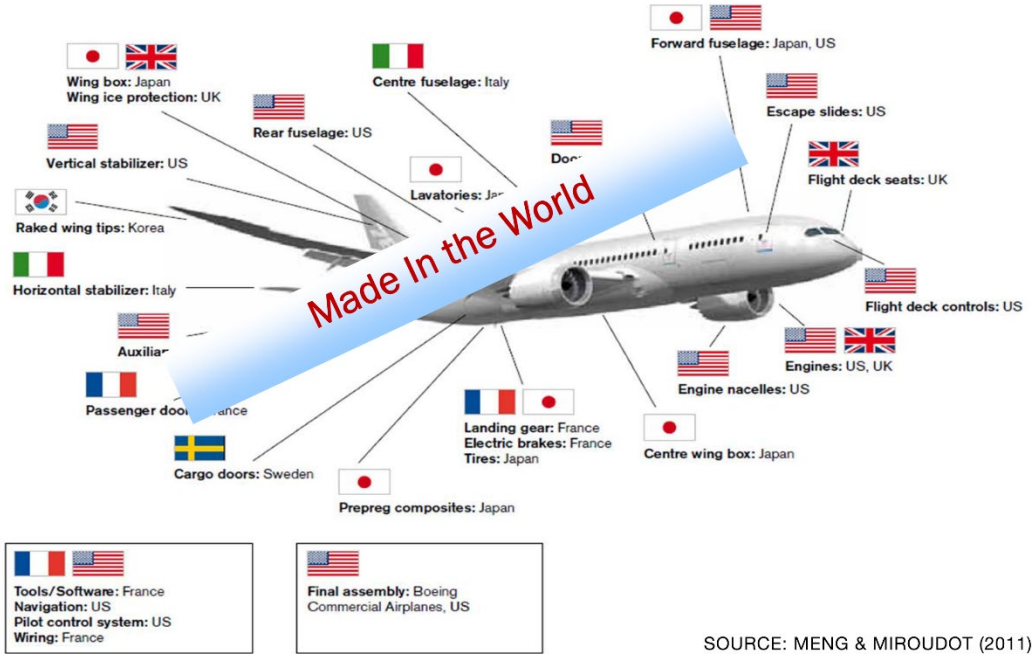


Figure 14: Fragmentation of production – work-sharing between firms and countries.[36]

[36] Source: https://www.wto.org/english/res_e/statis_e/miwi_e/flyer_miwi_e.pdf, last checked on 19.03.2026.

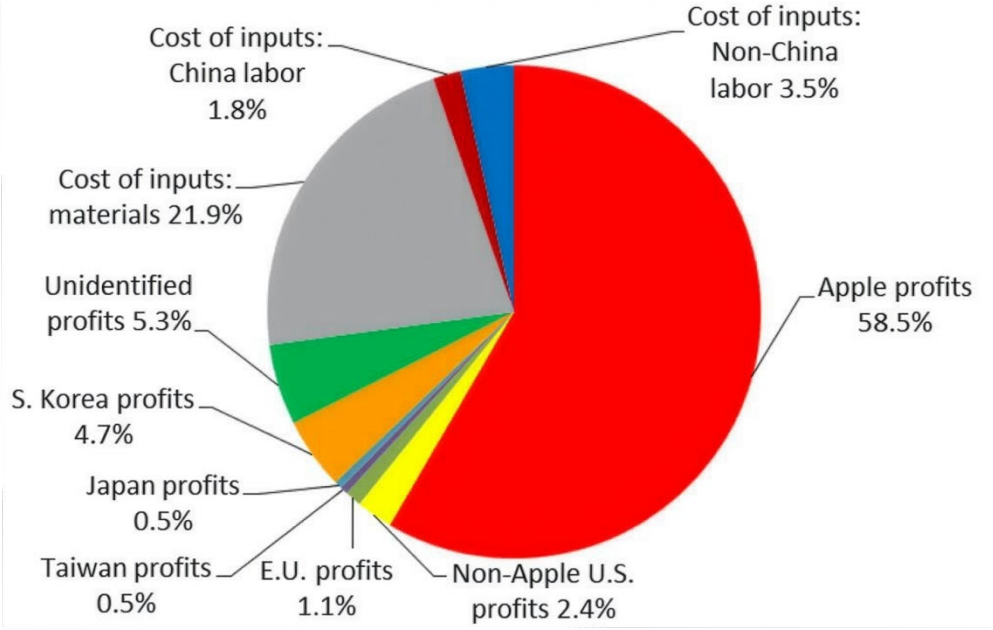


Figure 15: Value chain – the example of the iPhone[37]

We experienced – as consequence of the COVID-19 pandemia – the vulnerability of these value and production chain. When Chine – from where specially the developed countries got raw material and products – locked down the trade, cancelled the air travel, etc. many countries had to reduces industrial production. This brought to the fore the shortening of production chains, the appreciation of local production.

The value chain clearly shows the importance of innovation. Those countries, firms can get a good position in it, which are able to invent new products and services, and it depends very much on the capacity and preparedness of the workforce. Creativity, rational level risk-taking, adaptivity, etc., have crucial roles. Thus, schools are responsible for grounding these competencies.

In the contemporary context of the knowledge society, competencies are becoming increasingly multifaceted in nature, shaped by rapid technological advancements and the intensification of globalisation. The knowledge society, characterised by the primacy of

[37] Source: K. L. Kraemer, G. Linden & J. Dedrick (2011): *Capturing Value in Global Networks: Apple's iPad and iPhone*

information, innovation, and learning, necessitates cultivating a broad set of competencies beyond technical expertise. These include cognitive, social, digital, intercultural, and lifelong learning competencies, collectively fostering adaptability and resilience in a rapidly evolving global environment.

The increasing interconnectedness and complexity of the global environment, characterised by transnational interactions, cross-cultural collaborations, and economic interdependence, underscore the need for individuals and organisations to develop a comprehensive set of competencies that extend beyond technical expertise. This necessitates not only advanced communication and critical thinking skills but also the ability to engage in ethical reasoning, manage ambiguity, and operate within diverse cultural frameworks. *Rychen and Salganik* (2003) emphasise that key competencies for the knowledge society must contribute to successful life outcomes across multiple economic, political, and cultural domains, thereby underscoring their integrative and context-dependent nature.

Furthermore, these competencies are not static; they evolve in tandem with global challenges such as climate change, digital transformation, and geopolitical instability. This dynamism necessitates educational and institutional frameworks that promote continuous competence development through formal, non-formal, and informal learning pathways. The *OECD* (2005) emphasises the importance of competencies that enable individuals to interact effectively in heterogeneous groups, act autonomously, and utilise tools interactively, reflecting the interconnected and collaborative dimensions of globalisation.

In conclusion, the competencies vital to thriving in the knowledge society are complex, interrelated, and deeply influenced by globalisation. These competencies must be regarded as dynamic constructs needing constant refinement through education, policy, and practice if the demands of an increasingly interconnected world are to be met.

Information's role in our lives is clearly related to the exponential time we live in. We are swimming in data. Based on IBM statistics,[38] we create 2.5 quintillion bytes of data a day, and in 2016, 90% of the world's data (that is, 90% of all the data ever created) had been

[38] https://public.dhe.ibm.com/software/data/sw-library/data/IBM_Smarter_Computing_BIG_DATA.pdf, last viewed 28.03.2026.

created in the previous two years. You can easily store thousands of books on a simple USB stick. (The War and Peace – as plain text – needs 3,2MB[39] space, which means you can store 320 copies of this book on a 1GB stick and 327,680 copies on a 1TB Winchester, which is only slightly over the average in a computer.) The pace of data production is still increasing, and it is a great challenge on both personal and organisational levels. How can we select the information that really matters? How can we ascertain the relevance and the reliability of the news?

On the one hand, we can find examples of the credibility of news (*Franklin, B. & Carlson, M.,* 2011) and the role of investigative journalism (e.g. the Watergate-scandal or the reason for Iraq's invasion in 2003)[40]. On the other hand, we experienced the risk of fake news and how it can influence millions' way of thinking and decisions (e.g., the Cambridge Analytica scandal[41]). All these are also connected to schooling. It is crucial to question what the role of facts and data in learning is; how students can find the ones that are really important for solving a certain problem; and how they can decide about the credibility of opinions, analyses, and the reliability of facts, etc. Similar issues arise regarding climate change, the sustainable development of the economy and industry, poverty, the sharing of assets and profits in our societies, and equity. All these are in connection with the main objectives of schooling, thus the ethical and moral issues of school leadership.

5.1.4. Technology

Technology is playing an increasingly important role in the knowledge society and, as part of that, in education. The Internet has seriously influenced the teaching processes and the availability of information. It made it possible – independent of space and time – to reach and gather information and data to use in teaching and learning. At the same time, a new

[39] http://www.gutenberg.org/ebooks/2600, last checked on 19.03.2026.

[40] See the role of Bob Woodward and Carl Barnstein (Washington Post) and Jonathan Landay and Warren Strobel (Knight Ridder) in uncovering the real facts.

[41] See: https://www.theguardian.com/technology/2019/mar/17/the-cambridge-analytica-scandal-changed-the-world-but-it-didnt-change-facebook; https://www.bbc.com/news/technology-64075067; viewed on 23.06.2023.

challenge arose: searching for information, deciding its validity and importance, and fighting with the tremendous amount of data as described in point 5.1.3.

It is hard to imagine how technology will develop[42] and influence daily life and work environments. One of the crucial emerging stories is automation and robotization. There is an increasing fear that robots will take jobs from humans[43]. There are several arguments, pros and cons. The selected analyses from the PricewaterhouseCoopers (*PwC*, 2018) and *Manyika et al.*[44]. (2017a, 201b) let us get some insight into what would happen in the future. All selected analyses build on investigating trends and on drawing up scripts that inspire you to think and go deeper in your analyses. I highlight some of the main conclusions based on the referred studies. These analyses focus not narrowly on technology development and its effect on jobs but also on its influence on society and education. These all deal with the next 15–20 years, considering not only robotization but also the use of AI (artificial intelligence). The studies indicate that the process will likely be exponential, leading to the disappearance and change of existing jobs and the emergence of new ones. The PwC study says that, depending on the specific country's labour structure (skill level), quality of education, and flexibility of the economy, there are significant differences among countries regarding the estimation of the proportion of existing jobs that might be at high risk of automation by the 2030s. Slovakia and Slovenia might face a relatively high potential automation rate (44% and 42%), whilst Finland and Singapore would have a much lower (22%). The industrial sector is more at risk of automation than the education sector. Higher education requirements decrease the risk, while lower levels of education increase it. For jobs requiring manual and/or routine tasks, computation can be automated more easily than jobs that require

[42] Saudi Arabia announced the Neom project in which they plan to build a new city with 1 million residents without cars and roads and have hyper-connected communities. See in the press. How the AI can influence our world? See e.g.: https://www.europarl.europa.eu/news/en/headlines/society/20200918STO87404/artificial-intelligence-threats-and-opportunities?&at_campaign=20234-Digital&at_medium=Google_Ads&at_platform=Search&at_creation=RSA&at_goal=TR_G&at_audience=artificial%20intelligence&at_topic=Artificial_intelligence&at_location=HU&gclid=CjwKCAjwhdWkBhBZEiwA1ibLmEUKlrqQvKMd_Eb2Ci0HXGbByhD0eHZl2ayOUJgfyVGSt4HXsEt_-hoC1uwQAvD_BwE; https://www.amnesty.org/en/latest/news/2019/07/the-great-hack-facebook-cambridge-analytica/, viewed on 23.06.2023.

[43] The question, whether robots will take the jobs from human beings, reached 191,000,000 hits in Google.

[44] The analyses were produced on behalf of the McKinsey Global Institute (MGI)

literacy, social, or management skills (*PwC*, 2018, 3–17). *Manyika et al.* (2017b, 8–12) state that the impact of automation varies greatly across countries, depending on income level, demographics, and industry structure. The researchers estimate that 75–375 million people need to switch occupation categories. While less than 5% of occupations can be fully automated, about one-third of the constituent activities in about 60% of existing occupations can be automated. Millions of jobs will disappear, whilst others can arise from existing ones, and never-existing jobs will be born. The MGI study (*Manyika et al.*, 2017b, 6–12) estimates that rising incomes and consumption (especially in emerging countries) can result in 300–365 million new jobs. The ageing population will grow to around 300 million by 2030; thus, rising incomes (especially in the most developed countries) can lead to 80–130 million new jobs in health care and related fields. Employment growth and decline by occupation show significant differences across countries. While the most developed countries might face a great decline in production workers[45], material moving machine operators, agricultural graders and equipment operators, food preparation workers, and general mechanics, these jobs can even rise in emerging countries. The education sector will likely grow slightly or remain at current levels of employment in the most developed countries. Emerging countries can expect dynamic growth. Jobs lost and jobs gained might significantly vary by country, as *Manyika et al.* estimate (2017b, 12) because of four reasons: wage levels (high-level and low-level incomes), economic growth (depending on the productivity, innovation and sectoral characteristics), demographics (increasing or declining labour supply), the mix of economic sectors and occupations (level of technical automation potential, proportion of the activities easily involved in automation, quantity of the labour supply). The risk varies for different sectors as well. According to Manyika et al.'s estimation, the technical potential for automation is over 70% for "Accommodation and food services" and under 30% for "Educational service" (*Manyika et al.*, 2017a, 7). However, it is essential to note that the technical potential for automation does not equal that it will or should happen.

[45] Today, the US is seeking to bring industrial production back to the country. Its success is doubtful, according to authoritative economists. Partly because recent US tariff policy is undermining the very confidence needed for long-term investment (such as building a factory), and partly because if an investor builds a factory today, he is likely to seek maximum automation, which radically limits the opportunities and chances of employing blue-collar workers.

All studies clearly define that high-level education, the developed learning capacity, openness, adaptability, good communication, and the ability to solve problems are those characteristics of labour which significantly reduce the risk of losing a job as a consequence of automation and/or increase the chance to be able to change the job or work in a newly born area. Technological changes, automation, and the usage of AI vary enormously by country and sector. Nevertheless, the trends show that complex competencies like communication, critical problem-solving, innovation, creativity, etc. will become increasingly important for finding and keeping good jobs, while simple competencies will remain important.

Last but not least, I want to refer to the analyses available on the World Economic Forum website. They follow changes in core competencies important for fulfilling future job requirements, focusing on the role of technological changes in altering jobs and job requirements. The Future Report of Jobs 2018 (*WEF*, 2018) deals with short-term forecasting of how the so-called 4th Industrial Revolution (or the 3rd Information Revolution [*Bojár*, 2018]) can influence the global labour market. The WEF report identifies four technological change drivers: ubiquitous high-speed mobile internet (G5 and next), AI (see above), big data and data analytics, and cloud computing. Behind the change drivers, the report provides a brief overview of the factors that press the business, government, and the workforce to act proactively, as the actual window of opportunity can close quickly. Thus, there is a need to implement a new vision of the labour force and labour market. These factors are:

- Accelerated technology adoption
- Trends in robotization
- Changing geography of production, distribution, and value chains
- Changing employment types
- A new human-machine frontier within existing tasks
- A net positive outlook for jobs
- Emerging in-demand roles
- Growing skills instability
- A reskilling imperative
- Current strategies for addressing skills gaps
- Insufficient reskilling and upskilling (*WEF*, 2018, V-IX)

Without a detailed explanation of the above-listed factors – and taking into consideration those trends and changes analysed in this chapter – it is another confirmation of the changing requirements of competencies of the labour force. Table 4 interprets the changing demands for the near future.

Table 4: The changing of top ten competence demand 2018 vs. 2022; Source: Future of Jobs Survey 2018, World Economic Forum, 12

Today, 2018	*Trending, 2022*	*Declining, 2022*
Analytical thinking and innovation	Analytical thinking and innovation	Manual dexterity, endurance and precision
Complex problem-solving	Active learning and learning strategies	Memory, verbal, auditory and spatial abilities
Critical thinking and learning strategies	Creativity, originality and initiative	Management of financial, material resources
Active learning and learning strategies	Technology design and programming	Technology installation and maintenance
Creativity, originality and initiative	Critical thinking and analysis	Reading, writing, math and active listening
Attention to detail, trustworthiness	Complex problem-solving	Management of personnel
Emotional intelligence	Leadership and social influence	Quality control and safety awareness
Reasoning, problem-solving and ideation	Emotional intelligence	Coordination and time management
Leadership and social influence	Reasoning, problem-solving and ideation	Visual, auditory and speech abilities
Coordination and time management	Systems analysis and evaluation	Technology use, monitoring and control

Comparing skills and competencies in 2018 with those trending and declining in 2022, it can be stated that there is a change between existing and future demand. Complex general competencies are becoming increasingly important than routine, simple skills.

If we analyse the changes over the last few years, we can see similar changes (Table 5). In its 2020 report, the WEF emphasized cognitive and interpersonal skills such as complex

problem-solving, critical thinking, and creativity, reflecting the demands of an increasingly interconnected and automated world (*WEF*, 2020). However, by 2023, there was a discernible shift toward competencies rooted in self-efficacy, adaptability, and technological fluency, such as resilience, curiosity, and technological literacy (*WEF*, 2023). This change aligns with the accelerating pace of technological disruption and the growing importance of lifelong learning in maintaining employability.

Table 5: The changing of the top ten competence demand 2020-2023-2025.
Source: The Future of the Jobs Report 2020, 2023, 2025, WEF. Own editing[46].

Rank	*2020*	*2023*	*2025*
1	Complex problem-solving	Analytical thinking	Analytical thinking =
2	Critical thinking	Creative thinking	Resilience, flexibility and agility ↑
3	Creativity	Resilience, flexibility, and agility	Leadership and social influence ↑
4	People management	Motivation and self-awareness	Creative thinking ↓
5	Coordinating with others	Curiosity and lifelong learning	Motivation and self-awareness ↓
6	Emotional intelligence	Technological literacy	Technological literacy =
7	Judgment and decision-making	Dependability and attention to detail	Empathy and active listening ↑
8	Service orientation	Empathy and active listening	Curiosity and lifelong learning ↓
9	Negotiation	Leadership and social influence	Talent management
10	Cognitive flexibility	Quality control	Service orientation and customer service

[46] In the table, colours indicate the competencies retained over several years, arrows indicate the direction of change in the ranking, and equal signs indicate no change.

If we look at the 2025 competency list, we can see that there has been a considerable change from 2020, with the majority of competencies replaced. Compared to 2023, we can see that the change has been greater in ranking. Three elements have moved down, three have moved up in the ranking, while 2-2 remain or have been replaced. It is likely that the significant change from 2020, which essentially materialised by 2023, was driven by technological change and the advent of AI.

The impact of technological change on the competencies needed to thrive in life is becoming increasingly visible. Four conclusions can be drawn from the content of this subsection.

a) The speed of technological change is constantly changing the competencies needed to succeed in work, and the list and order of these competencies are changing in the short term.
b) Possessing complex skills is becoming more valued than simple skills.
c) The AI has an increasingly important role in our lives, filters many jobs and activities, and has a serious effect on learning, too.
d) The ability to learn and, as a result, the ability to adapt is becoming increasingly important. This demonstrates that the competencies required of students in the knowledge society are constantly evolving and changing. Consequently, only a flexible, innovative, and learning-ready school can adapt. This has a fundamental impact on the knowledge required for successful school leadership.

5.2. Learning and the world of work

The transition to a knowledge society increases the value of knowledge, which now plays a significant role in the economy and work. The link between learning and the economy is clearly demonstrated by the results of a research project conducted by the OECD in 2010. According to this research, even a relatively small increase in student performance – as reflected in PISA test results – could significantly enhance the competencies of each country's labour force, leading to increased well-being in the long run. Hanushek and Wößmann, who conducted the study in cooperation with the members of the PISA Committee and the OECD Secretariat, used a new model with the help of which they could explore the link between learners' cognitive skills and competencies and economic growth. The competencies were measured primarily through PISA tests, while the expected growth

in GDP defined the economic impact. Researchers considered three different occurrences of performance increase:

- the performance of the learners of all countries improved by 25 points in the PISA tests;
- if the learners in all countries reached a minimum of 400 points;
- and finally, if the learners of each country scored the same average score (546 points) as Finnish learners did between 2000–2006 (in Maths and Sciences).

They analysed the impact it would have on the economic growth of OECD countries due to a 20–30 year-long educational reform launched in 2010. The reform needs around 20 years to pervade the complete system. Calculating a life expectancy of 80 years for those born in 2010, they predicted that by 2090, the total economic growth in OECD countries would reach USD 115, 200, and 260 trillion. This growth is much larger than the expenses spent on development. (Around 80 years were calculated as during this period, the total labour force would be replaced by those who reached better results and performed better in their workplace, too.)

The findings of the applied model show that even a relatively small scale of performance improvement in the competencies of the labour force of individual countries would significantly impact welfare in the long term. This is much higher than the development costs (*OECD*, 2010, 11–28).

The OECD analysis enforces the importance of learning for society and the individual alike. However, the time spent on learning affects individual earnings; thus, the length of schooling increases economic growth and successful learning outcomes. Otherwise, the quality of learning counts even more (*Hanushek & Wößmann*, 2007, 2–11). The exponential pace of knowledge growth, the speed at which this knowledge becomes outdated, and the spread of learning across an entire lifespan all naturally place learning abilities and the formation of attitudes at the centre of attention.

Contemporary occupational trends reveal an anticipated decline in certain professions, which is concomitant with the emergence of new roles and significant transformations in existing professions. Consequently, the competencies required to thrive in a rapidly evolving labour market are also transforming. This phenomenon was also evident in the WEF analysis in section 5.1. In this regard, *Fadel and Trilling* (2009, 7–11) posit that throughout an individual's active life cycle, there will be an increase in the number of professions and jobs

held, concomitant with a shift in the set of competencies required for these roles. The role of skills that can be routinised is declining, and this applies to both manual and cognitive skills. Concurrently, the role of tasks that are difficult or impossible to automate and require creative thinking and in-depth analysis is increasing. This phenomenon is illustrated in Figure 16.

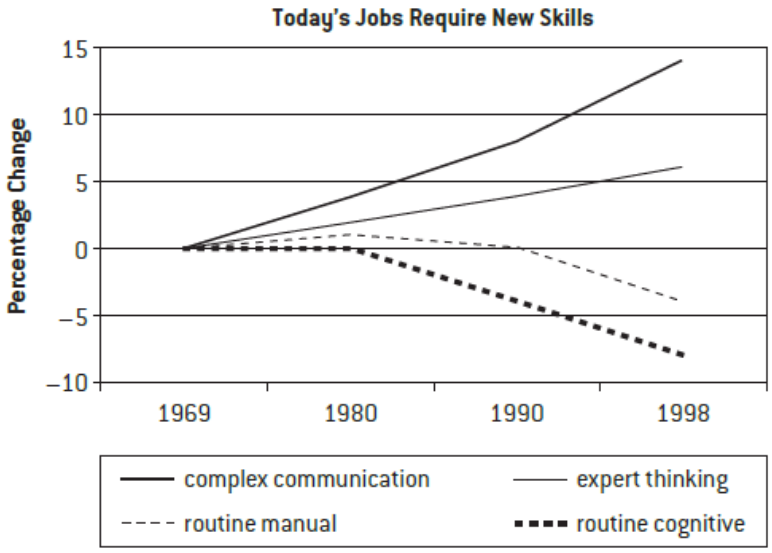


Figure 16: Change of competencies needed in the 21st century.
Source: Fadel & Trilling (2009, 8)

Other authors and analyses find similar changes. The *OECD Skills Outlook* (2013) presents a graph similar to that of Fadel et al. (Figure 17). It also highlights the different demands for routine and non-routine skills and how these are changing.

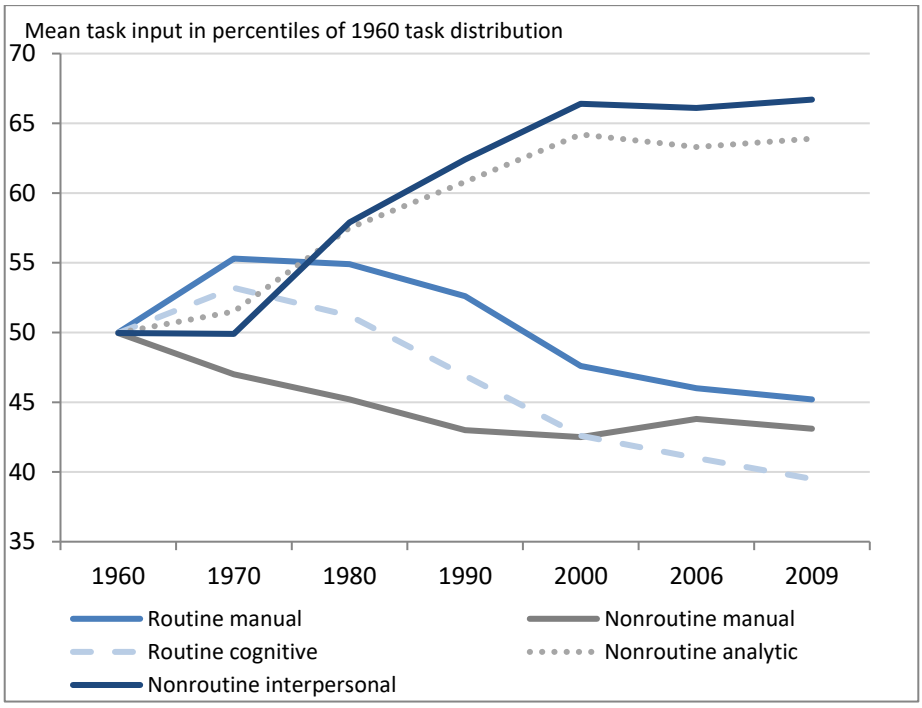


Figure 17: Change in the demand for skills. Trends in routine and non-routine tasks in occupations, United States, 1960 to 2009.
Source: Autor, David H. and Brendan M. Price. 2013.
"The Changing Task Composition of the US Labor Market: An Update of Autor, Levy, and Murnane (2003)." MIT Mimeograph, June. See Table A1.5.

Going further, *Dvorkin and Shell* (2017) state in their study that employment in non-routine cognitive and manual occupations has been on the rise. Cognitive non-routine roles, such as managerial and professional positions, have seen steady growth due to their reliance on complex problem-solving and adaptability, skills less susceptible to automation. Similarly, manual non-routine jobs, including personal care and service occupations, have expanded, driven by tasks that require human interaction and cannot be easily automated.

Conversely, routine occupations have experienced stagnation or decline. Routine cognitive jobs, like clerical work, and routine manual jobs, such as manufacturing roles, involve repetitive tasks that are increasingly automated or outsourced. This trend has reduced middle-skill jobs, contributing to the polarisation of the labour market (*Dvorkin*, 2016).

We conclude that the growing demand for non-routine cognitive skills underscores the importance of education and continuous skill development. As automation and globalisation reshape job requirements, workers must adapt by acquiring skills that are less likely to be

replicated by machines. This evolution necessitates policy interventions focused on education and training to prepare the workforce for the changing employment landscape.
It is very close to the statements taken by *Fadel* and *Trilling* (2009, 10–11). *"What is certain is that two essential skill sets will remain at the top of the list of job requirements for 21st-century work:*

- *The ability to quickly acquire and apply new knowledge.*
- *The know-how to apply essential 21st-century skills – problem-solving, communication, teamwork, technology use, innovation, and the rest – to each and every project, the primary unit of 21st-century work."*

Finally, it is essential to emphasise a paragraph from the OECD Skills Outlook 2021 report. In the executive summary, the authors discuss the transversal skills that play a role in success in the labour market.

"Evidence from online job vacancy data reveals that communication, teamwork and organisational skills are among the transversal skills most frequently demanded by employers in a wide variety of occupations. Cognitive skills, such as analytical, problem-solving, digital, leadership and presentation skills are also highly transversal across jobs and work contexts. While the pandemic heightened the importance of building skill sets that strengthen individuals' resilience to change, evidence shows that the labour market returns associated with transversal skills can vary depending on how they bundle with other skills and across job roles. Employers should be supported in providing effective lifelong learning to their employees so that they can develop the right mix of transversal and technical skills that they need to thrive." (*OECD*, 2021, 17)

The competencies enumerated herein align with those prioritised by the WEF, thereby reinforcing the findings of Fadel et al. and Dvorkin et al.

In terms of the relationship between learning and the world of work, we can conclude that schools play a key role in equipping students with the skills required by the labour market and in helping them adapt to changing expectations. Here, these competencies need to be developed and, where students need, to be equipped with the skills and attitudes necessary for lifelong learning. Developing the competencies mentioned above – creativity, problem-solving, analytical thinking, cooperation, leadership, etc. – requires a flexible, inspiring and open environment that encourages experimentation while emphasising responsibility. The competencies required by the world of work can be developed by schools in a partly direct

and partly indirect way. This, of course, requires a learning environment, organisation, and leadership that support the development of competencies.

5.3. Students' competencies in the 21st century

Subchapters 5.1 and 5.2 established the foundations for defining the student competencies the younger generation needs to thrive in the knowledge society. The transition from an industrial society to a knowledge society, the challenges and problems that arise in this process, and the knowledge needed to find answers (5.1) are fundamentally transforming the world of work and influencing the interpretation and role of learning in the lives of individuals and organisations (5.2). Adults must acquire the competencies necessary for successful entry into, integration within, and sustained participation in the labour market. This preparation (see 5.2, WEF) is contingent upon the quality of their school education, ensuring that they are equipped with the necessary skills to adapt to continuous and significant change.

The definition of learner competencies (see Figures 1 and 2) is particularly significant in this paper. Firstly, the content of these competencies, in conjunction with how they are acquired, allows us to draw conclusions about the necessary learning environment, the organisation (school) that creates it, and, ultimately, the competencies required to lead and manage such organisations. It is important to note that the present digression is not intended as an end in itself, nor does it constitute a neglect of the primary focus. Instead, it is an attempt to move towards a more precise understanding of the competencies that school leadership should possess based on an interpretation of the competencies exhibited by students.

This subchapter focuses on the concept elaborated by *Fadel and Trilling* (2009) and the competency framework they developed (P21). The aforementioned points have been expounded upon in section 2.2.1, wherein the relevance of the framework's content, the dynamism of its development, the actors' in-depth debate and consensus-building, and its practical applicability are emphasised. The utilisation of the framework in US states and its adoption by several countries with advanced, effective education systems as the foundation for their education policy substantiates its efficacy.

Concurrently, the changes that have occurred or are ongoing in our world since the establishment of P21 cannot be disregarded. Consequently, the present study incorporates

concepts developed in other contexts and is more recent in our examination of student competencies. One such concept is the competency model created by the OECD, which attempts to define the student competencies required in 2030. Another OECD project focuses on the competencies that future generations will need if we focus on the development of the whole person in an interconnected world.

In this subsection, an investigation is conducted into the extent to which disparate approaches yield analogous or disparate outcomes. In conclusion, the discourse will identify competencies that are expected to emerge in the future but are not, or are not prominently represented within the aforementioned models and concepts.

Prior to commencing the analysis, it is imperative to engage in a thorough discussion of the terminology employed. While presenting and analysing individual sources, the terminology used in the source will be retained. For instance, Fadel et al. employ the term “skill” as an overarching category, with competencies designated as subcategories. The OECD conceptual framework also incorporates the term “skill”, which is considered to be part of knowledge, attitudes, and values. Another OECD concept that employs the term “competence” is the concept of “competence-based education.” Nevertheless, it is believed that the elaboration of the contents renders their meaning clear. Thus, the different uses of terms should not cause any problems. In the summary of the subchapter, there is a consistent reference to the terminology defined in section 3.1.1, according to which competence can be captured along the descriptors of knowledge, skills, abilities, and attitudes.

5.3.1 21st-century skills by Fadel and Trilling

As I stated before, transforming societies into knowledge economies has profoundly altered students’ competencies to achieve personal success and contribute meaningfully to individual and collective well-being. The competencies required for success are not static in a rapidly changing world. Economic globalisation, digital transformation, climate change, and societal shifts continually reshape the skills and attitudes necessary for individuals to thrive.

In such a society, where information, innovation, and collaboration drive progress, education systems face the need to keep updated the definition and interpretation of competence. Redefining competencies ensures that learning remains relevant, inclusive, and empowering.

In their comprehensive and influential work, *Fadel and Trilling* (2009) analyse the shift in learning from the agricultural age, through the industrial age, to the knowledge age. They pose four essential questions, among which one is in our focus: *"What skills will your child need to be successful in this world*[47] *you have imagined twenty years from now?"* (*Fadel & Trilling*, 2009, XXIV) They outline a comprehensive framework of competencies essential for individuals to thrive in the dynamic, complex, and technologically integrated environment of the 21st century (*Fadel & Trilling*, 2009, Part Two). The authors propose a holistic model of learning that combines traditional academic knowledge with interdisciplinary skills and personal attributes. The central aim is to redefine educational priorities to better equip learners for life and work in the knowledge age.

The authors categorise these competencies into three broad domains: Learning and Innovation Skills, Digital Literacy Skills, and Life and Career Skills. Together, these domains form what is often called the "21st Century Skills Framework."

Suppose we want to understand the mechanism that starts with developing the skills students need in a knowledge economy and ends with a system of school leadership skills that can optimise student development. In that case, it is imperative to undertake a more profound examination of student skills. In this regard, the present study will take Fadel's influential book as a point of departure and examine the section dealing with the definition of student competencies.

Learning and Innovation Skills

This first domain encompasses what *Fadel and Trilling* (2009) describe as the foundational "4Cs": critical thinking, communication, collaboration, and creativity. These skills are positioned as essential for navigating a global economy increasingly reliant on problem-solving, adaptability, and innovative thinking.

- *Critical Thinking and Problem Solving*: Students must be able to reason effectively, analyse complex systems, and make judgments based on evidence and logical reasoning. The authors stress the importance of moving beyond rote memorisation towards the development of cognitive flexibility and evaluative judgment. Real-

[47] After about 20 years, when the book was published, children would leave school.

world challenges, case-based learning, and inquiry-based projects are encouraged as methods to cultivate these competencies.

- *Creativity and Innovation:* Creativity is not presented as mere artistic expression but as the capacity to generate novel and valuable ideas and solutions. Innovation is seen as the extension of creativity into the practical domain, involving refining and implementing original ideas. According to the authors, nurturing creativity involves risk-taking, tolerance for ambiguity, and the freedom to fail as a learning process.
- *Communication:* Effective communication is reconceptualised as multimodal and interactive. In the 21st century, this means fluency not only in spoken and written language but also in digital and visual media. Communication should be clear, purposeful, and audience-aware, enabling students to engage in persuasive dialogue and present ideas compellingly in diverse contexts.
- *Collaboration:* Collaboration is framed as essential for nearly all professional and civic contexts. It includes the ability to work productively with others, particularly in diverse and intercultural teams. The authors highlight interpersonal skills such as empathy, shared responsibility, and team decision-making as central elements of this skill set (*Fadel & Trilling*, 2009, 46–60).

Digital Literacy Skills

This second domain underscores the competencies required to effectively engage with the vast and evolving digital information and technology world. The authors divide this area into three interrelated literacies: *information literacy, media literacy*, and *ICT (Information, Communications, and Technology) literacy*.

- *Information Literacy:* This involves the capacity to locate, evaluate, and utilise information effectively. *Fadel and Trilling* (2009) argue that in a world saturated with data, students must learn to identify credible sources, distinguish fact from opinion, and synthesise information across platforms and formats. Ethical use of information and intellectual property is also emphasised.

- *Media Literacy:* Media literacy entails understanding how media messages are constructed and what their purposes are. Students must be capable of analysing media content critically, identifying bias and perspective, and interpreting how digital media shapes perceptions and beliefs. The skill also includes consuming and producing media ethically and responsibly.

- *ICT Literacy:* Beyond basic technical proficiency, ICT literacy involves strategically using digital tools to communicate, manage data, and solve problems. The authors note that simply knowing how to use a computer is insufficient. Students must be able to adapt to new technologies and use them to support learning, innovation, and collaboration (*Fadel & Trilling*, 2009, 61–71).

Life and Career Skills

The third domain encompasses a broad set of *personal and interpersonal competencies* necessary for adapting to change, managing complexity, and achieving personal and professional goals. These skills reflect an awareness of the evolving demands of the workforce and society.

- *Flexibility and Adaptability:* Students must be able to adjust to various roles, job responsibilities, and work environments. The authors highlight the increasing volatility of careers in the 21st century, emphasising that adaptability and openness to change are critical attributes for long-term success.
- *Initiative and Self-Direction:* Learners are expected to become self-starters who can set goals, manage their time, and pursue learning independently. These capacities form the foundation for lifelong learning, which is increasingly necessary in a world of rapid technological and societal change.
- *Social and Cross-Cultural Skills:* The authors emphasise the importance of being able to work effectively with individuals from diverse backgrounds and cultures. These skills are particularly crucial in a globalised workforce and demand empathy, respect for cultural differences, and strong interpersonal communication.
- *Productivity and Accountability:* This competency includes the ability to manage tasks and projects efficiently, meet deadlines, and deliver high-quality outcomes. Responsibility, integrity, and a commitment to excellence are key personal attributes.
- *Leadership and Responsibility:* Effective leadership involves the capacity to influence and guide others toward a shared goal. It also includes ethical decision-making, community engagement, and personal accountability. The authors advocate for a view of leadership that is both collaborative and service-oriented. (*Fadel & Trilling*, 2009, 73–86)

To sum up, we can conclude that Part Two of *21st Century Skills* constructs a multidimensional framework designed to align education with the needs of a global, digital society. The authors urge a shift from traditional content-driven instruction toward an integrated approach that fosters adaptability, innovation, and lifelong learning. They argue convincingly that these competencies are not optional enhancements but essential foundations for effective citizenship, employability, and personal fulfilment in the 21st century.

The authors' opinion regarding the essential change of the applied learning methodology drives us to redefine the learning environment in schools. I will deal with this topic in Chapter 6. However, I still have some work to do with students' skills and competencies. First, I compare how the WEF 2025 skills relate to Fadels' framework. After that, I give examples of the application of 21st-century skills in the educational policies of some developed Asian countries. Next, briefly introduce the OECD concepts mentioned, and investigate their relation to the P21.

Table 6: WEF 25 skills and Fadel's framework – comparison

WEF Rank	*WEF 2025*	*Fadel & Trilling framework*
1	Analytical thinking	Critical Thinking and Problem Solving
2	Resilience, flexibility and agility	Flexibility and Adaptability
3	Leadership and social influence	Leadership and Responsibility
4	Creative thinking	Creativity and Innovation
5	Motivation and self-awareness	Initiative and Self-Direction
6	Technological literacy	Information Literacy, ICT (Information, Communications, and Technology) Literacy; Media Literacy
7	Empathy and active listening	Social and Cross-Cultural Skills; Communication
8	Curiosity and lifelong learning	Covered by Fadel & Trilling framework, generally
9	Talent management	
10	Service orientation and customer service	Productivity and Accountability; Collaboration

The comparison is based on the list of skills published by *WEF* (2025, 35) and the detailed description of the 21st-century skills framework (*Fadel & Trilling*, 2009, 45–86). The two lists were elaborated at different times for different reasons. The WEF list aimed to identify the most important skills people should gain to act in the labour market. Fadel and Trilling defined the framework for students' skills. However, the two lists can be connected, as workers tend to gain mostly the skills (competencies) they were taught in school. Thus, it seems logical to define the relationship between the two lists. Table 6 shows what relation we could consider. It shows that most of the skills on the WEF 2025 list have a counterpart in Fadel's framework. It gives a strong message to us, showing the close relationship between the world of work and schooling.

5.3.2 Interpretation of 21st-century competencies in some Asian countries

Under 2.2.1, I referred to the application and interpretation of Fadel's framework in some developed countries. Next, I briefly introduce how Japan, South Korea, and Singapore interpret the 21st-century competencies, which serve as the basis for their educational policies. The Global Center for Global Education at Asia Society investigated the most critical educational challenges. Among them are those competencies that students should gain in the knowledge era. This organisation developed reports entitled "Advancing 21st Century Competencies in East Asian Education Systems" for 5 countries, among them Japan, South Korea, and Singapore. This summary is based on these reports, which explore how these nations conceptualise and integrate 21st-century competencies into their national education policies. These frameworks aim to prepare students for rapidly changing global conditions through a blend of cognitive, interpersonal, and intrapersonal skills essential for lifelong learning and participation in a knowledge-based society.

Japan emphasises *Zest for life*, a holistic educational ideal comprising academic ability, moral character, and health (*Kimura & Tatsonu*, 2017). Japan's framework centres on balancing knowledge acquisition with emotional and social development. It underscores the integration of competencies across subjects and the importance of cultivating students' self-motivation, resilience, and ethical behaviour.

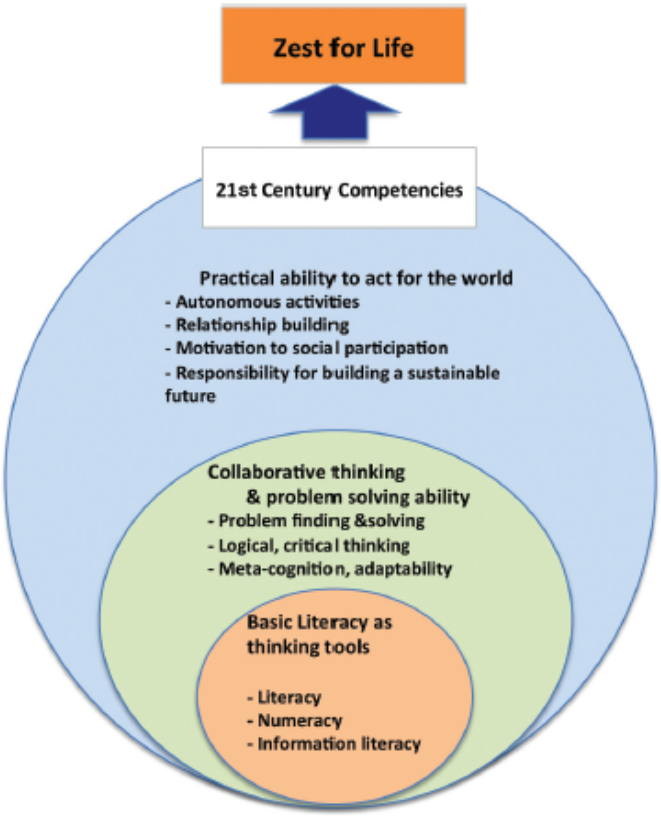


Figure 18: 21st century competency frameworks for students – Japan; Source: Kimura & Tatsonu (2017, 5)

South Korea frames its competencies through the *Key Competencies for Korean Students*, which support creativity, self-directed learning, and character development. The Korean approach is marked by efforts to reduce academic pressure and enhance creativity through curricular reforms that shift from rote learning to student-centred and inquiry-based education (*Kim & Eom*, 2017). While the educational concept is rooted in their history, it also reflects the needs of modern society. As the authors wrote: *"the objectives of South Korea's education are to assist all people in perfecting their individual character, developing the ability to achieve an independent life and acquire the qualifications of democratic citizens, and being able to participate in the building of a democratic state and promoting the prosperity of all humankind"* (*Kim & Eom*, 2017, 1).

Singapore adopts a future-oriented approach through its *21st Century Competencies and Student Outcomes* framework. It emphasises core values (e.g., respect, resilience) and competencies such as civic literacy, global awareness, communication, and critical thinking. The framework is structured as concentric rings, with foundational values at the core,

enabling students to thrive in a globalised world while maintaining a strong national identity (*Pei-Ling Tan et al*., 2017). This framework arose from continuous development. I should mention the concept of "Thinking School Learning Nation (TSLN)", which is built on recognising the role and importance of learning in the sustainability and economic growth of Singapore. TSLN had a strong pedagogic focus, which was a key direction of the programme. Later, in 2004, the "Teach Less, Learn More (TLLM)" program further strengthened this approach. It is built on the recognition that acquiring 21st-century competencies requires new, innovative pedagogical methods. Figure 19 shows the competency framework.

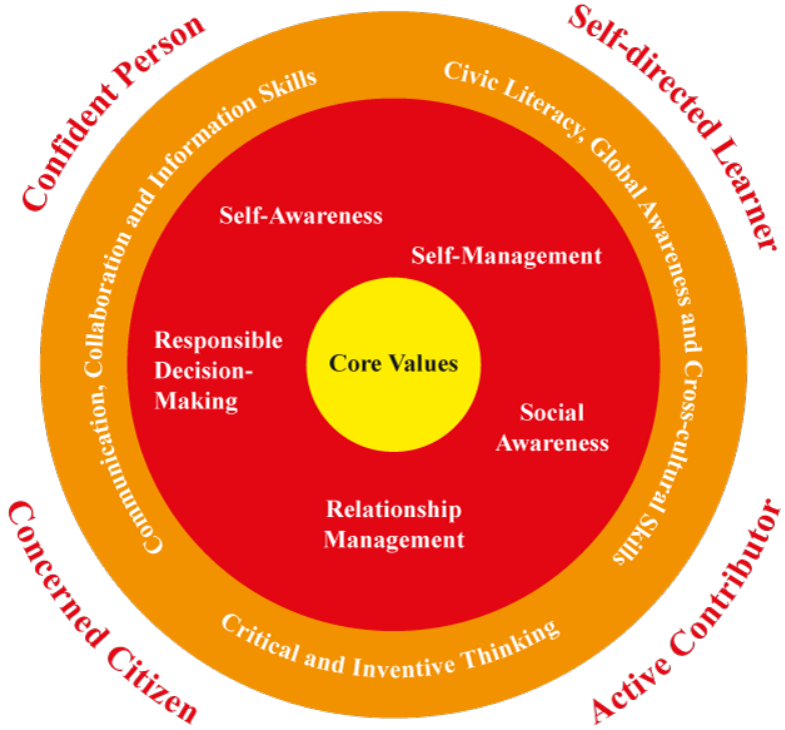


Figure 19: Competency framework for students in Singapore; Source: Pei-Lin Tan et al. (2017, 9)

The frameworks of Japan, Singapore, and South Korea broadly align with the tripartite model proposed by *Fadel and Trilling* (2009), which categorizes 21st-century skills into *learning and innovation skills, digital literacy skills,* and *life and career skills*. All three nations emphasise critical thinking, communication, and collaboration, directly mirroring Fadel and Trilling's "4Cs" (critical thinking, communication, collaboration, and creativity). Furthermore, the integration of moral education and socio-emotional learning in Japan and

South Korea reflects the “life and career skills” domain, particularly adaptability and social responsibility.

Singapore’s emphasis on global awareness and civic literacy highlights a sophisticated application of Fadel and Trilling’s global citizenship and cross-cultural competencies. In contrast, Japan’s moral and character education aligns more closely with personal responsibility and ethics, whereas Korea’s creative competency development links to innovation and self-direction.

While distinct in cultural and historical contexts, the competency frameworks in Japan, Singapore, and South Korea share a holistic perspective and a commitment to nurturing, preparing, and equipping students with 21st-century competencies, thus enabling them to proactively respond to the challenges of our century. Each framework complements the global discourse on 21st-century education, echoing the dimensions of Fadel and Trilling’s model while tailoring their application to national priorities and values.

The development of 21st-century competencies, as defined by developed Asian countries and enshrined in their education policies (cf. Fadel and Trilling), has had a profound impact on the organisation of learning and the methods employed. It is evident that acquiring defined competencies requires an open, flexible learning environment in which learners assume an active role in the learning process. The organisation of the learning process and the pedagogical methods employed are conducive to the development of innovative thinking and the ability to act, as well as to cooperation, active problem-solving, and responsible participation. The development of competencies in no country is simply a matter of practical knowledge. It extends to the education of students to be responsible for themselves and their environment, to learn ethical behaviour, to adapt to a changing world, and to the continuous learning needed to do so. As demonstrated in the case of Fadel and Trilling, this phenomenon leads us to the learning environment, which is discussed in Chapter 6. This environment is the second element of the diagrams (Figures 1 and 2), which illustrate the concept of the thesis.

5.3.3 OECD concepts and Fadel’s framework

Next, I introduce two OECD concepts that address preparing students for the future and define distinct competencies for them. After a short description, I uncover the similarities and differences between Fadel’s concept and the OECD models. My intention is to provide

a holistic, and complex description of students' competencies, which are essentially taught in schools in the knowledge era of our societies.

5.3.3.1 The OECD Learning Compass

First, I will examine the Future of Education and Skills 2030 project, launched by the OECD in 2015. The project aims to define the knowledge that the next generation will need to act responsibly with regard to sustainability and community well-being. To this end, they must prepare for professions that do not yet exist and use technologies that have yet to be invented. Furthermore, they must learn to thrive in an interconnected global society, embracing perspectives rooted in different cultures. Therefore, preparation must encompass cognitive development, practical knowledge, the acquisition of high-level interpersonal competencies, and a strong moral compass to guide responsible actions and choices within the community. The initial phase of the project is centred on delineating the competencies required to navigate the intricacies of a VUCA (volatile, uncertain, complex, ambiguous) environment. This phase of the project took place between 2015 and 2019. In Chapter 6, the discourse will shift to the continuation of the project, which pertained to the definition of the learning environment for the acquisition of competencies. In this phase, the process of redefining competencies was underway, with experts engaged in the task. The starting point was the key competencies previously defined in the *DeSeCo* project (1997–2003)[48], on which the learning framework was built. This learning framework introduced a new approach, which was termed the 'learning compass'. The hypothesis was that the acquisition of the competencies defined in the new framework could serve as a compass for young people to follow in their progress towards a desirable future. In addition to knowledge, skills and competencies, it places a strong emphasis on the development of attitudes and values. The OECD's Learning Compass framework, which comprises seven domains, is presented below.

[48] For a comprehensive overview of this subject, please refer to the edited volume by *Rychen, D.S. & Salganik, L.H.* (eds., 2001).

- *Core foundations*: These are the essential building blocks for learning, development, and well-being, including literacy, numeracy, physical and mental health, and digital literacy. They serve as prerequisites for deeper learning and participation in society.
- *Transformative competencies*: Encompass the abilities learners need to contribute to shaping a better future. These include creating new value, reconciling tensions and dilemmas, and taking responsibility, enabling individuals to act meaningfully and ethically in complex and ambiguous situations.
    - Creating new value: Encouraging innovation, entrepreneurship, and creative problem-solving.
    - Reconciling tensions and dilemmas: Equipping students to deal with complex ethical, cultural, and societal conflicts through negotiation and critical reflection.
    - Taking responsibility: Promoting a deep sense of accountability for one's actions and their broader social and environmental impact.
- *Student agency and co-agency*: Agency refers to the capacity of students to set goals, reflect, act, and make choices in alignment with their values. Thus, they can positively influence their own lives and contribute to the common good. Co-agency highlights the shared responsibility and collaborative support from teachers, peers, families, and communities that enable students to exercise their agency and mutually enrich each other, acting within a larger learning ecosystem.
- *Knowledge*: Encompasses both disciplinary knowledge and interdisciplinary understanding, including theoretical and practical knowledge, as well as epistemic knowledge – the understanding of how knowledge is constructed, validated, and applied.
- *Skills*: Include cognitive and metacognitive skills (such as critical thinking, problem solving, and self-regulation), social and emotional skills (such as empathy and collaboration), and practical and physical skills necessary for everyday life and work.
- *Attitudes and values*: Refer to students' dispositions, mindsets, and ethical orientations. These shape motivation and behaviour, guiding how knowledge and skills are applied in real-world contexts and influencing students' capacity to engage constructively in society.
- *Anticipation-Action-Reflection cycle*: Describes a dynamic learning process in which students envision possible futures (anticipation), take deliberate actions (action), and

evaluate outcomes and experiences (reflection), thereby promoting continuous learning and adaptive capacity. (*OECD*, 2019, 13)

These interconnected elements form a holistic framework for developing learners who are capable, responsible, and prepared to navigate the challenges and opportunities of the 21st century.

Comparing the OECD Learning Compass 2030 with the Fadel and Trilling framework, I can identify several common points, while the OECD concept, being "younger", can better reflect some of the challenges. The OECD framework and the P21 competency framework share a foundational alignment in their vision for holistic, future-oriented education. Both frameworks emphasise the integration of cognitive, interpersonal, and intrapersonal dimensions of learning, but they differ in structural emphasis and conceptual depth.

The OECD Learning Compass 2030 and Fadel and Trilling's 21st Century Skills framework converge on the imperative to prepare learners for complexity, change, and global interdependence. Both models are grounded in a holistic approach to education, advocating for the development of knowledge, skills, and dispositions necessary for lifelong learning and responsible citizenship.

- *Core Foundations* in the OECD model parallel Fadel and Trilling's foundational literacies (e.g., literacy, numeracy, ICT), forming the essential prerequisites for more advanced competencies.
- *The Transformative competencies* articulated by OECD – creating new value, reconciling tensions, and taking responsibility – extend the "life and career skills" in Fadel and Trilling's model by embedding a deeper emphasis on ethics, sustainability, and agency in navigating complex social and moral dilemmas.
- *Student agency and co-agency* reflect Fadel and Trilling's emphasis on learner autonomy and self-directed learning. The OECD model further expands on this by situating agency within a socio-ecological context and acknowledging the role of collective and relational support in learning processes. However, Fadel and Trilling adopt a similar approach when introducing the 21st-century learning framework.
- The three elements – *Knowledge, Skills*, *Attitudes, and Values – correspond directly with Fadel's framework, as all these elements appear in their 21st-century learning framework as part of the* "Whole Learner", underscoring a shared understanding of integrated human development. Both models recognise the importance of applying

knowledge meaningfully through critical skills and guided by ethical and emotional intelligence.

- The *Anticipation-Action-Reflection* (AAR) Cycle introduced by the OECD presents a dynamic process model that operationalizes the competencies over time, offering a more explicitly iterative approach to learning than Fadel and Trilling's framework, which is more typological.

In summary, the OECD Learning Compass builds upon and extends Fadel and Trilling's framework by introducing more system-level and future-oriented elements, such as transformative competencies and the AAR cycle, while maintaining a shared commitment to preparing learners for adaptive success in complex, interconnected societies.

This synthesis highlights how both frameworks are complementary: the OECD model offers a more evolutionarily adaptive and context-sensitive structure, while Fadel and Trilling provide a widely accessible foundation for curriculum and instructional design.

Both need very different learning environments from the school of the industrial age.

5.3.3.2 The OECD Global competence model

As with the OECD Learning Compass, the issue of global competences[49] can be linked to the rapidly changing, turbulent (VUCA) world. As indicated in the OECD study (*Mansilla & Schleicher*, 2022), globalisation and digitalisation have been identified as significant factors influencing learners' competences worldwide. While globalisation and digitalisation hold the potential to broaden the scope and opportunities for individuals and communities, they concomitantly introduce risks that are characteristic of a volatile, uncertain, complex and ambiguous (VUCA) environment.

The authors posit that education alone is insufficient for imparting traditional knowledge to students; instead, it must equip them with a compass to guide them through the VUCA world with confidence. Effective education is about cultivating identity, establishing objectives,

[49] We use "competencies" mostly. Here we kept the word usage applied by the OECD and the OECD experts. Thus under 5.3.3.2 point we use "competences".

and empowering. This approach is predicated on curiosity and open-mindedness, active listening, compassion, and the capacity to mobilise emotional, cognitive, and social resources to facilitate relevant learning. The authors contrast this with behaviour and action fuelled by closed thinking, disregard for others, hatred, and fear (ibid, 6).

The authors structure their study around answering five specific questions. I propose to focus on two of these questions here, which we will relate to the main field of the chapter. These questions: a) What are the global competences? b) What kind of learning supports the acquisition of these competences? The initial question is of interest to us because the answer to this question will expand our understanding of the students' competences needed to succeed in the 21st century. Secondly, responses pertaining to the form and mode of learning will help us move forward, i.e., identify the learning environment necessary for acquiring students' competences (see Chapter 6).

In their seminal work, Mansilla and Schleicher investigate the global competences, drawing upon the PISA 2018 competency framework. The following definition is provided by different OECD publications (*OECD*, 2018, 4*; OECD PISA*, 2020, 56; *Mansilla & Schleicher*, 2022, 11). Global competence is defined as the capacity to examine local, global, and intercultural issues; understand and appreciate different perspectives and worldviews; engage in open, appropriate, and effective interactions across cultures; and take action for collective well-being and sustainable development. This framework underscores the importance of equipping learners with the skills to critically analyse global issues, understand diverse perspectives, and engage in respectful dialogue and action.

The domains of the global competence framework are closely interlinked. The following descriptors of knowledge, skills, attitudes and values can be used to describe these domains (see Figure 20).



Figure 20: The dimensions of global competence.
Source: OECD PISA, 2020, 57

The content of each dimension delineates the competences required to function. The following aspects can be highlighted:

- *Dimension 1 – Examine issues of local, global and cultural significance*: critical thinking and reasoning, selecting and weighing evidence, analysing data and arguments, forming statements towards local, global, and cultural issues, understanding and critically evaluating media messages, etc.
- *Dimension 2 – Understand and appreciate the perspectives and worldviews of others*: knowledge about history, communication style, beliefs, values, and cultures. Capability and intention to understand different viewpoints of others, be able to look for common ground in cultural differences and build bridges between various views and approaches. Accepting basic human values. Recognise altering worldviews and be tolerant of different views without accepting them. Understanding the usefulness of applying different cultural filters to getting deeper insight leads to more mature decisions, etc.
- *Dimension 3 – Engage in open, appropriate and effective interactions across cultures*: Understand cultural norms, intercultural contexts, and be able to adapt to the changing situations (behaviour, communication). Being able to carry out open, tolerant, respectful, and effective dialogues with others, including representatives of marginalised groups. Behaviour is characterised by openness, sensitivity, curiosity, and willingness to engage with others.

- *Dimension 4 – Take action for collective well-being and sustainable development*: Consider and accept being an active and responsible member of society, so as to be able to respond to local, global, and (inter)cultural issues. Capability and intention to act actively and form opportunities in an informed way, having a voice in an interconnected world. Considering the importance of justice and standing up for others. Being able and engaging to act for a more peaceful, fairer, and environmentally sustainable world.

We can consider developing such interbounded, complex competences introduced here need special, well-planned teaching methods and learning environments.

The concept of teaching is intrinsic to the education processes, both on an individual and an organisational level. This concept is the underlying factor that determines the organisation of learning, the methodology, and the teaching technology. Mansilla and Schleicher investigated the characteristics that determine the quality of learning. This approach is informed by the research of *Manilla and Chua* (2017), which examined the application of signature pedagogies in the domain of global competence development. Mansilla and Schleicher – based on Project Zero at the Harvard Graduate School in Education[50] – proposed a set of six defining characteristics of effective learning. The following are provided:

- *Whole learning*: It means a whole-person approach of teaching, including cognitive and emotional development and supporting young people in recognising and upholding values.
- *Relevant learning*: It answers the question of why a certain thing should be learned. This goes beyond everyday practical knowledge and skills. It helps individuals address questions that enable them to gain a deeper understanding of themselves and the world they live in. For all these reasons, relevant learning strongly affects intrinsic motivation and, in turn, the quality of learning.
- *Deep learning*: This form of learning and its interpretation have a strong research background. Its essence lies in going beyond simply acquiring and reproducing knowledge. It extends to understanding deeper connections and applying knowledge in practice. Another important feature of this form of learning is the transformability

[50] See: https://pz.harvard.edu/

of acquired knowledge, its transfer from one area to another, and its application in new situations. This brings us closer to developing a knowledge ecosystem.

- *Social learning*: Its watchwords are trust, care, and understanding, representing the social fabric and environment of learning. A fundamental element of this characteristic is that learning takes place in a social environment and is based on interaction with others, so it cannot be reduced to the actions of individuals. This learning is influenced by the family, social institutions, society, culture, history, and the media. Learning, and as the result of the learning, is shaped in this environment as a result of and under the influence of interactions.
- *Transformational learning*: A fundamental characteristic of transformative learning is that the knowledge acquired is long-lasting and permanent. The teacher's personality and a defining experience in the learner's life can play a role in this. This type of learning shapes self-image, way of thinking, and worldview. It builds skills such as evidence-based reasoning, analysis of complex problems, perspective-taking, and reflective communication. A characteristic of transformative learning is sensitivity to real-world problems. Learning is not simply manifested in learners' ability to transfer what they have learned in one area to other areas and apply it to solve new problems. It is particularly important to shape a personality that thinks globally, which requires immersion in culture and enculturation.
- *"In the world" learning*: It means being able to navigate in our VUCA world, understand, explore, and solve real, complex, dynamic, multidimensional problems. It evokes the authentic, project-based, experimental learning. It is very similar to service design-based problem solving.

Acquiring the OECD's global competences requires a dynamic, collaborative, active teaching methodology that views students as subjects of learning rather than objects of learning, as seen in the case of the Learning Compass.

Cooperative learning, active communication in pairs, and inviting guest speakers to the classroom are clearly the norm for acquiring global competences. The teaching climate is warm and inclusive, with lots of laughter, challenges, and a wealth of ideas. Students dare to engage with risky topics, both intellectually and/or in terms of values, because they have the depth of thought, tact, and tolerance to do so. They are able to move comfortably in a multicultural environment. The approach to learning and the teaching methods encourage open-mindedness, empathy, and fact-based reasoning. It is crucial that students are sensitive

to global challenges and problems and see the connections between global events and local history.

Lastly, I can compare the OECD global competence framework with Fadel and Trilling's framework. In summary, I can state the following. The global competence framework is a multidimensional construct that is vital for students to navigate and contribute positively to an interconnected world. It calls for a holistic approach to education that integrates cognitive, socio-emotional, and behavioural dimensions to prepare learners for global citizenship

Several similarities and differences emerge when comparing the competencies outlined in *Big Picture Thinking* and *21st Century Skills*. Both frameworks prioritise critical thinking, communication, and collaboration as foundational skills. These competencies are essential for problem-solving, effective interaction, and teamwork in diverse settings.

The OECD global competence framework uniquely emphasises global competence, which includes understanding global issues, appreciating cultural diversity, and engaging in ethical action. This focus aligns with the goals of fostering global citizenship and addressing global challenges such as sustainability and social justice. The framework also highlights the importance of empathy, respect for others, and a commitment to collective well-being.

In contrast, *P21* emphasises digital literacy, including accessing, evaluating, and using information effectively. It also underscores life and career skills such as adaptability, initiative, and leadership, reflecting the competencies needed for success in the modern workforce. While global awareness is included, it is one of several themes rather than the central focus.

In conclusion, both frameworks offer valuable insights into the competencies necessary for students to thrive in our VUCA world. Mansilla and Schleicher in *Big Picture Thinking* provide a focused approach to developing global competence and ethical engagement, while Fadel and Trilling in *21st Century Skills* offer a comprehensive set of skills for navigating the complexities of the 21st century. Educators can draw from both frameworks to create holistic learning experiences that prepare students to be informed, adaptable, and responsible global citizens.

5.4. Conclusions – Volatile world and students' competencies influencing school leaders' competencies

The dynamic nature of the knowledge society necessitates an ongoing redefinition of student competencies. To prepare students for a world characterised by complexity, uncertainty, and interconnectedness, education must foster foundational knowledge and skills as well as higher-order capacities such as ethical reasoning, creative problem-solving, collective action, and future-oriented thinking.

Drawing on *OECD* (2019, 2022) and *Fadel and Trilling* (2009), it is clear that competencies for the 21st century must be broad, integrated, and transformative. While all frameworks agree on core skills like critical thinking, creativity, collaboration, and adaptability, newer frameworks increasingly emphasise agency, sustainability, and anticipation of future challenges. These shifts suggest a move from preparing students simply to "fit" into society toward empowering them to actively shape a better, more equitable, and sustainable future.

Thus, educational systems must commit to updating curricula and reimagining teaching practices, learning environments, and assessment methods to truly cultivate the competencies needed for flourishing in a rapidly changing world.

In Chapter 5, I thoroughly explored the factors that shape the competencies necessary for students to thrive in a knowledge society. With this in mind, I analysed these competencies. We familiarised ourselves with several models, such as P21, the Learning Compass, and the Global Competence Framework. This was a detour in terms of defining the competencies of successful school leaders in the knowledge society. At the same time, however, it was an essential step because, as we saw when presenting the individual frameworks, these competencies essentially determine the learning concept and environment necessary for developing competencies (Chapter 6), which the school must create (Chapter 7). In other words, the digression was also important because, as the concept of the thesis suggests, I also explore causal relationships in answering the research question. In other words, from the competencies that are important for students to acquire in a knowledge society, we can infer the environment in which these can be acquired and which the school must create. From this, we can infer the competencies required of school leadership.

While the frameworks examined were not identical, they essentially shared the same approach, learning concept, and teaching methods, which are expected to lead to the

successful acquisition of the defined competencies. Based on the description of these competencies, we can confidently state that traditional learning approaches, which focus on subjects and involve teachers imparting and testing knowledge, are not suitable for teaching the competencies required in a knowledge society. The environment generally required for this, and the type of organisation and organisational functioning capable of creating it, are presented in Chapters 6 and 7.

6. LEARNING ENVIRONMENTS

This chapter explores and identifies the characteristics of a learning environment that enables students to acquire the competencies required in a knowledge society. I aim to identify the competencies required for effective school leadership in the 21st century. However, in order to achieve this objective, it is first necessary to ascertain and comprehend the nature of the school environment that fosters optimal opportunities for student learning. Ultimately, the responsibility for creating such an environment rests with the director and the school's leadership. The sixth chapter pertains to the second component of the diagram (see Figure 1), which elucidates the thesis concept. It is necessary to take another detour to respond to the research question, which will bring us closer to answering the fundamental question. This digression, therefore, reinforces the causal relationship defined by the thesis concept. In this regard, it is imperative to underscore that my objective does not entail a thorough, exhaustive examination of the learning environment. This environment is significant insofar as it influences the definition of school leadership competencies.

As previously mentioned, the characteristics of the learning environment have been outlined, including its open, inspiring, and collaborative nature. In this chapter, I will undertake a systematic examination of the characteristics of this environment. This will mark the inaugural step in the process. In the following section, I build on the competence frameworks presented in Chapter 5, which, from different perspectives, dealt with the definition of the learner competencies needed in the 21st-century knowledge society. I then examine what kind of learning environment is required for these frameworks to function. The knowledge thus acquired will lead us to Chapter 7, which aims to identify the organisational characteristics and models that can be expected to create the desired learning environment for students.

6.1 The physical and mental learning environment

In a rapidly evolving global society, education systems are under increasing pressure to equip learners with 21st-century competencies such as critical thinking, creativity, communication, collaboration, digital literacy, and social-emotional skills. These competencies require learning environments that go beyond traditional classroom models, integrating flexible, inclusive, and student-centred approaches. In this chapter, I explore the

most significant aspects of physical and mental learning environments that support the development of these competencies, grounding the discussion in recent educational research and theory.

While we must face the challenges mentioned above, we know that schools are slow to change. This is partly due to their millennia-long function, which spans several centuries in terms of mass education. In this capacity, they play a distinguished role in preserving traditions and passing on culture. With the advent of industrial society, education became one of the largest subsystems of society, and its size alone explains its inertia. The temporal extent of education has further reinforced this. In a system of this size, technical and physical conditions are just as difficult to change as the rules, norms, and customs that have developed within the profession. In developed countries, for example, education accounts for 4–6% of GDP. It requires a significant number of buildings, equipment, and employees to function. From a technical point of view, the buildings cannot be easily modernised (consider lighting, heating, natural light, insulation, etc.), and it is particularly challenging to convert interior spaces, such as traditional classrooms. Shaping and transforming the image of learning held by those working in the system – primarily teachers – is similarly challenging. The challenges and conflicts posed by the advent, development, and spread of the internet and mobile phones are enough to illustrate this point. Now, artificial intelligence is penetrating all areas of social life, including education. These changes present particular challenges in a fundamentally traditional and inflexible system. Security concerns can exacerbate this situation, which varies significantly from country to country.

In the following, I will examine the physical and mental environment required to acquire 21st-century skills. We will also see significant differences between the requirements of the industrial and knowledge societies in this area.

6.1.1 The physical learning environment in the knowledge society

When examining this environment, we must consider the design of school buildings, classrooms, and learning spaces more generally. As well as the buildings, we must pay attention to physical conditions such as adequate lighting, fresh air, temperature, and furniture.

Finally, we need to consider what tools are required to optimise learning conditions. When discussing optimisation, we must consider traditions and socio-economic conditions, which

can lead to significant differences. Our aim is not to paint an idealistic picture. We will see that meeting expectations is not solely a financial issue related to physical or mental conditions. However, we must also acknowledge that school leadership typically has little influence in this area due to the necessary financial resources to change the existing environment and related regulations.

Next, we look at the physical aspects of the learning environment in school and seek to adapt to the new requirements of the knowledge society.

Let us consider the impact of the built environment. *Peter Barrett and his colleagues* (2015) conducted research involving 3,766 pupils and 153 classrooms across 27 primary schools in England. Without delving into the details of the study (sample, methodology, detailed conclusions, etc.), I will highlight the most important findings relating to the learning environment. The researchers examined the effects of the physical environment on student progress and learning performance from three perspectives. These were as follows:

- *Naturalness*: Are the conditions suitable for the physical comfort of the students? These include light, sound, temperature, air quality, and connection to nature (i.e., what can be seen from the classroom).
- *Individualisation*: How well does the room adapt to the needs of the student group? Do the space and layout support the learning process and meet the students' needs? Does the room encourage students to feel that it is their own? It is essential that the room can be arranged flexibly to suit the teaching process, with clearly marked routes to the activity areas.
- *Stimulation*: The complexity of the classroom, i.e., the connection between its elements, its orderliness, and finally, its colour.

Together, these three factors explained 16% of the learning outcomes, with the first factor accounting for half of this and the other two factors sharing the remaining 8% roughly equally.

Although the effect examined for the school as a whole was much smaller, this also shows that the research procedure raises some questions. Nevertheless, at the classroom level, the effects are noteworthy.

For us, this means that: a) it is important for school leadership to be aware of, understand, and be informed about the effects of the physical environment; b) using this knowledge, they

should optimise learning spaces as much as possible. All these have consequences for the competencies required of school leaders and leadership.

An optimal physical environment supports various learning modalities, including individual, collaborative, and project-based work. Classrooms with flexible furniture, modular seating, writable surfaces, and mobile technologies promote adaptability and student agency (*Barrett et al.*, 2015, 121–123; *OECD*, 2019, 9–12). These features facilitate active learning, allowing students to shift between activities that enhance their engagement and autonomy. The OECD study provides photos to compare classrooms of different ages. The pictures (Figure 21) speak for themselves.



Figure 21: Classrooms – learning environment in the 20th and the 21st century. Source: OECD, 2019, 10

Lastly, we have to mention the digital environment of learning and teaching. Effective integration of digital tools is crucial for fostering 21st-century competencies. Access to interactive whiteboards, laptops, tablets, and broadband internet (Wi-Fi) supports collaboration. The situation is similar regarding the AI application in education. However, technology must be purposefully aligned with pedagogical goals to truly benefit learning outcomes. (*Homes et al.*, 2019; *OECD*, 2023)

6.1.2 The mental environment of learning

There is no clear definition of the mental environment. However, its most important elements can be identified with high certainty.

These include a positive mindset towards student development and support for developing self-image, self-efficacy, and a sense of security (both physical and emotional/psychological). Other elements include an accepting and inclusive culture and opportunities for emotional and social development.

In the digital age, addressing the conditions necessary for developing digital competencies is essential. Here, we are not referring to technical elements (devices, the internet, wi-fi, etc.) but to pedagogical aspects of development. This is also justified by the fact that special attention is being given to this area of competence in the developed world (including the European Union).

These mental conditions are reflected in how individuals and organisations think about learning, the roles of learners and teachers, and the regulations and pedagogical concepts that express these ideas. These are demonstrated through implementing pedagogical and teaching methods based on them. This chapter does not deal with the school as an organisation; it only references it where necessary. In addition to the above, I will focus on the organisation of learning and teaching methods that cut across these areas.

6.1.2.1 Learning and innovation

As we saw several times in Chapter 5, creativity and innovative thinking are increasingly valued in transitioning to a knowledge society. Therefore, it is worth considering how learning about innovation can influence the learning environment. To this end, I refer to an OECD study.

In 2008, the OECD Centre for Educational Research and Innovation (CERI) published a collection of studies entitled Innovation for Learning, Learning for Innovation, based on findings from the learning sciences. The collection deals with the changes affecting schools during the transition from an industrial to a knowledge-based society. The fundamental questions are: how can knowledge derived from learning science inspire change in education, and what kind of learning environment can function effectively and successfully in an era in which creativity and innovation are key drivers?

In the first study of the volume, Francisco Benavides and his colleagues focus specifically on the learning environment (*Benavides, Dumont & Istance*, 2008, 21–44). They analyse the reasons for the changes, which we will not discuss here as these factors have been dealt with

in detail in sections 5.1 and 5.2. They also define key competencies for learners (DeSeCo, European Parliament and Council Decision on key competencies) and conclude that current education systems are unable to provide an adequate learning environment for lifelong learning or for preparing for a VUCA world in the transition to a knowledge society. This is confirmed by PISA measurements, which reveal that a substantial proportion of students in many countries persistently fail to reach level 3 in reading, a threshold essential for entering the labour market. According to the authors, one key problem is the low knowledge management and innovation capacity in schools. This prevents students from acquiring the competencies necessary in a knowledge society, such as problem-solving, deep thinking, analysis, openness, creativity, communication with peers, and the development of social and emotional competencies beyond cognitive knowledge. This necessitates focusing on real-world problems and contextualised learning, highlighting the importance of reflectivity and formative assessment. Existence and prosperity in the knowledge society require active citizenship, agency, and responsibility.

We can see that the OECD CERI approach is consistent with the competencies discussed in subchapter 5.3 and, in addition to the physical environment, focuses primarily on thinking about learning, based on findings of learning science, as well as on the organisation of learning and pedagogical methodology that enable the acquisition of competencies.

The findings on knowledge management, innovation, organisation of learning, and learning concepts are important because they enable us to draw conclusions about school organisation and functioning that support change (Chapter 7) and, consequently, to draw conclusions about school leadership competencies (Chapter 8).

6.1.2.2 Focus on the whole person development – Learning science-supported learning

A study by *Linda Darling-Hammond and her colleagues* (2020) marks a milestone in examining how learning and development science can support the learning process in schools and classrooms. As we have seen in many other cases, the authors define the competencies required in a 21st-century knowledge-based society, before examining which teaching strategies and practices, based on learning and development science findings, facilitate the acquisition of these competencies. The study primarily focuses on the mental conditions for learning and competency development.

The authors present a complex framework focusing on the development of learners' personalities as a whole. This includes academic, cognitive, ethical, physical, psychological, and socio-emotional development. Emotional, cognitive, and physical development are interrelated and interact. Development in one area influences the others, so a systematic approach to identifying, planning and implementing these influences is crucial. According to the holistic model of student development, these processes are determined by four factors (see Figure 22). One of these factors is the learning environment, which I will examine in more detail. The factors are closely interrelated, meaning characteristics that define the learning environment can also be identified in the other three factors. This chapter focuses on the area that deals directly with this. According to the authors, a supportive learning environment essentially involves establishing strong, positive relationships, providing emotional and physical security, fostering a sense of belonging to a community and instilling a sense of purpose. They primarily examined which pedagogical, school, and classroom practices create the necessary conditions (*Darling-Hammond et al.*, 2020, 97–99).



Figure 22: Science of Learning and Development (SoLD) Model; Source: L. Darling-Hammond et al. (2020, 98)

The authors emphasise that, according to findings in learning science, the organisation of learning and teaching methods we have become accustomed to (in the schools of industrial society) cannot be applied in a rapidly changing world characterised by rapid technological development. Above all, there is a need for using research methods and applying the knowledge in new contexts and creative problem-solving, which is typically based on cooperation. It means that learning can increasingly be understood as a collective activity rather than an exclusively individual one. Schools should design their learning environments, their structures, and practices based on students' learning and development needs. The

characteristics mentioned include: (a) a caring environment that provides emotional and physical security; (b) consistent, continuity-based procedures that reduce anxiety and strengthen commitment to learning; (c) the establishment of trust-based relationships between students, teachers and parents. (*Darling-Hammond et al.*, 2020, 100–102)

As mentioned earlier, the areas influencing students' learning and personality development are interrelated. From the perspective of the learning environment we have defined, the SoLD model's area dealing with learning strategies can also be classified as a mental factor. Without going into detail, we can mention that the SoLD model recommends a learning strategy based on experiential, practical problems and the use of personal experience. In this process, students are active participants in their learning, by carrying out their activities primarily in a cooperative manner. Taking prior knowledge into account (diagnostic assessment) plays a key role in the learning process, while formative and developmental assessment play a key role in progress. All of these promote deep learning, as discussed in more detail in Chapter 7, where I examine Sawyer's concept. (*Darling-Hammond et al.*, 2020, 100)

6.1.2.3 Digitisation as the mental environment of learning

Digitalisation is an unavoidable phenomenon of our time. It is, therefore, no coincidence that developed countries and regions worldwide are paying particular attention to this area. An example of this can be seen in the European Union, which launched the Digital Competence Framework for Citizens (DigComp). Equally important is the digital competence framework designed for teachers, trainers, and educators working with children, young people, and adults in settings ranging from early childhood to higher education and adult learning (DigCompEdu).

The digital world can be considered a part of the mental environment for learning, both inside and outside of school. It creates new opportunities and, at the same time, presents previously unknown challenges that constitute a new task for students, parents, and teachers alike. Opportunities include rapid orientation, data collection, information gathering, and communication over long distances, both in space and time, with almost no limitations. However, it is also necessary to be able to navigate the vast amount of information. Users must be able to distinguish between trustworthy and unreliable information. Online communication can hide one's true personality. There is now extensive literature on

cyberbullying and similar issues. New tools and methods must be learnt and used. Suppose the decision is made at an organisational rather than a central level. In that case, schools are responsible for determining whether and how modern tools (e.g., smartphones and AI) can be used in teaching and learning. Possible solutions can vary widely, from a total ban to the intelligent integration of these tools.

The emergence of artificial intelligence poses a similar challenge. Teaching and testing based on drilling and standardised tasks are becoming obsolete because they fail to engage young people. Questions that test lexical knowledge can be answered quickly and easily with the help of AI. It is a significant concern whether learners can verify the accuracy of the responses and whether AI is hallucinating when solving tasks. This can create uncertainty at personal and organisational levels, requiring new coping strategies for schools, teachers, parents, and students. The digital world will transform learning situations, forms, and methods, as well as the mental environment of learning, in fundamental ways.

In the following section, I will examine what environment would support the development of digital competencies.

Developing students' digital competencies requires a dynamic, inclusive, and technologically enriched learning environment that supports both formal and informal modes of learning. Such an environment should provide access to up-to-date digital tools and infrastructure alongside pedagogical approaches that promote active, collaborative, and problem-based learning. According to DigCompEdu, the integration of technology should not be limited to the use of devices. Still, it must be embedded in teaching strategies to encourage students to engage critically with digital content, co-create knowledge, and reflect on their digital practices (*Redecker*, 2017). Moreover, a supportive school culture that values experimentation, digital creativity, and continuous professional development for educators is essential to foster innovation and adaptability. Effective learning environments also ensure digital inclusion by addressing disparities in access and supporting students with diverse needs, thereby aligning with the European Commission's goal of empowering all learners for meaningful participation in the digital society (*Vuorikari et al.*, 2022).

6.2 Developmental environment for Fadel and Trilling's competence framework

Fadel and Trilling (2009, 117–149) deal with the renewal of school support systems in their book (Chapter 8: Retooling schooling, Reshaping support systems), how schools can be equipped to provide the relevant learning possibilities to their students in the 21st century. The authors draw up the characteristics of school leadership (caring, building trust, focusing on learning, supporting teachers' learning, taking care of the kids' learning experiences, serving the development of the 21st-century competencies, like inquiry, design, collaborative learning projects, solving real-world problems, etc.).

Table 7 includes those factors that the authors identified. I add to it the actors who play crucial roles in forming and realising the relevant learning environment for students. We can conclude that school leaders have an inevitable role in many factors to conceptualise, make an operative plan, and realise the necessary surroundings for students' learning. It makes clear that we can draw up some of the school leader's competencies they have to possess to be able to establish the required learning environment in school (conceptualisation based on rapidly changing factors in our VUCA world, taking informed decisions involving the other actors of the school, cooperating with teachers, students, parents, the representatives of the local community, supporting their teachers learning, thus acting as knowledge broker, etc.) All these elements will be essential for us in Chapter 8 when we discuss the competencies of successful school leaders in the 21st century.

Table 7: Learning environment and actors forming it; own edition based on Fadel & Trilling (2009, 139)

Learning environment for 21st century learning by Fadel & Trilling	*Key actors forming the learning environment*
The physical buildings, classrooms, and facilities and their design	The concept belongs to the school depending on the level of autonomy, and finance depends on the educational administration
A school's daily operations, scheduling, courses, and activities	Decided on the school level. School leadership, especially the principal, has a crucial role in it.
The educational technology infrastructure	The infrastructure is funded by the school maintainer. The school's pedagogical programme should discuss the concept of using the infrastructure.
The professional community of teachers, administrators, and others	The framework is usually decided on the national level. However, the continuous professional development opportunities for teacher learning mostly depend on school leadership.
The culture of the school	The school leader and leadership have an essential role in forming school culture.
Community involvement and participation	The school and its leadership and their pedagogical concept play a crucial role in shaping participation at the local (community) level.
The education system's leadership and policies	Mainly, it belongs to the national (and local) level educational administration.

6.3 Learning environment and school leadership

When examining the environment necessary for developing learners' competencies in a knowledge society, it is important to briefly consider the relationship between this area and school leadership. To this end, I refer to the 2013 OECD CERI study, "Leadership for 21st Century Learning", in which leading experts share their thoughts and opinions. The volume provides a comprehensive overview of the topic, examining the role of leadership in creating an innovative educational environment and the strategic and operational management of teaching (in other words, leading and managing teaching) from global and organisational

perspectives. It also presents numerous examples of learning-focused school leadership. (*OECD*, 2013). Based on the executive summary (*OECD*, 2013, 9–12), I present characteristics of learning-focused leadership that can be linked to the learning environment. These characteristics will serve as a reference point for the leadership competencies outlined in Chapter 8. Here, I do not merely summarise the attributes of learning-focused leadership as described in the volume; I also explore their background.

- *Improving the learning environment*: Learning and optimising the conditions for learning are at the heart of learning-focused leadership. It is essential to distinguish this from teaching-focused leadership, as the two approaches differ. In learning-focused leadership, teaching is the primary tool for optimising the learning process and fostering a conducive learning environment. This is the essence of teaching-focused leadership.
- *The role of creativity*: Leaders must explore new ways of organising the learning process and shaping the environment. They need to be innovative and experimental and have the courage to do so. Consider how developing students' creativity requires the organisation of learning procedures and teaching methods that differ significantly from traditional lessons, mainly based on teacher lectures and questions. Examples include starting from real-life problems and using project-based learning, which breaks down the familiar classroom framework.
- *The role of expertise*: Leadership sustains and inspires learning. This requires continual updating of expertise, which also applies to developing the competencies required for leadership. The importance of expertise leads to support for teacher learning and the creation of professional learning communities.
- *The social and networked nature of leadership*: A focus on learning goes hand in hand with a distributed leadership style. As previously mentioned, leadership involves connecting with others and existing networks for the purpose of learning, as well as creating new ones. This leads to organisational learning.
- *Innovation and the learning environment*: Developing learning environments and related innovations blur the boundaries between formal, organised school learning and non-formal, informal learning outside of school. At the same time, recognising and building on knowledge acquired in different contexts is becoming increasingly important. This cycle of innovation necessitates the development of new organisational methods for learning.

This concludes our second detour. As mentioned at the beginning of this chapter, I aimed to explore the most important characteristics of the learning environment that facilitate the acquisition of the knowledge and competencies required in the 21st century, based on the competencies required of learners in the knowledge society (Chapter 5). Examining the relationship between leadership and the learning environment, as presented indirectly in Chapter 5 on student competencies, made it clear that teaching methods that support learning are crucial for developing the competencies required by the knowledge society. At first glance, this responsibility lies with teachers. However, in a school based on shared values and goals, teachers' responsibility is limited by their shared responsibility for developing students and ensuring the effectiveness of that development. This brings us to the organisation that creates the conditions for learning: the school. School leadership has primary responsibility for shaping and operating this organisation. This topic is discussed in the following two chapters.

7. LEARNING IN SCHOOL, SCHOOL AS LEARNING ORGANISATION

I defined the research concept in Chapter 2 and detailed the role of schools as organisations under point 2.2. I made a statement there that schools that can optimize the learning environment for students to gain the competencies that are inevitable in the 21st century are learning organisations. (It does not mean that all schools would be learning organisations. I also do not state that the learning organisation would be the only organisational form that is able to develop students' capacities. I state the learning organisation model, as its core value is learning, fits best to develop those skills for students necessary in the knowledge/learning society.) The learning organisation – as the previous chapters dealt with the 21st-century skills of students, the relevant environment of developing students' competencies) – needs attention, while it is the construct that school leadership should build up to provide high-quality possibilities for student learning. When we want to identify the school leadership competencies, we must deeply understand what school leadership has to do and what it has to carry out. Building up a school as a learning organisation is a crucial leadership task and responsibility.

The first part of this chapter introduces the noun of a learning organisation and gives an example of its application in education. The second part of the chapter provides insight into the learning organisation model for schools developed within the framework of the Mentor Network 2.0 and, lastly, provides evidence that schools acting as learning organisations organize the teaching and learning process differently compared to those that show less capability to function as learning organisations.

This is the final detour before we define the competencies of school leadership. As with Chapters 5 and 6, this detour brings us closer to answering the fundamental research question. In the diagram presenting the research concept (Figure 1), this is the organisational level. To define the competencies necessary for successful school leadership in a knowledge society, we must understand what kind of organisation — i.e. what kind of school — can optimise learning for students. From this, we can deduce the capacities that leadership must possess to create, develop, and operate such a school.

7.1. Learning science and school in the knowledge society

The transition from industrialism to an information (or knowledge) society and thus the transition from an industrial to an information/knowledge economy reshapes the world of learning and the school. In this "new world", the economy is much more based on the production and distribution of information than on the production and distribution of tools and objects (*Drucker*, 1993, 182). If we connect this with *Fukuyama's* (1995/1997) interpretation of trust (trust functions as a productive force in the economy) or *Florida's* (2002, 2005) theory of creative economy (the role of talent, technology and tolerance in the economy and the increase of competitiveness), then the closed, submissive, prescriptive approach and model of schooling becomes apparent; the effective interpretation of learning in this model is outdated. This approach is strengthened by *Inglehart et al.'s* (2002) value research, which concluded that in a society built on knowledge and creativity, rationality and tolerance/trust as values go together. Hence, it can be observed that an open and inclusive culture is closely connected to economic development/enrichment, with natural consequences for the school, one of whose key roles is to develop the competencies that enable individuals to enter the world of work.

The abovementioned changes (described in more detail in Chapter 5) significantly restructure the link between work and learning. The labour market tends to define competencies more and more, rather than (or instead of) the qualifications required of a candidate for a particular position or responsibility. At the same time, the roles of the individuals, their tasks and responsibilities also increase regarding the improvement of their own preparedness. As a result, the role of the sector – that enables the preparation of individuals and supports their learning and thus forms a bridge between the individual and the world of work – also changes.

These issues described above lead to the latest findings of learning science, which show the necessary transformation of schooling. The following section – based on *Sawyer* (2008) – provides a brief overview of how the transition process affects the concept of schooling.

The present form of schooling emerged in the era of industrial society, and it became widespread in the early 20th century. Education, as a subsystem of society, became one of the most extensive and most bureaucratic systems. At the time of its emergence, no deep, sound knowledge of learning was available on which school education could have been based. In many respects, at that time, schooling was built on experiences gained so far,

common sense and presuppositions that had never been examined, and therefore, had not been proven either. According to the schooling model – termed by Sawyer as standard:

- The basis of schooling lies in the acquisition of facts, rules and procedures.
- The amount of the above-mentioned reflects a person's academic knowledge level.
- Knowledge is owned by the teacher, whose task is to pass it on to learners.
- Learning goes from simple to complex, but the education experts define what is simple/complex, and not the child's learning method or style.
- The success of schooling can be measured by the level of knowledge acquired through these facts and procedures (*Sawyer*, 2008, 45–47).

However, nowadays, carefully selected facts, rules, and procedures are not enough to adjust to the world of work and be successful in the workplace, because the complexity of work itself has grown radically across all kinds of vocations and professional fields. A perfect example of this, for instance, is that while 20 years ago, using a computer was the prerogative of only a few people, mainly in highly qualified jobs, today, it has become a common skill requirement.

A new learning model can be formed with the help of learning science and built on recent research findings. The key elements of this, following the concepts of Sawyer, are the next ones:

- A deeper and conceptual understanding of learning, instead of concentrating on superficial facts and procedures.
- The importance of coherent, integrated, and correlated knowledge, as opposed to knowledge segmented into various academic subjects.
- The importance of contextualized and authentic knowledge, as opposed to the application of exercises lifted out from the classroom context.
- The importance of cooperative rather than isolated learning.

A relevant learning environment, according to the principles described above, can be characterized as follows (from the view of the learning science):

- Learning tailored to the target group. All children can gain experience through learning experiences that are customized to them.
- The availability of a wide variety of types of knowledge sources. The learners can access the necessary knowledge anytime from various sources, books, the internet, and experts worldwide.

- Joint group learning. The learners study together, where they work jointly on authentic and exciting projects.
- Testing deeper understanding. Tests must assess the deeper and conceptual understanding of learners, and they must be able to reveal to what extent learners' knowledge is integrated, coherent, and contextualized. (*Sawyer*, 2008, 58)

The two learning models described above (the standard and the new model) are closely tied to the economy in the sense that they both strive to form and operate a kind of education process that considers the expectations of the economy. The relationship between the economy and the system of learning is complex and characteristically indirect; the knowledge, values, and way of thinking of the given era greatly influence this correlation.

Sawyer's new learning model is closely connected with the basic principles of learning organisations. A deeper understanding of learning and the integration of knowledge content requires systems thinking, applying theoretical patterns, and personal leadership. Without it, a new way of thinking about learning, the role of the school, and the practice that follows this would be impossible. In the "new school", studying together in groups plays a key role, which is also a component of learning organisations. Behind the components of Sawyer's model, there are outlines of values that can be well defined (the importance of knowledge, cooperation, performance and quality, creativity and innovation, etc.), which presume the existence of a shared vision for the future. These are closely related to the model of 21st-century learner competencies.

In studying the operation of the school, Ken Robinson came to conclusions similar to Sawyer's. He said that 'the new forms of work necessitate more and more expertise, creativity and innovation. New technologies, for example, require entirely different abilities than the industrial economy' (*Robinson*, 2001, 18). In his interpretation, the school has to change fundamentally and should go through a transition to organic development due to the changes. Robinson's statements reflect on technological changes (the digital era) and creativity and collaboration, which are core components of students' 21st-century skills. The school's organic development relates to the concept of a learning organisation.

In many respects, there are consistent results between the revelation of employers' opinions and examining the school and its desired change from the viewpoint of learning science. Here, I would like to highlight some elements from *Positioning the Teaching Profession and*

the Modernisation of School Leadership (translated by *Nyírő*, 2003) that are essential to the topic.

In 2001, the European Union asked the organisations of employers to examine the possible ways of doing away with the shortage of teachers in education systems and, additionally, to see how students could be better prepared for integration into the world of work. I shall quote three of their conclusions:

- The environment for 21st-century employers has changed radically. The rapidly changing work needs learning and adaptation, which in turn require the development of personal (e.g., taking responsibility, autonomy), practical (e.g., problem-solving, ICT applications), and social skills (e.g., communication, cooperation), in addition to the solid basic skills for this, lifelong learning provides the framework.
- Schools often do not operate as learning organisations, which creates a considerable contradiction in the case of an institution that 'specialises in learning.' Decades-old routines characterise their operation, career opportunities are scarce within the organisation, and embracing and applying new technology is slow. Therefore, it would be necessary to modernise the content and methods of school learning, as well as the school organisation. The latter should operate as an open, dynamic workplace that challenges its actors and provides opportunities for growth for them.
- School leadership has a significant role; hence, significant attention should be paid to selecting its leaders, training, and evaluation (*Nyírő*, 2003, 63–76).

The employer organisations defined the positioning of the teaching profession and the modernisation of school leadership as the two vital elements of the possible solution. The former emphasizes the change in the teacher's role and the emergence of facilitator and mentor roles in learning leadership. In the case of leadership, the focus has to be on creating opportunities and conditions and on the strategy of communication with stakeholders about the school's increasingly complex tasks. All this presumes the emergence of considerable school autonomy in the integrated application of goals, tasks, and resources (*Nyírő*, 2003, 68–70).

The employer organisations' expectations are once again in apparent harmony with the learning organisations' basic principles – see, for example, the emphasis on a shared vision for the future and, on complexity, or on group work and the changed functions in learning leadership.

Those tendencies connected to job seeking and successfully taking up a role can be mentioned among employers' requirements. The former static approach is replaced by a dynamic one that connects to the rapid and high-complexity changes characteristic of information/knowledge societies. The change is well-represented in the comparison of the two approaches:

- *Static approach*: There is a need for a professional with a given degree to take up a role (e.g., the school is looking for an English and history or mathematics and physics teacher). The individual is also seeking a job that matches their qualifications. (I have expertise in a field and go where needed.)
- *Dynamic approach*: The organisation is looking for a professional to handle a set of tasks for which well-defined competencies are required. During the search, it is sensitive to how job seekers' personal competencies can be best utilised within the organisation. In other words, it is open to reforming and altering its expectations (e.g., the institution is looking for a teacher who would teach English and history, and has experience in project-based teaching, can work in a team, and can take responsibility for his/her work). During a job search, the individual pays attention to the tasks, needs, and problems that occur in the organisation and where he/she would be able to contribute the most to his/her work (added value) by considering these.

It is apparent that the two approaches require fundamentally different strategies and implementations from stakeholders, and that the dynamic approach is based on systematic thinking.

7.2. Uprise of the learning organisation model

The theories related to learning organisations are closely connected with the concept of learning and our thoughts about it. It can be taken as evidence that the activity (learning) of the individuals that make up the organisation is a necessary but not satisfactory condition of a learning organisation coming into existence. In other words, there is no learning organisation without individual learning, but the learning of those who belong to a given institution does not, in itself, mean that the given company or institution operates as a learning organisation. We can interpret the notion starting from a general one, and then analyse its application to the school.

The notion of learning organisations is inseparable from organisational learning but is also distinguishable. The latter can be interpreted as the sum of those activities that serve as the collection of experiences related to organisational operations, reflections, and the organisation's development. In this interpretation, organisational learning, its expanse over the whole organisation, its frequency, high quality, and its form that encourages and synchronises individual and organisational learning, lead to the formation of the learning organisation. The latter is not a goal or a result but a state, process, or the form of existence of the organisation (*Senge*, 1994/1998, XV).

We see organisational learning as a notion that lays the foundation for the learning organisation. Organisational learning may be regarded as the mediation of habits and norms, which, as such, can be regarded as old as learning in groups. More specifically, we can mention *Argyris and Schön's* (1978, 1996) interpretation of single-loop learning (correction of unexpected results, errors), double-loop learning (reflecting the dynamic, mutually influential relationship between processes, activities carried out in order to achieve goals), and deutero (or strategic) learning (which aims at learning how to learn). The latter is presented by *Visser* (2007) in a deeper way that leads back to its roots.

7.2.1. Learning organisation model from Senge

The creation of the notion and the system of learning organisations can be attributed to Peter M. Senge. Based on the experience gathered in leadership training, the MIT researcher concluded that the new direction of company leadership may be the concept of learning organisations. During the development of the model, managing the inevitable decline after the initial intensive, burning interest (the effect of the new) played a key role.

Beyond the knowledge of the nature of changes and the successive models of company leadership, Senge also relied on the results of learning at the workplace, which more or less already had a history at the beginning of the 1990s (*Weston*, 1993; *Michael*, 1973). For him, this served as a basis and, at the same time, confirmed his definition of the main characteristics of learning organisations and drove participants and their thinking to create inspiring and new approaches (*Senge*, 1994/1998, VII-XII).

During his work with company leaders, Senge experienced the challenges posed by globalism, the acknowledgement of the limit of resources in a broader context, the increasing influence of multinational corporations on the market, the increasing uncertainty that can be

observed in business, etc., made it necessary to fundamentally renew company leadership. Therefore, it can be said that the renewal of leadership inspired the birth of the concept of learning organisations. All this, including the roots of its origins, is an important characteristic of the model, which did not simply become one of the new approaches to leadership but required a different way of thinking and a different organisational structure. It might be due to this approach that the model did not disappear in one or two decades; in fact, the transition from industrial to knowledge/information economics and the growth of the importance of lifelong learning only increased its significance. In our world, which has only shown increased speed and complexity since the development of the model, it may also provide an opportunity for sustainable development and operation in the most diverse types and sizes of organisations.

Senge defined five co-related characteristics of a learning organisation, the joint existence of which could guarantee the model to be sustainable and functioning with reasonable effort. Next, I shall briefly describe the key principles of the learning organisation, as outlined by Senge.

The essence of *systems thinking* is to see and understand things and phenomena globally, together with their correlations, and to search for long-term impacts. *Personal mastery* involves leading ourselves, reformulating our thoughts about our future, and looking at the world with patience and an objective mind. Under *mental models*, we mean beliefs in principles, convictions, and stereotypes that have a decisive influence on our behaviour and operations. *Shared vision* means that the members of the organisation have a definite, clear, and attractive vision, which reflects a strong cohesion among the members. Therefore, it has a solid catalytic impact. The essence of *team learning* is to be found in collective thinking and tuning into one another (*Senge*, 1990/2006, 6–11).

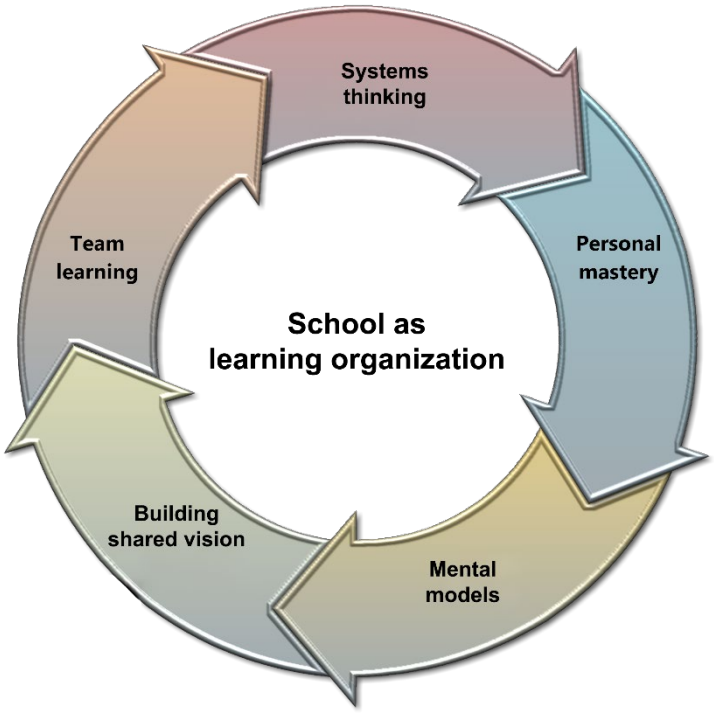


Figure 23: Senge's learning organisation model, own editing

Senge et al. (1994, 484–492) provide information on how the learning organisation model can be adapted in education. Here, I give a few demonstrative examples regarding the school adaptation of Senge's model. *Systems thinking* helps us see the school as an organisation in its entirety, understand the individual and team processes, and the endless complexity of learning (integrating school subjects and learning processes in order to provide students with applicable knowledge; the correlation between school objectives and daily operation, its impact on individuals and groups, etc.). The concept of *personal mastery* can be grasped through what the institution does for the students' and employees' self-awareness to grow, whether and how it is capable of sustaining and increasing students' commitment to learning, whether and how the institution assists its members in creating a shared vision and in clearly identifying and reaching their objectives. If we examine *mental models* in the world of schools, we realize that school behaviour rules reflect an organisational way of thinking compiled by individual thoughts, or, if we wish to give another example, they reflect what is considered knowledge and accomplishment. At an institutional level, this *shared vision* can be manifested in the documents defining school strategy and operational content (it is

called the pedagogical program in Hungary[51]). Considering that objectives must reflect the value system of schools if an institution wishes to produce a document that affects its daily operation, it is indispensable to have a mutual agreement on the core values that can later serve as a basis for setting objectives. Regarding *team learning,* we can articulate the following questions: Is it the individual student or the teams of students that form the fundamental element of school learning? Which one and why? (*Senge*, 1990/2006; *Senge et. al.*, 2000)

7.2.2. Results and critics of the learning organisation model

Roughly two decades have passed since Senge's concept of learning organisations was introduced. The time that passed has brought much experience. The fundamental question is whether it fulfilled the hopes related to the model. Was the model able to significantly increase the adaptability and effectiveness of organisations through the high-quality implementation of organisational learning? The answer will be formed based on the multifaceted, analytical handbook released in 2009 by a non-profit organisation, the European Consortium for the Learning Organisation. In one of the studies in this handbook, Belet concludes that implementing the model of learning organisations and first-generation applications was mostly unsuccessful, and the changes generated by them were superficial. He mentions among the experiences that even though the organisations that applied the model of learning organisations made efforts to organise and support individual and group learning. They introduced some tools which served organisational knowledge management. These activities and actions, however, typically did not expand to the whole of the organisation; they were not systematic, and the most frequently emphasised and mentioned problem was that no new model has emerged that focuses on the support of learning. The author mentions three reasons: a) The learning organisation model was theoretically developed and sparked interest; however, its construction and practical implementation ran into many difficulties. b) The implementation requires a profound change in leadership culture and practice. c) A new power distribution, a new decision-making system, and a new

[51] The Hungarian law on public education prescribes that schools must define their objectives in their pedagogical programs.

way of leading people are essential. (*Belet*, 2009, 119–121). As part of the Mentor Network 2.0 programme, the concept and system of activities of the R&D project were created by considering these experiences in the case of the model developed for the schools.

We saw the genesis of the concept of the learning organisation model rooted in the necessity of changing leadership styles, views, and approaches. The application of the model needs a strong commitment to change and acceptance of sharing responsibility in leading and managing organisations. Based on *Senge et al.* (1994), the examples I listed above make it possible to conclude what leadership competencies would be essential to lead a learning organisation, including system thinking, strategic thinking, empowering, and a rational level of risk-taking.

7.3. Research on the learning organisation in education

Senge's model clearly shows the strong relationship between the learning organisation model and its leadership. Next, I summarise some educational research that demonstrates the connection between these fields.

7.3.1. The Leadership for Organisational Learning and Student Outcomes Project – Australia

The learning organisation research related to schools could be regarded as the most significant in Australia today. The goal for the longitudinal, considerable sample research (LOLSO, Leadership for Organisational Learning and Student Outcomes) launched at the beginning of the turn of the millennium by *Mulford et al.* (*Mulford* & *Silins*, 2003; *Silins, Zarins* & *Mulford*, 2002) was to find a connection between organisational learning, school leadership and academic performance, to build the interpretation of learning organisations in a school context on empiricism, and to support school development reforms built on facts. 50 South Australian and 46 Tasmanian secondary schools participated in the four-phase research; approximately 3500 (Year 10) students and 2500 teachers and school leaders filled in questionnaires (the data collection carried out in the first phase was repeated in the third phase, with Year 12 students participating). In order to secure and diversify the conclusions, the quantitative research was augmented with qualitative examinations using the triangulation method (good practice, case studies). The researchers examined the hypotheses

about the learning organisation with confirmatory factor analyses. Building on the qualitative and quantitative analyses, practices to improve the professional leadership of the school were suggested.

Based on interpreting Senge's model in a school context and widespread analysis of available literature, *Mulford et al*. defined seven characteristics of the learning organisation: situation analysis, vision for the future and goals, cooperation, initiation and risks, supervision, acknowledgement and confirmation, and continuous professional development (*Silins, Zarins & Mulford*, 2002, 25–27). Processing the data with factor analysis confirmed one factor (organisational learning) and four of its components (an atmosphere based on trust and cooperation; initiation and risks; a vision for the future, which is common and followed up on; professional development) instead of the seven factors based on the literature analysis (*Silins, Zarins & Mulford*, 28–29). The factors derived from data collected in South Australian schools were validated using data from the Tasmanian collection. The indicators in Table 8 show the validity of the data collection.

Table 8: The factors of the LOLSO project and its goodness of fit indices

Goodness of Fit Indices for 1-Factor, 4-Factor and 4-Factor Nested Models			
Criteria	*1-Factor Model*	*4-Factor Model*	*4-Factor Nested Model*
RMSEA	0.088	0.085	0.070
GFI	0.92	0.92	0.95
AGFI	0.91	0.91	0.94
PGFI	0.83	0.82	0.80
CFI	0.90	0.91	0.94
RMSEA improvement reflected by a lower value GFI, AGFI, PGFI, CFI improvement reflected by a higher value			

In another study analysing LOLSO results from the perspective of school reforms aimed at improving academic performance, *Mulford and Silins* (2003, 177–183) made the following remarks.

Australian secondary school teachers saw the concept of organisational learning in an atmosphere built on trust and cooperation, which defines a common vision for the future.

During the realisation of the goals that can be derived from this, initiation and risk-taking are present in a natural way, as well as continuous development, which supports carrying out the activities. The community-focused leadership style and practice that support organisational learning acknowledge the organisation's work and draw on distributive and transformational leadership styles as models. Based on the statistical analyses, the following were identified as students' most crucial non-academic knowledge: thinking about the teacher's work (the mode of teaching, talking about the tasks, the presence of ambitious teacher expectations); learning self-image (self-confidence, satisfaction with one's performance and marks, etc.); participation (compulsory and free activities); commitment (identifying with the school, the point of learning, good relationship between teachers and students). Non-academic results bring the teacher's work to the forefront because they significantly influence students' academic performance, even more so on the quality of their learning. Although indirectly, non-academic results (except for participation) affect students' school performance unequivocally. The researchers revealed the complex system of connections between the two exact types of learning and environmental factors. The research confirmed that leadership indirectly influences learning outcomes. Leadership impacts teachers' activities of organising and leading learning (classroom work and processes) through the formation and development of the conditions of organisational learning, which directly influences students' performance. The validity of applying transformational and distributive leadership was also confirmed here.

Figure 24 summarises the factors that influence organisational learning and students' performance.

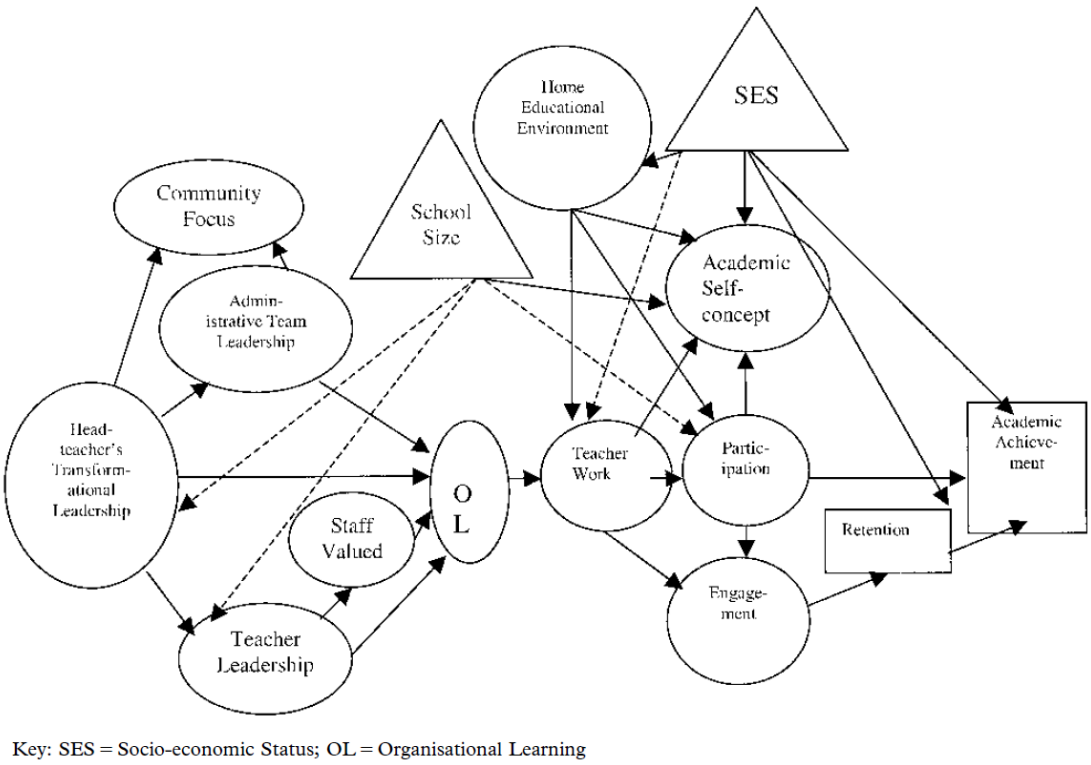


Figure 24: Organisational learning, learning outcomes and the system of connections of the factors that influence these;
Source: Mulford & Silins (2003, 185)

After introducing the goals, methods, and main results of the LOLSO project, I consider it essential to strengthen two features and results of the research project. Firstly, research and development are accompanied by each other. The research aimed not only to uncover the relationship among the three factors (organisational learning, school leadership, and student achievement) but also to support the use of research results for school improvement. This approach was applied in the different research phases discussed in the dissertation. Secondly, the research provided firm evidence regarding the effect of school leadership on student academic (and non-academic) performance by influencing the teachers' way of thinking, their behaviour, and – through these factors – their classroom activities. The commitment towards the school's vision and goals, collaboration, an inspiring climate, etc., belong to those factors initiated by the leadership. Thus, it is possible to state that high-level organisational learning, when a school functions as a learning organisation, is established by the school leadership, which follows the values that belong to the core of the learning organisation model. They apply such leadership styles and methods (transformative leadership, distributive leadership), which successfully influence teachers' teaching

strategies and classroom practice. The LOLSO project provides evidence about the relationship between school leadership and organisational characteristics and their influences on teachers' classroom activities, applied teaching methods, etc. Later, I will analyse the relationship between the organisational characteristics of schools – their capacities to act as learning organisations – and the teaching methods the teachers apply in a Hungarian sample.

7.3.2. The Leadership in the Processes of Organisational Learning in Schools – Czech Republic

The second research project we want to refer to can be even more important regarding the role and capacities of school leadership. *Pol et al.* – at the Masaryk University, Brno – launched a longitudinal research titled Leadership in the Processes of Organisational Learning in Schools (LPOLS) in 2010–2012, whose goal was to interpret the definition of organisational learning and to shed light on its school specialities in Czech schools and to develop an integrated model related to school organisations based on all this (*Pol et al.*, 2011). The researchers recognized rapid changes in the environment and the school's adaptation to them. Their starting point was organisational learning, identifying it as a combination of processes and activities that lead to the development of the organisation through the learning of individuals and groups (*Pol et al.*, 2011, 148). The researchers defined two ways to create a learning organisation: the first focuses on associates' intensive and continuous development (*Palán*, 1997, as quoted by *Pol et al*., 2011), which naturally aligns with the formation of an organisational framework of learning. This process could be relatively quick, but, at the same time, there is no guarantee of becoming a learning organisation. The researchers defined the reformation of the organisational culture as the other way (*Bedrnová, Nový et al*., 2002, as quoted by *Pol et al.*, 2011), making it learning-centric, which is more difficult but simultaneously guarantees the desired transformation more (*Pol et al.*, 2011, 150–151).

Based on the widespread analysis of the literature and its interpretation for the school, the researchers defined nine characteristics of organisational learning. It played an essential role in their interpretation that they did not only include teachers as the participants of organisational learning but also other associates who work in different fields at the school, students and parents, and all other actors who, by participating in school processes, could

have had an impact on the process of organisational learning as well. *Pol et al.* defined the following characteristics (2011, 155, based on Table 1):

- the deliberate, decisive (purposeful and targeted) style of learning
- the expansion of learning to the whole of the institution, at least to all of its important units
- learning is defined by the school culture
- the identifiability of the driving force
- the creation and sharing of knowledge
- learning happens within the organisation and about the organisation at the same time
- leads to change in quality (of teaching and learning)
- all actors are part of the process (not only the teachers and their leaders)

If we compare the four factors of the LOLSO Project with the nine characteristics defined in the LPOLS Project, it can be observed that Mulford et al. focused on the learning organisation while Pol et al. focused on the characteristics of organisational learning. This may account for the differences between the two lists.

Similarly to their Australian colleagues, in the second phase of the Czech project, the researchers (*Pol et al.*, 2013) carried out a large-scale, representative data collection in two regions of the Czech Republic. 52 primary schools were involved in the study, and the questionnaires were filled out by 1003 teachers and 117 leaders (directors and deputy directors). The research was built on the coordinated application of qualitative and quantitative methods, and triangulation was used once again to validate the data. At the same time, the qualitative data collection (three case studies based on in-depth interviews) served as the groundwork for the questionnaire-based research in the representative sample.

The goal of the empirical phase was to map the processes, leadership, and support of organisational learning. The researchers used *Verbiest et al.'s* (2005) Matrix Professional Learning Community, whose questions are quoted literally based on *Pol et al.'s* study (2013, 189):

- *"What is the content of organisational learning in today's schools (deepening)?*
- *In which groupings does organisational learning in school take place (broadening)?*
- *How are the processes of organisational learning managed, and what stimuli and barriers do they have in school (anchoring)?"*

The researchers focused on four fields in the qualitative study, which define the questionnaire-based study: (1) the motives of organisational learning; (2) the fields of organisational learning; (3) leadership strategies; (4) factors which support and block organisational learning. Based on the case studies, the researchers identified nine fields and six supporting/blocking factors of organisational learning (Table 9, *Pol et al*.). Pol et al. concluded that supporting and blocking factors can be the same depending on their context. Their results are in harmony with Sambrook and Stewart's research, which investigated the relationship between lifelong learning and HR – focusing on those factors that support or block organisational learning – in seven European countries, selected four organisations per country having 500–1000 employees. They also found that there are key factors in the organisation which – depending on their functions and operation – can support or hamper organisational learning *(Sambrook* & *Stewart*, 1999).

Table 9: The fields, supporting and blocking factors of organisational learning in the LPOLS Project (own edition based on Pol et al., 2013, 191–192)

The fields of organisational learning	*The factors that support and block organisational learning*
School pedagogical programme	School leadership
Choice and use of teaching methods	Collaborative culture
Teaching of children with special educational needs	Shared vision
Risk-inducing behaviour by pupils	Material and organisational capacity
Pupils' academic results	External support
Cooperation with parents	Individual capacity
The use ICT	
Choice and use of textbooks	
Use of in-service training experience	

In the questionnaire-based data collection, the researchers asked about organisational learning indirectly. The statements were formulated in such a way that they could define two indicators with them: one of them shows in what way and to what frequency, and how much in an organised way the school deals with the different fields of organisational learning; and how systematic and organised is the organisational learning-supportive activity of the school

leadership. Furthermore, it was also examined what levels (individual, formal or informal groups, the whole of the organisation) the people involved find definitive in organisational learning (*Pol et al.*, 2013, 190–192). The first results of the data analysis can be summarised as such:

- Teachers and leaders both detected the process of organisational learning positively. They essentially judged the role of leadership as learning support and its systematic nature similarly. There was a significant difference between the two groups' perceptions (teachers and leaders) in only a few fields of organisational learning: the school pedagogical programme, cooperation with parents, and the use of the experience of in-service training.
- There was a significant difference between the two groups in terms of the definitive levels of organisational learning. While teachers first and foremost mentioned the individual level and informal groups, leaders argued that formal groups and the level of the whole of the organisation were definitive.
- Lastly, they concluded that leadership and a vision for the future definitely support organisational learning, but, at the same time, teachers' personal capacity, identifiable on an individual level, did not prove to be significant (*Pol et al.*, 2013, 192–196).

The LPOLS research clearly proved the relationship between school leadership activities and their vision regarding the school and organisational learning. Both school leaders and teachers recognized organisational learning positively and expressed that they considered the learning necessary for the core business of the schools. The research deepened the knowledge of what kind of leadership activities can support organisational learning and, through that, more effective teaching and learning in schools. Analysing leadership activities helps us identify those competencies more precisely, pushing schools to act as learning organisations and so provide better learning environments for their students.

Lastly, here are some concluding remarks based on the two longitudinal projects, which show the application and applicability of the learning organisation as a model and practical approach in the world of schools:

- For both research programmes, the world beyond an education system served as a starting point; usually, this was the knowledge society, its fast and turbulent changes, and the deduction that the world of schools must adapt to this. This adaptation needs

a clear vision from the leadership, continuous attention to the processes inside and outside the school, and a fine-tuned approach to managing changes.

- Both research programmes were built extensively on the results of earlier organisational research. Senge's model appeared as a prominent source, and the referred research programmes paid considerable attention to leadership. This way, both research projects contributed to defining the relevant school leadership competencies.
- The research projects significantly increased the evidence-based knowledge concerning what a learning organisation can mean from a practical and everyday perspective and what characterises its operation. These facts deeply support understanding both the organisational and leadership processes and activities that help a school become a learning organisation.
- The LOLSO Project contributed deep and detailed knowledge about the functioning of those factors which create student knowledge as a result of their complex interaction and, at the same time, it is a key result that during the identification of this knowledge, the focus was not solely on the acquisition of academic knowledge. In addition, it provided unequivocal evidence of leadership and operating as a learning organisation, impacting students' academic performance. This fact is also crucial for my research, as the conceptual framework – introduced in Chapter 2 (see Figure 1) – assumes that the learning school is the optimal organisational form for providing a high-quality learning environment for students.
- The LPOLS Project confirmed the model-level (or theoretical) presumptions about leadership and the effect of a vision for the future on the creation of a learning organisation, and it revealed such differences between leaders and teachers in terms of thought patterns, which bear a significant concern for the development of the organisation.

7.3.3. Learning Organisation Model for School (LOM4S) – an RD-based model for students' success

The third project phase I want to introduce here is Mentor Network 2.0, which was carried out in the frame of a nationwide project in Hungary that aimed to develop the quality of teacher training in all regions of the country.

Figure 25 draws up the relations and the impact system which appear in the knowledge economy and knowledge society as a consequence of the interbounded relation among the higher education (teacher training, 1st level); process and effectiveness of the public education (2nd level); world of labour of the knowledge society (3rd level). Our approach is based on teacher training, and demand-driven CPD influences quality at the personal (teacher) and organisational (school and leadership) levels.[52]

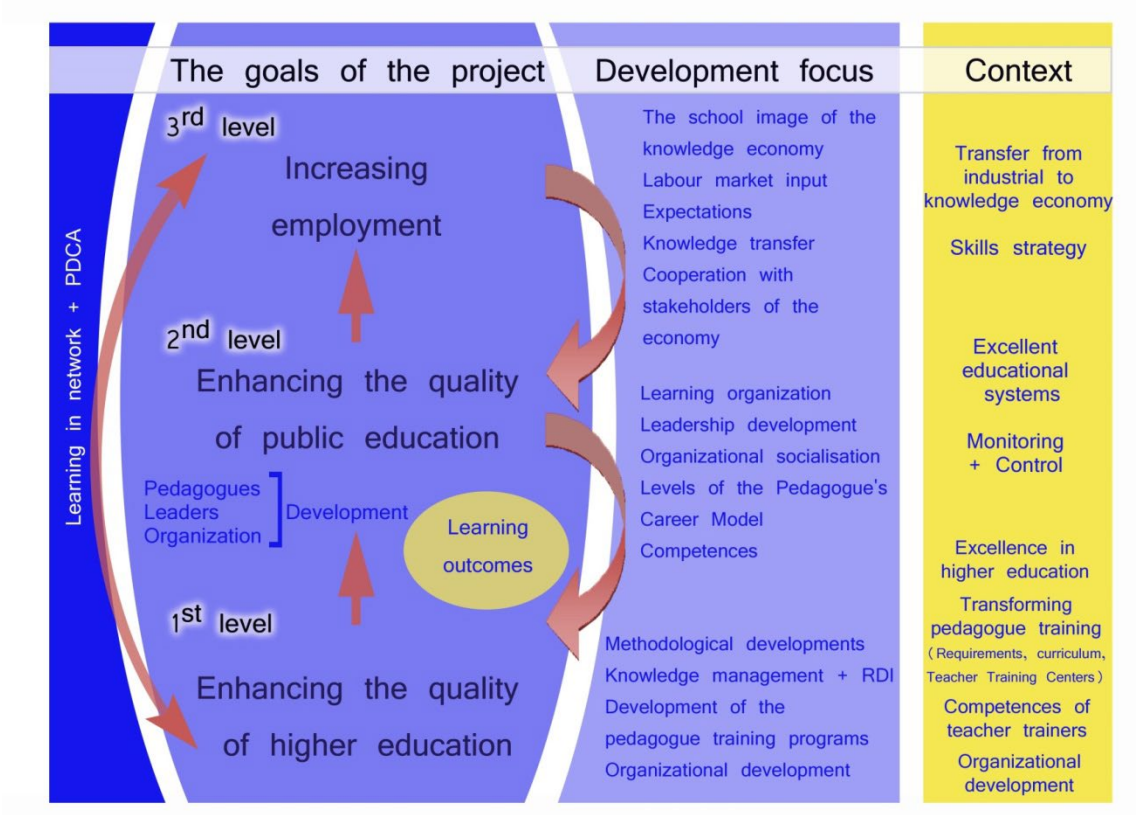


Figure 25: The concept of renewing teacher training – University of Szeged

The third research phase – the Learning Organisation Model for Schools – belonged to the 2nd level of the project. I described the development concept of the new learning organisation model in Chapter 4 (see Figure 10). The model was based on three pillars: the

[52] I took part in the conceptualization of the project and was responsible for some elements of that including the development of a new learning organisation model for schools.

previous learning organisation models; the leadership concepts/models which proved that school leadership is the second most crucial factor in enhancing students' competencies; and a complex diagnosis of the schools from which we originated the reference point for schools and assessed their fitness to the optimal organisational behaviour of school as learning organisation, called learning organisation profile for schools (later: LOP4S). (See Figure 26)

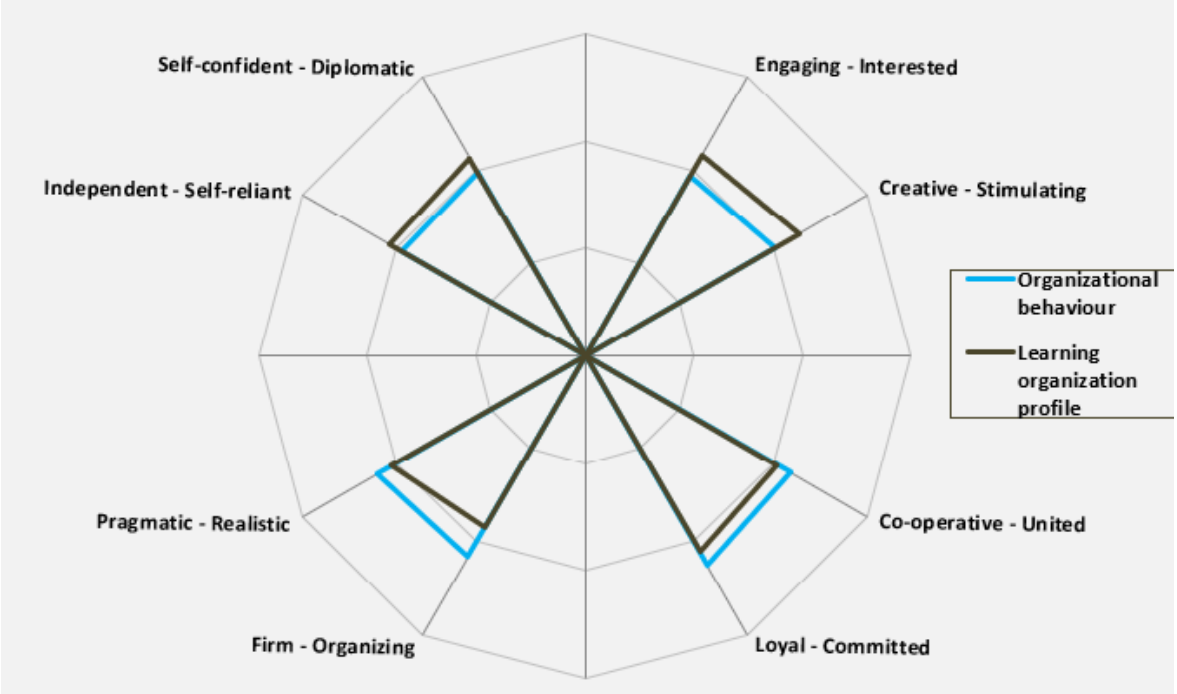


Figure 26: Learning organisation profile for a school based on organisational behaviour
Notes: The profile is based on the INRO/RDA behavioural competency model. See details in Appendix 1

The LOP4S was developed through several professional consultations and workshops and built on Hungarian and international knowledge and experience. The expert group, comprising researchers, consultants, and practising school leaders, defined the features that characterise the behaviour of schools that function as learning organisations. (This means that the model was based on behaviour-scientific principles, dealing with the behaviour of the individuals and the organisation jointly, thus examining their correlation). The organisational behaviour was described using 140 statements, the content and approval of which were reached through consensus among the experts. Here are some examples:

- The main pillar of organisational operation and culture is trust.

- The organisation has a written vision statement, which was drawn up and is reviewed collectively.
- Teachers take responsibility for their own development.
- Self-organized student groups and professional teams operate within the organisation.
- The organisation is characterized by systems thinking.
- The critical examination of current practices and continuous learning and development forms are an integral part of school culture.
- Individual student paths are also monitored, and to this end, the school assumes a shared responsibility with the players involved in successful learning.

Based on the statements describing the learning organisations' behaviour, the LOP4S was drawn up in the INRO/RDA model, which served as a reference point for comparing the institutions' learning organisational capacities (see an example in Figure 26).

The entire staff of the individual schools, or at least 10 opinion-leader teachers (including the formal leadership), filled in the INRO/RDA questionnaires, and the results were standardized. That makes it possible to recognise these results as the features of the given school. Then, we deducted the standardized INRO/RDA values for each school from the LOP4S value, which helped us determine how much the organisational behaviour profile of each school matched the LOP4S (fitness variant) or to what extent it deviated from it. The institutions were ranked in three groups according to the scale of their match (low, medium, and high deviation from the LOP4S). We examined the differences between HlES and MlES schools regarding organisational behaviour, as measured by the INRO/RDA questionnaire.

We rated the 82 schools into three equal-sized groups based on how much their organisational behaviour fit the LOP4S (fitness score). The level of deviation can be low, medium, or high. We examined whether the fitness level mirrors the relation to the organisational culture and behaviour. Applying different statistical methods (ANOVA, multiple comparisons, homogeneous subsets), we found that the patterns of organisational culture based on the CVF are very similar, independent of whether schools belong to the low, medium, or high deviation group.

Carrying out the same investigation, we can point out that, except for the leading-operation dimension of the INRO/RDA, all other dimensions and subsets of the model show significant differences. Using the holistic approach of the INRO/RDA we can state that those schools

whose profiles fit the best to the LOP4S characterise – comparing the schools which have high fitness scores, which means they differ strongly from the LOP4S – higher level openness, extraversion; they are more dynamic. However, all schools are more relation-oriented than content-oriented, and low-fitness-score schools have a slightly stronger content orientation. Lastly, these schools show greater openness, self-confidence, and target-orientedness, expressing independence and a higher level of dynamic change, which can be the characteristic features of a learning organisation operation if we compare them to institutions that fit the profile less.

The identified characteristics of the organisation (openness, target-orientedness, dynamism, etc.) are in harmony with those that appeared in the LOLSO project. Thus, we also confirm the features of the learning organisation. The organisational characteristics also make it possible to form conclusions regarding leadership competencies that support developing a school towards a learning organisation. The diagnostic phase of the LOM4S allows us to identify some relevant leadership competencies. It seems pretty apparent that building an open, target-oriented, self-confident, dynamic organisation needs a leadership which itself is open, innovative, creative, future-oriented, believes in the common and shared values of the organisation etc., and owns those skills and knowledge which are inevitable for building up the defined organisation.

7.3.3.1. The LOM4S Model

The concept of my research defined a logic chain from students' competencies relevant to the knowledge society to the school leadership competencies necessary to establish a suitable learning environment for students. All "curves" I am doing aim to feed this logic chain. This is why I deal with the learning organisation in detail. The research and development programs I have analysed already (LOLSO, LPOLS) gave a firm and evidence-based background for such statements: the school leadership makes significant differences regarding the students' learning possibilities and performance; it does so through the organisation (vision, inspiration, building cohesion, inspiring and supporting knowledge creation using and sharing, etc.). The LOP4S we used in the LOM4S program also confirmed these results.

Next, I want to introduce the LOM4S model, as it will add new knowledge to the topic, and, based on the empirical research carried out in the project, I can add two elements to the

evidence. First, I will investigate whether teachers with different views about schools as LO also provide different learning environments for their students. Second, I look for evidence of whether the two school groups in our sample (HlES and MlES) would show differences in leadership and LO characteristics. The answers to these questions show whether there is a difference in the learning environment and school leadership between teachers and schools representing different levels of LO. The answer is about understanding LOM4S, so I will introduce it in the following section.

The development of the model was based on the relevant literature and related research experience, as well as the results of the LOP4S. This process led to the collection of those organisational characteristics, behavioural competencies, and organisational operational elements that characterise a public education institution functioning as a learning organisation. The finished inventory contained 140 sentences; the list was built primarily on *Senge's* (1990) learning organisation model and the big-sample empirical research *(Silins et al.*, 2002; *Mulford et al.*, 2004*; Pol et al.*, 2011, 2013). When compiling the list of statements, we aimed to describe as clearly as possible how operating as a learning organisation manifests itself in educational institutions (schools). We aimed to focus on the operation of work groups and employees' behaviour and attitudes as the building blocks of learning organisations. In addition, several descriptive statements referred to the pedagogical process and the work with students, parents, and, more broadly, the partners of the school.

Based on the revealed theoretical frameworks and the list of statements, we created a model that described the operation of the learning organisation, enabling the study of the knowledge-intensive nature and the learning organisation character of Hungarian schools. We based the research carried out during the project on this model and on the development of the study tools, which oriented the data processing, too.

When creating the model, it was equally important to examine the characteristics of the schools observable in the given moment, the organisational and individual conditions, and the development path and evolution of the organisations. The operation of the learning organisations was interpreted from these two perspectives. The created model is thus made up of two complementary models: it displays the synchronic and the diachronic approach of the operation of the learning organisation simultaneously. This dual approach makes it possible to capture the essence and strength of the operation of learning organisations on the level of institutions (schools), groups and processes within the institution, and individuals (leaders, teachers), and those organisational and individual characteristics too, which could

bear the highest significance on the knowledge-intensive operation of organisations and their temporal formations.

The operation of learning organisations from a synchronic approach

The synchronic model focuses on the institution's characteristics observable at a given moment (see the right part of Figure 27). It describes the schools' operations along six plus one factors that fundamentally determine whether the institutions are capable of effectively increasing those abilities that enable them to reform their pedagogical processes in order to raise the quality of learning and teaching (which we consider the core business of the school). The six factors (which can be interpreted both on an individual and institutional level) are the following: (1) shared values, vision for the future, and goals; (2) knowledge sharing; (3) taking responsibility, cooperation, trust; (4) innovation, initiation, risk-taking; (5) network and partner connections; and (6) leadership. According to the model, the status and operation of these factors can effectively move forward or intensely block (7) classroom processes, improve the quality of learning and teaching, the ability to solve learning organisation-related problems, and the effectiveness of pedagogical work, which most often defines the competitiveness of schools as well. The seven factors and their relation to each other result from theoretical consideration. The sentence list, which described the behaviour and operation of a school as a learning organisation, was grouped into seven factors[53]. This way, the model expresses the core business/core process of the school – teaching and learning, factor 7 – which is at the centre of the synchronic model. It is encompassed by those factors that influence the organisational capacities of the school (factors 1 to 5) and that determine the learning environment. These are interrelated, synchronized, and systemized by factor 6, the leadership.

[53] I did the grouping together with one of my colleagues and the research group took common decision about the final subdivision of the sentences into the defined factors.

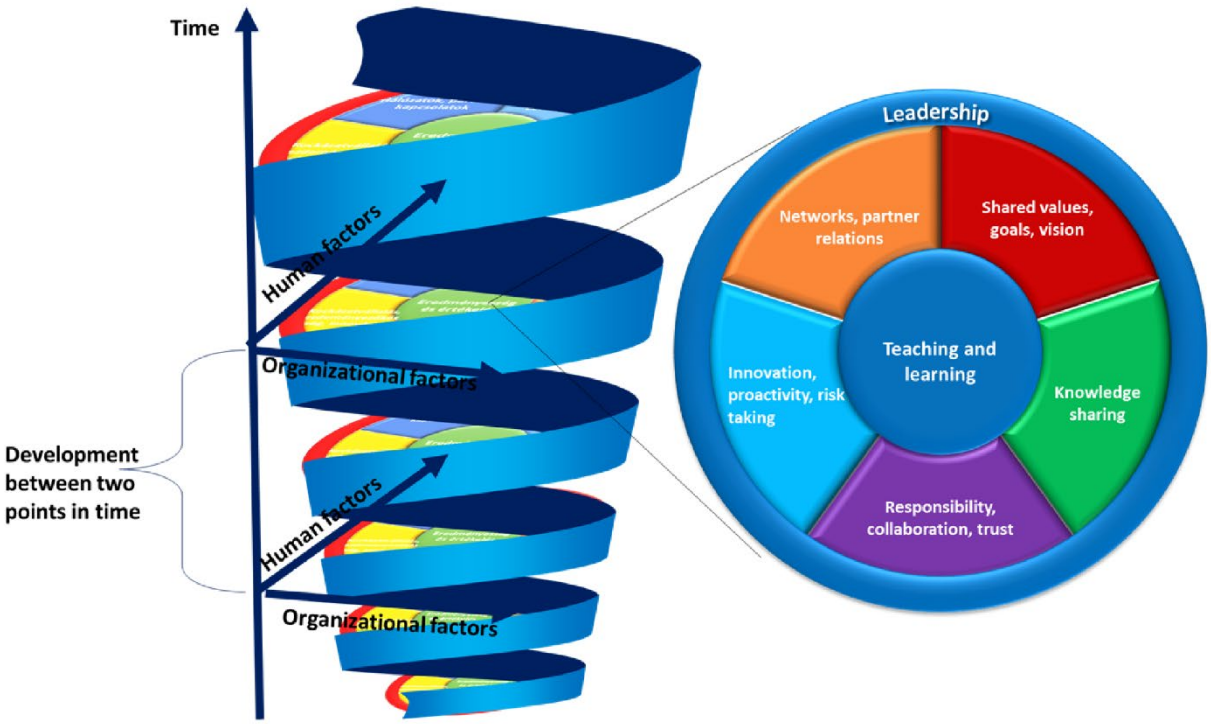


Figure 27: The synchronic and diachronic model of LOM4S.
Source: Baráth [2015, (ed.) 28]; edited by László Horváth

The operation of learning organisations from a diachronic approach

The diachronic model (see Figure 27) examines the operation of the learning organisation from a comprehensive perspective, putting evolutive changes at the forefront. This helps to achieve the longer-term operation and development of the learning organisation. The model describes how the organisational competencies that renew pedagogical processes and enhance the quality of learning and teaching change with the advancement of time in institutions that operate as learning organisations.

The model is based on the premise that the growth of capacities to renew pedagogical processes is achieved through a complex system of impacts on the organisation. The improvement processes can begin at any field or level of the organisation, and then interacting with other fields and levels may induce a comprehensive change. One of the fundamental tenets of the model is that the reinforcement of shared values, goals, and vision; the promotion of knowledge-sharing practices; the enhancement of trust and collaboration;

the internalisation of accountability; the intensification of initiatives, innovations, and risk-taking; the expansion of networking and partnerships; and the optimisation of knowledge-focused leadership will result in an improvement in the quality of the teaching and learning process. This, at the same time, impacts the institution's competitiveness as well.

The development and the change of organisations are not identical and not uniform in the individual fields. The diachronic model serves as a pivotal point for the institution in planning and executing the synchronised, targeted development of the particular fields. The model considers that the factors that define the effectiveness of the learning processes and organisational learning also change during development. It shows the complexity of organisational changes.

7.3.3.2. Validation of the LOM4S

After the development of the theoretical model of the learning organisation, we carried out a survey in the region of the South of the Great Hungarian Plain on our sample. The developed tools (tailored questionnaires for three target groups: school leaders, deputy school leaders, and teachers) were complex, making it possible to serve both research and development functions. In the third research phase, the focus was on validating the theoretical model. The questionnaires comprised the dimensions identified during model development. The statements were formed taking into consideration the content of each factor; however, the elements of the sentence list were not used directly.

In the end, the teacher questionnaire was completed by 1192 individuals (after data cleaning). 119 individuals completed the deputy director questionnaire, and the director questionnaire was completed by 62 individuals, which also means that 62 individual institutions filled in the questionnaires. This means that 75% of the institutions took part in the R&D project. The proportion of teachers who completed the questionnaire is 27% compared to the total number of teachers in the teaching staff in all involved institutions.

Responders had to interpret the elements from the list of statements for their own institution on a 4-point Likert scale. First, according to how characteristic the given statement of their own institution (it served the institutional development) is, and second, according to how important the given characteristic is in terms of a school operating as a learning organisation. Using the 'important' statements, the validity of the previously presented model was

analysed using confirmatory factor analysis. Based on the results, we refined and specified the original model. The result of this is shown in Figure 28.

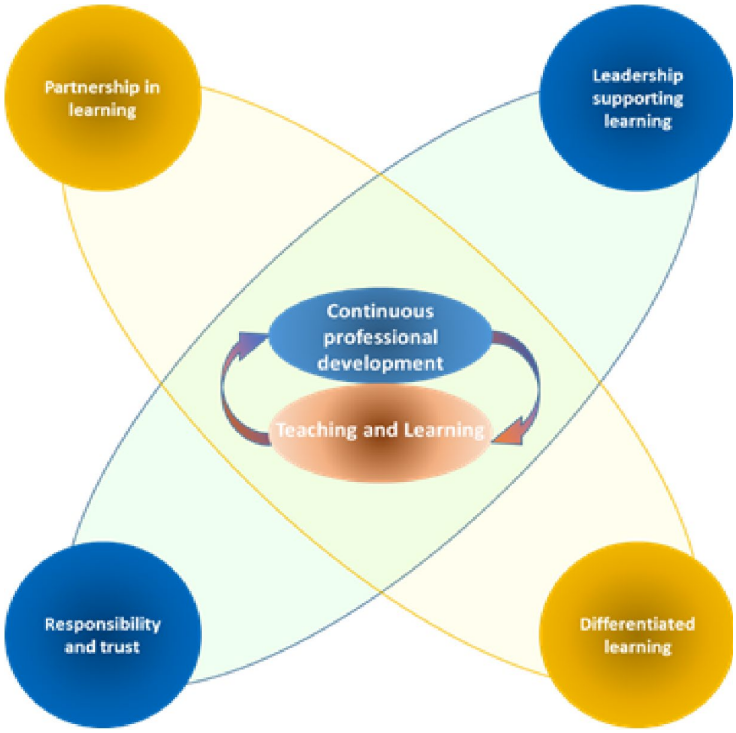


Figure 28: The validated model of the school operating as a learning organisation, Source: Baráth [2015 (ed.), 41]; edited by László Horváth

The detailed content of the individual factors is mainly covered by the statements and sentences attributed to them, which are presented in Appendix 4. If we compare the figure for the synchronic-diachronic model with that for the model derived from factor analysis, we observe a high degree of similarity. The current model is similar to the model of an atom. In the middle (in the core), there is continuous professional development and learning and teaching. As in the original theoretical model, the process of learning and teaching is at the centre, but this shows a powerful interaction with continuous professional development, whose focus is the perpetual renewal and revitalisation of the learning and teaching processes. The mutually supplementary interaction of these two elements stands in the middle, surrounded by two clouds that indicate two dimensions. The circle indicated in blue (taking responsibility and trust, leadership supportive of teaching – continuous professional development primarily belongs to this) contains the organisational characteristics, while the circle indicated in yellow (partner relationship in learning and differentiating – the dimension of learning and teaching implicitly belongs to this) details the dimensions of

learning and teaching, signifying the importance of the central process. While the first group refers to a contextual factor, the second refers to the process. Of course, a very closely-knit connection can be observed between these elements, which means that they intensely support each other.

The statistics show the reliability of the results as they appear in Tables 10 and 11 based on the factor analyses.

Table 10: Reliability Statistics

Cronbach's Alpha	*Cronbach's Alpha Based on Standardized Items*	*N of Items*
0.931	0.933	6

Table 11: Item-Total Statistics

Factors of the Atomic Model	*Cronbach's Alpha if Item Deleted*
Partnership in learning	0.929
Continuous professional development	0.913
Teaching and learning	0.914
Differentiated learning	0.927
Leadership supporting learning	0.914
Responsibility and trust	0.911

In conclusion, the initial stage was the creation of a learning organisation model, which was developed by a group of experts through a series of iterative processes. These comprised a comprehensive discussion of the content, which ultimately led to consensus. The outcome of this consensus was a list of sentences that provided a comprehensive account of the functioning of the learning organisation. By structuring the list of sentences, the synchronic-diachronic model was created, which can be considered a theoretical model of learning organisations based on the construction process.

The statements included in the questionnaire survey were based on the synchronic-diachronic model but differed from the list of sentences in terms of both number and wording. The fact that the respondents' responses, who were unfamiliar with the theoretical

model, were used in a confirmatory factor analysis to obtain a model that is essentially consistent with and reflective of the theoretical model validates the theoretical model. It can thus be argued that the theoretical model accurately describes the functioning of the school's learning organisation.

There is another approach to validity testing, which may also be fruitful in our case. I will summarize it based on the presentation by *Cizek, G.J.* (2007) and the related literature[54]. Based on the presentation, I will attempt to show why the developed learning organisation model can be considered valid.

In his presentation, Cizek builds on the definition of two concepts. The first is the *construct*, a label or concept used to capture behaviours that are not directly observable (e.g., honesty). In such cases, we infer what we are actually investigating based on observable, measurable characteristics. The other concept is *inference*. This means that we conclude the underlying characteristics based on what we measure or observe. It is thus an estimation based on measurement or observation – what Cizek calls an *informed leap* – and the fundamental question is the validity of our inference (*Wright*, 1994). This, as we shall see, is essentially a process that requires reaffirmation. The novelty of validation lies in two things: a) it does not separate validation from content, etc.; b) it is not concerned with validating the tool but with the conclusions that can be drawn from the application of the tool. It is precisely this that may be of interest to us because if this form of validation also validates the model (not the questionnaires directly, but the learning organisation model captured by them), then this may mean that we can make claims based on the model with a fair degree of confidence.

According to the unitary view of validity, there are no different forms or types of unitarity, but different sources of evidence that confirm our conclusions about the construct based on measured, observed phenomena (*Cronbach*, 1971).

In the following, I briefly review the sources of validity and then tabulate how the process of developing the learning organisation model shows the validity of the conclusions, i.e.,

[54]. The author presented the validity interpretation at the annual NAEP meeting (National Assessment Governing Board).

that the model presented correctly reflects the functioning of the school as a learning organisation.

- Contents of the measuring instrument. It is fundamentally based on the development process and the developers' expertise. It includes the developers' training and experience, as well as the process of developing the measurement tool, including testing, statistical tests, correction procedures, and the involvement of different target groups in the feedback.
- Using the measuring instrument, the response process. The idea is that respondents should not simply recall things and elements of knowledge from their memory, but that the activity should require deeper cognitive processes (reflection, analysis, making connections, comparing experiences and statements, drawing conclusions, etc.)
- Structure, internal structure. It allows us to examine whether statements and groups of statements enable conclusions to be drawn in one or more areas. Factor analysis is used to examine a group of statements that are distinct and homogeneous within each factor.
- Relationship with other variables. We test whether observed relationships correspond to predicted or otherwise hypothesized relationships. These may be contemporaneous or have a predictive role for the future.
- Consequences of measurement (testing). Measurement is usually carried out with a well-defined purpose, and we expect that the conclusions and predictions drawn from the measurement results will be realised. However, it is necessary to separate the actual consequences, the realisation, from the conclusions. It is the responsibility of the developers to test the consequences, but the consequences are not part of the conclusions and, therefore, do not affect validity.

Table 12: Applying a single approach to the development of the learning organisation model

Source of validity	*Proof of validity, evidence*
Contents of the measuring instrument	See the description of the LO model development in section 7.3.3.1, which provided the basis for developing the questionnaires. Content validity was supported by the involvement of a wide range of perspectives and professionals (whale-hunting). There was testing, statistical analysis, discussion, and correction. The versions of the questionnaire were fine-tuned and harmonized.
The response process	Here, two elements are worth mentioning. a) The questionnaire required reflection on personal experiences on the functioning of the organisation, with an emphasis on the examination of one's practice and then on the assessment of the same activities in terms of their importance for the functioning of the learning organisation. This required in-depth reflection, synthesis, and forming conclusions from the respondents. b) The questionnaire response was reinforced by a 2-day peer review (involving 2-3 experts) in a small group of schools to explore the evidence for the questionnaire response.
Structure	See the factor analysis and results leading to the nuclear model. (Tables 10 and 11)
Relationship with other variables	This is shown by grouping respondents into low, medium and high groups based on their level of organisational learning and then examining how the values of the learning organisation factors evolved in these groups (see below). Simultaneous measurement of the variables was achieved.
The consequences of measurement	The fact that the results of the study were used as a basis for developing an intervention and development plan to improve the functioning of the learning organisation in each institution can be seen as an expression of the consequences of measurement (consequential validity). In other words, the indicators of the learning organisation and the quality of the indicators provided the direction for developing the action plans. (This was also supported by consultants, and the results of the study thus also provided the basis for the consultancy work.) The conclusions were, therefore, reflected in the development plans. However, the conclusions (where the organisation stands regarding the level of functioning as a learning organisation, competitiveness, effectiveness) did not guarantee the outcome, i.e., where the school will be after one, two or six-year development periods.

Based on the above, it can therefore be concluded that the developed learning organisation model is valid even if a uniform approach to validity is applied. It is important to note that the role of the validated model created based on the questionnaire survey, i.e., the nuclear model, is crucial that – since it can be considered essentially identical to the theoretical, synchronous-diachronic model – the theoretical model can be used in the course of organisational studies and developments. The significance of this is captured in the following:

- The focus of the theoretical model is the core business of the school, learning and teaching. (At this point, it is essential that it is not only learning, because the model itself is also suitable for describing organisations that are limited or essentially non-learning organisations.)
- Teaching and learning will be shaped by the factors that primarily affect the basic functions of the school. (This approach is seen in many cases, in many models. The OECD's learning organisation model is essentially the same. We have also seen this approach in other models, for example, when describing how behaviour is influenced. Such as the COM-B model).
- Capturing the responsibility of leadership is more accessible and more transparent with the synchronous-diachronic model than with the nuclear model because the primary influencing factors are coordinated by leadership. It is their primary role and responsibility to align these factors with the specific situation of the school in order to optimise progress and, therefore, results.
- Last but not least, the theoretical model allows the study of these processes over time, i.e., not simply a snapshot, but the movement and change over time of the primary factors that influence learning-teaching and, through them, the construction of the system of effects.

I have undertaken a brief presentation of this new approach because of the above-mentioned list. I think it was an important step to validate the learning organisation model because, as we will see, it is the basis for analysing the school learning environment in what follows. The validity of the model becomes particularly important in Chapter 8, where the question of how the competencies needed to manage a learning organisation relate to the school leadership competency framework that emerged because of the first two phases of the research is raised.

7.3.3.3. Learning organisation and learning environment for students

The research concept was that schools, as learning organisations, can provide an appropriate learning environment for students to acquire the competencies that will prepare them for life in the knowledge society. This means we should find evidence proving that the learning organisation level and the characteristics of the learning environment in school relate to each other.

Based on the survey – applying factor analyses (alpha factoring, promax rotation, eigenvalue>1) – we defined new variables; the first group describes the teacher learning or other way the work-based learning environment in school for teachers (WLE factors). The second group shows the student learning environment (SLE factors). While WLE includes 3 factors, SLE contains 4. We counted the mean of the factors belonging to WLE and SLE, defining two aggregated variables named WLE and SLE. Next, we analysed the relationship among three complex, composite variables: WLE, SLE, and LO% (the ratio of acting school as a learning organisation, based on the values of 6 factors of the validated LO model).

Table 13 shows the components of the SLE and WLE factors, their names, and Cronbach's alphas.

Table 13: Components of the SLE and WLE factors and their reliability index

Factor	*Factor component*	*Component name*	*Cronbach alfa*
Student Learning Environment (SLE)	SLE1	A student-centred pedagogical approach to competence development	0.826
	SLE2	Credible, supportive teacher	0.821
	SLE3	Collaboration, experiential learning, knowledge sharing	0.804
	SLE4	Supporting self-regulated learning	0.694
Workplace Learning Environment (WLE)	WLE1	Reflective learning and knowledge sharing supported by leadership	0.902
	WLE2	Commitment, expectation, community	0.693
	WLE3	Ideas, experimentation, innovation	0.710

The table shows that overall, the reliability of each factor component is good. Two factors (SLE4, WLE2) have values just below the accepted rule of thumb of 0.7. However, the deviation is so small that it can be accepted as a rounding error. Appendix 4 gives a detailed description of the factors and their components.

In the following, we analysed the relationships between the factors that describe the learning organisation and the learning environment to explore their relation. In order to explore the relationship among the three composite variables, the general linear model was used. The question was how much of the variance of the dependent variable (LO%) is explained by the included category variables (wle_bin2, sle_bin2). In OLS, we used category variables because they are better for showing no interaction between them. In the Anova test, ω^2 and η^2p show (Table 14) the explained variance (the values are 67.7% and 67.8%, respectively). This, therefore, reflects a strong explanatory power.

Table 14: Results of the general linear model

ANOVA Omnibus tests							
	SS	df	F	p	η^2	η^2p	ω^2
Model	41448.678	3	455.674	< 0.001	0.678	0.678	0.677
wle_bin2	3981.178	1	131.304	< 0.001	0.065	0.168	0.065
sle_bin2	8809.972	1	290.563	< 0.001	0.144	0.310	0.144
wle_bin2×sle_bin2	0.001	1	4.646e-5	0.995	2.306e-8	0.000	-0.000
Residuals	19647.612	648					
Total	61096.290	651					

We went on to look at the exact effects between these variables. The analysis includes sle_bin2 and wle_bin2, which divide the sample into two categories, low SLE/WLE and high SLE/WLE (cut off at 50%). These categories can be visualised by comparing a 2×2 matrix. We can see, for example, that the ß value for wle_bin2 is 0.716 (fixed effects parameter estimates, Table 15), which can be interpreted as meaning that if someone is in the high WLE category, they will have a higher LO% with this multiplier. If we want to

write it as an equation, then LO%=wle_bin2×0.716 (wle_bin2 is 1 if you are in the higher group and 0 if you are in the lower group).

Similarly, for the variable sle_bin2, we can see that the value of ß is 1.065. The effect on LO% can be described here with a similar equation: LO% = sle_bin2×1.065. The equations show how the value of LO% is affected by low or high values of workplace learning and student learning environment variables. We can also see that the latter has a larger effect on LO%. Finally, it is essential to note that there is no interaction between the two category variables (wle_bin2 and sle_bin2). This is shown by the p-value (0.995) in the table.

Table 15: Impact Pathways Analysis

Fixed Effects Parameter Estimates

Names	Effect	Estimate	SE	95% Confidence Interval		β	df	t	p
				Lower	Upper				
(Intercept)	(Intercept)	83.501	0.303	82.906	84.095	0.000	648	275.867	< 0.001
wle_bin21	high wle – low wle	6.937	0.605	5.748	8.125	0.716	648	11.459	< 0.001
sle_bin21	high sle – low sle	10.319	0.605	9.130	11.508	1.065	648	17.046	< 0.001
wle_bin21×sle_bin21	high wle – low wle × high sle – low sle	0.008	1.211	-2.369	2.386	8.519e-4	648	0.007	0.995

While the two independent composite variables (SLE, WLE) significantly affect LO%, they do not show interaction with each other, so their effects are independent. The common effect of the two variables does not affect the LO%. We see this from Estimated Marginal Means.

Table 16: SLE, WLE common effect on LO%

sle_bin2:wle_bin2						
					95% Confidence Interval	
sle_bin2	wle_bin2	Mean	SE	df	Lower	Upper
low sle	low wle	74.875	0.331	648.000	74.224	75.526
high sle	low wle	85.190	0.840	648.000	83.541	86.838
low sle	high wle	81.807	0.736	648.000	80.362	83.252
high sle	high wle	92.130	0.331	648.000	91.481	92.780

The plot diagram (Figure 29) also shows that SLE and WLE have no interaction with each other regarding their effect on LO%. To sum up, by applying the general linear model, we could prove that, supposing the causal effect among the composite variables, their relation is strong. The SLE and the WLE have significant effects on LO%, while the WLE and the SLE have no interaction with each other. Thus, supposing a causal effect among the variables, this effect is substantial.

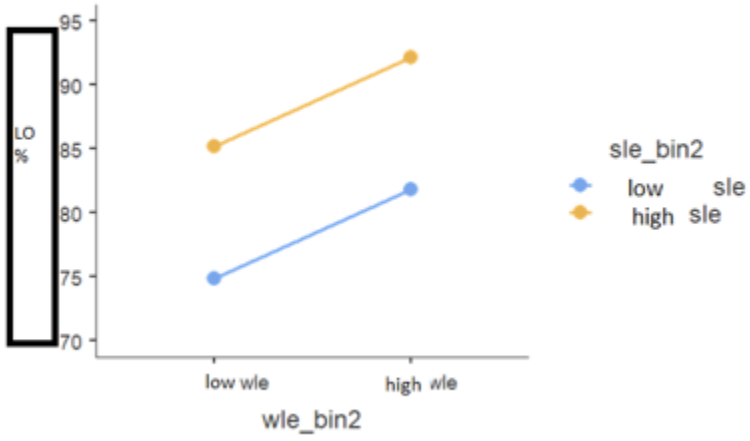


Figure 29: Plot diagram of SLE/WLE interaction

This statement is supported by the mediation analyses, too (Figure 30, Table 17). Figure 30 shows that SLE has a direct effect on LO% while it also has some additional indirect effect through WLE. Table 17 provides concrete data regarding the effects, so we can see that

$SLE_{Total}=SLE_{Direct} + SLE_{Indirect}=0.611+0.314=0.925$. All values are significant, and the total effect is high.

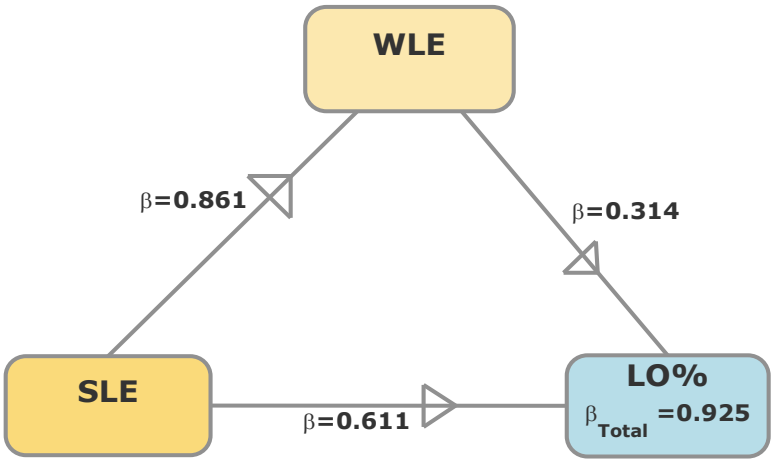


Figure 30: Mediation model – SLE, WLE effect on LO%
Note: SLE and WLE are composite variables examined for their combined effect on the LO% variable. The β values indicate the strength of the effect. The p in the table is the significance level of the path effect (p < .001 in all cases). β_{Total} shows the combined effect of SLE directly and through WLE on the LO% composite variable.

Table 17: SLE (direct and indirect) effect on LO%

Indirect and Total Effects								
				95% C.I. (a)				
Type	Effect	Estimate	SE	Lower	Upper	β	z	p
Indirect	SLE ⇒ WLE ⇒ LO%		0.294	3.390	4.543	0.314	13.489	< .001
Component	SLE ⇒ WLE	3.966	0.020	0.829	0.907	0.861	43.273	< .001
	WLE ⇒ LO%	0.868	0.322	3.938	5.199	0.364	14.196	< .001
Direct	SLE ⇒ LO%	4.569	0.324	7.096	8.368	0.611	23.835	< .001
Total	SLE ⇒ LO%	7.732	0.189	11.329	12.068	0.925	61.972	< .001
Indirect	SLE ⇒ WLE ⇒ LO%	11.699	0.294	3.390	4.543	0.314	13.489	< .001
Note. (a) Confidence intervals computed with method: Standard (Delta method)								

The present study has thus far sought to ascertain whether and to what extent the SLE and WLE variables influence the LO% variable. The general linear and mediator models were employed to verify the effects. The analysis could also have been conducted in the opposite direction, i.e., how the learning organisation functioning (LO%) affects the learning environment of students (SLE) or, similarly, the learning environment of teachers at work (WLE). However, the analysis does not show a causal relationship; instead, it shows whether there is a significant effect in the respective direction and to what extent. Three important findings can be made to better understand these processes.

Firstly, it can be posited that the primary influence on the learning environment of students (SLE) and the learning of teachers at work (WLE) is learning organisation functioning (LO%). This is based on the premise that organisations function in a specific manner, and thus, it can be postulated that this understanding can be applied to the learning environment. Nevertheless, it is conceivable that these variables may exert a feedback effect on the functioning of the learning organisation. Two inferences can be drawn from this, although the data presented in this paper do not confirm them. However, they allow us to make a strong assumption: a) The organisational characteristics are deep and robust enough to assume that they can fundamentally determine the learning environment. This implies that the learning environment (of the student and the teacher) serves as a reflection, an indicator, if you will (like a litmus paper), of the functioning of the learning organisation. b) Of course, processes in the organisation are not start-stop, start and run, and then stop, but can feed back to the functioning itself. That is, it is possible that at some points, whether initiated and influenced by individual or small-group initiatives and activities (there may be student and teacher initiatives and their interlinking), student and/or teacher learning may exhibit characteristics that go beyond the general learning characteristics of the organisation. New forms of learning inspire organisational learning, which can develop into more advanced forms and practices than before, thus moving the organisation forward in terms of learning organisation characteristics. This approach, therefore, suggests a circular relationship among the variables involved. The inertia of an organisation is greater than that of its constituent individuals. Thus, one or a few teachers may develop a new teaching practice; the school tolerates it but does not spread it, and the operation remains insular. If a persuasive organisational decision is made to make a similar change, it will spread throughout the organisation. It is more likely to become general practice. Of course, here, too, there may be

variations in individual practice, but here, the reticence to adopt new methods may become insular.

Secondly, the objective of the statistical analysis was to explore linear relationships. As might be anticipated, the organisational context is more intricate than this simplified representation suggests. This is exemplified by the synchronic-diagonal model of learning organisation functioning, which indicates that organisational functioning in certain areas may not necessarily vary proportionally. Over time, the degree of spillover or lag may vary and be contingent on environmental influences. In other words, organisational change can be characterised as a non-linear process.

Moreover, the impact of organisational culture, encompassing both accepted written and unwritten norms and values, on operational procedures is reinforced. This also supports the hypothesis that the effect from the organisation on the individual may be more pronounced. That is to say, the characteristics of the learning organisation exert influence on the learning environment of the students, which the teacher ultimately shapes as an individual in the classroom. Similarly, teachers' learning in the workplace is influenced by several factors, including the expectations and norms that prevail within the organisation (see the role of organisational culture) and the organised, knowledge-creating and knowledge-sharing forums that operate within the organisation to improve the quality of learning. This ultimately leads to the conclusion that to effectively visualise the relationship between the composite variables that are the primary focus of our study, the circular process previously mentioned must be conceptualised as a helix, fragmented in time.

Thirdly, it is also noteworthy that the helix can be ascended and descended. This implies that the learning organisation is not a linear trajectory from point A to point B; rather, it is a dynamic entity that exists in a state of equilibrium once it reaches point B. Organisations undergo change, albeit at a gradual pace, in response to shifts in their external environment and the evolving composition of their membership. In this case, the teachers represent a vital aspect of the organisational change. A fundamental question is how the actors representing a given state of the organisation transfer the knowledge they have acquired, to what extent they retain the forms of activity they have developed, and whether or not the changes they implement result from a conscious decision. Consequently, maintaining and enhancing the learning organisation's functionality necessitates sustained attention, intervention, and rectification. This very functionality can facilitate the development of a conducive learning environment for learners.

In conclusion, the findings of this study indicate a significant relationship between the functioning of learning organisations and the learning environment. Considering the evidence presented here and our understanding of organisational functioning, we can posit that the functioning of learning organisations significantly influences students' learning environments. This influence operates through a complex system of effects and non-linear processes. It may, therefore, be posited that an organisation whose primary focus is on learning is best positioned to optimise the learning environment for students. This assumption is contingent on the further assumption that the functioning of the learning organisation is subject to conscious and purposeful examination and development by its members, particularly the leadership. A more detailed examination of this issue can be found in Chapter 8.

Returning to the research concept, I can state that we have firm evidence supporting our hypothesis that schools operating as learning organisations can provide significantly different learning environments for their students than those that do not. To sum up, the statistical analyses prove the strong effect between the organisational characteristics (acting as a learning organisation on a high or low level, LO%) and the quality of the learning environment (level of learning environment for students and teachers, SLE, WLE), and make it possible to identify the size of the effect of the variables. Knowing and understanding the operation of organisations makes it possible to decide about causality.

7.3.4. Wales – supporting schools to act as a learning organisation

The last international example leads us to Wales. While the Australian and Czech cases show how educational research can support system-wide school development programs, the LOM4S program aimed at developing a new learning organisational model for schools applicable in practice, the Wales case introduces us to the world of policy implementation. This means that Wales' educational policy defined its primary goals as high-quality and inclusive education for all citizens, and considered the development of schools as learning organisations as the primary tool for realising this goal. Schools acting as learning organisations: a) own capacities to change and adapt to the fast-changing environment – both on personal and organisational levels – which is incredibly important, taking into consideration the technological, social, economic, and political changes; b) learn from their experiences to realise their vision, mission, and goals. The policy decision is based on

extensive research by the OECD, which has developed a learning organisational model for schools (*Kools & Stoll*, 2016; *OECD*, 2018).

The model focuses on high-quality learning for all students as the core business of schools and organizes supportive processes to help realize the implementation. The development was based on the OECD learning school model, and the OECD provided support to implement the country's educational policy. Improving schools as learning organisations is the main tool for realizing the four purposes of the new curricula. The large-scale, long-term school improvement programme was started in 2011.

"The four purposes should be the starting point and aspiration for schools' curriculum design. Ultimately, the aim of a school's curriculum is to support its learners to become:

- *ambitious, capable learners, ready to learn throughout their lives;*
- *enterprising, creative contributors, ready to play a full part in life and work;*
- *ethical, informed citizens of Wales and the world;*
- *healthy, confident individuals, ready to lead fulfilling lives as valued members of society."*[55]

The following figure shows the concept of schools as learning organisations and the supportive environment for their implementation and realization.

[55] https://hwb.gov.wales/curriculum-for-wales/designing-your-curriculum/developing-a-vision-for-curriculum-design/#curriculum-design-and-the-four-purposes, read on 27.07.2020.

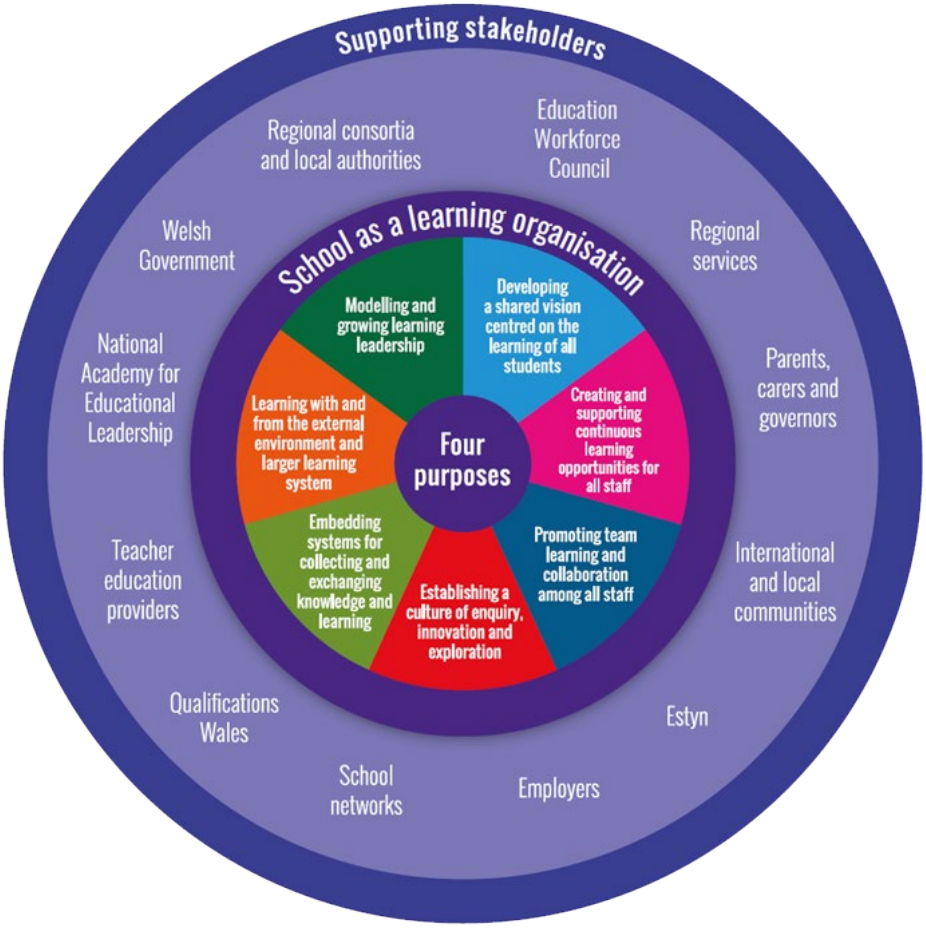


Figure 31: The schools as learning organisations model for Wales,
Source: OECD (2018, 20) Developing Schools as Learning Organisations in Wales, Implementing Education Policies.

If we focus on the school-level part of the model, we can recognize that the four purposes are served by the seven dimensions of the operation of the school. These dimensions push the school to become a learning organisation. All seven dimensions (or field of school work/operation) intend to enhance the learning capacity of the school, provide learning opportunities, and inspire learning at both personal (students and staff) and organisational levels.

The OECD model was adapted through a co-creation process involving all relevant stakeholders (schools, teacher training providers, professional consortia, inspectorate, leadership training institute, governmental and regional educational authorities, etc.). The Wales' SLO model served as a reference point to assess the level of fitness of Wales' schools to the model. The RD project applied a mixed-methods design (several interviews

accompanied the SLO survey) to identify strengths and areas for improvement. The assessment was formative, as the experts agreed that the high-stakes assessment would be risky. It might reduce willingness to participate in the program and also decrease the motivation to answer the questions honestly in both the survey and the interviews (*OECD*, 2018).

The first result (*OECD*, Highlights) and the detailed analyses (*OECD*, 2018) show that the model is relevant, and it helped all stakeholders plan their activities to support the realization of the four purposes through curriculum reform. The report, Developing Schools as Learning Organisations in Wales (*OECD*, 2018), had complex aims. We want to highlight two aspects: a) To what extent do the key characteristics of a learning organisation already exist in schools in Wales? b) What roles does school leadership play in transforming schools into learning organisations?

The Wales' SLO survey showed that the tool (questionnaire) was suitable for making differences among schools. Close to 60% of schools in Wales involved in the sample proved good level practice in 5 to 7 dimensions of the model used as a point of reference. However, there was a pretty big difference between the primary and secondary schools. The second one had significantly less practice acting as a learning organisation. The scores on the different dimensions were also waving. While the *Modelling and growing learning leadership* and the *Promoting team learning and collaboration among all staff* dimensions received high scores, the *Developing a shared vision centred on the learning of all learners* and the *Establishing a culture of enquiry, innovation and exploration* dimensions reached significantly lower scores. Both these differences and the variation between school types require a deeper understanding of school-level processes to identify relevant intervention points and methods (*OECD*, 2018, 23).

The report found that school leadership has a crucial role "in the promotion and strengthening of induction programmes, mentoring/coaching, peer review and creating a culture of enquiry, innovation and exploration in their schools." (*OECD*, 2018, 29) They also proved that there are significant differences between primary and secondary school leadership. While 70% of the primary school leaders are modelling growing learning leadership, the ratio for secondary school leaders is 39%.

Conclusions in harmony with our research: we can ask whether schools that act as learning organisations provide better learning possibilities for their students than those that do not.

The OECD report stated that Wales' SLO model, including its dimensions, has a vital role in promoting learning culture in schools across the country (*OECD*, 2018, 37). The deeper analyses argued that – behind the decision of the Welsh Government to transform their schools into learning organisations, I could find a strong and even growing body of research evidence – that those schools are acting as learning organisations:

- can more quickly and easily adapt to changing external environments;
- accept and initiate innovation in their organisation;
- serve as a better workplace for their staff, reducing burnout, increasing self-efficacy, and job satisfaction;
- increase their students' learning outcomes.

Leadership that focuses on developing school culture and learning can also contribute – in an indirect way – to improved student performance (*OECD*, 2018, 87–88).

Taking into consideration the facts mentioned above, based on the Wales SLO report, I can state that further evidence was found about the relation between schools acting as learning organisations, their leadership, and the final purpose: equipping the students with all those competencies that are important to have a full life in the knowledge society.

7.3.4.1 Reflections on the learning organisation – direct and indirect effects of the Welsh project

It is worth referring to the results and continuation of the Welsh system development. One study provides evidence regarding the applicability of the SLO model, and the relevance of the areas defined in the model (*Harris et al.*, 2022). At the same time, it draws attention to the need for schools to receive more practical guidance, enabling them to function as learning organisations. (In light of Senge's model and the criticism of the model (see Subchapter 7.2.2), this may be particularly important.) More recent research by *Kools et al.* (2020) aims to contribute to the reconceptualization of schools as learning organisations. The authors note that the lack of clarity surrounding the concept is an obstacle to its practical application. To overcome this, they have developed a measurement tool that makes it possible to measure and scale the characteristics of schools as learning organisations and their organisational competencies.

In connection with the Welsh project, it is also worth mentioning that education policy and education leadership have a significant impact on schools becoming and functioning as learning organisations. If the educational administration encourages change in schools, creates the conditions for organisational learning, and thus the possibility of becoming a learning organisation, then this process can take place more easily and quickly than in educational systems where the conscious educational policy outlined here is absent.

The importance of the role of education policy is demonstrated by two Latvian studies that examine the functioning of learning organisations in schools and support for them. It is noteworthy that the transformation of schools into learning organisations is not merely a research topic, but a development priority defined in the education system and enshrined in the program. The two studies deal with the theoretical background, the system development goals, the conditions for becoming a learning organisation, and their creation at the local and system levels (*Kaulēns et al*., 2022; *Lazdiņa*, 2023).

In addition to examining the system level, it is very important to explore and understand the organisational processes that enable educational institutions to become learning organisations. An international comparative study (*Sierra-Huedo, Romea & Aguareles*, 2023) on this topic highlights the obstacles inherent in rigid curricula and individualistic teaching cultures. It sees the possibility of transformation (becoming a learning organisation) in the strengthening of the systems approach (see Senge model), in the networked operation of institutions, and in the sharing of knowledge between them, a process in which transformational leadership plays a key role.

Numerous other studies and their findings could be cited, but the studies referred to here already confirm the following: a) The concept of school as a learning organisation is present in the latest research and development trends. b) Interpreting schools as learning organisations is not merely a theoretical question, but a key issue in improving the quality of learning. c) The transformation of schools into learning organisations is both an educational policy and an organisational issue, and we can see efforts to intelligently combine these two aspects. d) The functioning of schools as learning organisations, the school leadership capable of achieving this, and the improvement of the quality of learning are closely linked. All this reinforces the concept of the thesis, according to which schools functioning as learning organisations and school leadership capable of establishing and operating them play a key role in the development of students' knowledge and competences, and that this role is likely to become stronger in the knowledge society.

7.4. Conclusions – Organisational learning and students' achievements

This chapter has examined the learning organisation concept as a potential organisational form, given that research indicates that it can facilitate optimal learning conditions for students in educational settings (see Figure 2). An examination of Senge's model and its application in educational contexts has demonstrated that it also applies to schools. Nevertheless, the difficulties encountered in implementing Senge's model were not intrinsic to the model itself but rather to its application.

Research on schools in Australia and the Czech Republic has provided clear evidence of a strong link between the quality of organisational learning, the functioning of the learning organisation, and the characteristics of school leadership. Moreover, the Australian research programme has demonstrated that the functioning of a learning organisation and the leadership style employed therein influence the development of learners' academic and non-academic outcomes through complex but explicable interactions.

The LOM4S programme's development of a learning organisation model, which classifies schools according to the extent to which they exhibit characteristics of learning organisation functioning, also demonstrated a clear relationship between learning organisation characteristics and leadership characteristics. Furthermore, the research and development project has shown that organisations (schools) exhibiting a higher degree of learning organisation functioning create a distinctive learning environment for their students compared to those exhibiting lower levels of these organisational traits. The study demonstrated a robust correlation between student, teacher (workplace) learning, and learning organisation characteristics.

The functioning of learning organisations and the relationship between student and teacher learning in school should be supplemented with one more finding. Based on data collected during the LOM4S research phase, it was found that the leadership of schools with extensive experience in learning organisation operation and development (HlES) clearly differs from that of schools with moderate experience (MlES) in terms of CVF roles, based on the recognition of the teaching staffs. This means that the leadership of schools with varying levels of learning organisation activity also differs. The former group of schools can be expected to better develop their students. In this way, leadership roles – as a mediating variable – show the relationship between leadership and student development (*Baráth*,

2017). This reinforces the findings and conclusions of Chapter 8 regarding the relationship between school leadership and students' learning outcomes.

The findings of this study provide evidence that schools can optimise learning conditions and the learning environment for students in the knowledge society. In light of the findings above, it is now possible to question what characteristics are required of a school leader(ship) to develop, maintain, and continuously adapt the functioning of their institution as a learning organisation to achieve high-quality learning outcomes. In this way, we have demonstrated that focusing on the learning organisation model, the third detour, has brought us closer to answering the research question of this thesis. The leadership competencies required for this are identified in Chapter 8.

8. SCHOOL LEADERSHIP AND LEADERSHIP COMPETENCIES

I have now reached the final element of my research concept: the definition of school leadership competencies. As a result of the detours in Chapters 5–7, we have seen that the leadership competencies derived from these – the student competencies required in a knowledge society; the learning environment that supports the acquisition of these competencies; and the school organisation that creates this environment – essentially converge. In other words, the leadership competencies outlined in these chapters paint a picture of a leader who is knowledgeable about global processes, can interpret these at a school level, and uses this understanding to guide organisational operations and decisions. They have a strong value system and are able to motivate teachers and students. They see challenges as opportunities and base the search for solutions to problems on cooperation. They have the courage to innovate, try new things, and continuously strive to develop their knowledge while creating a supportive environment for teacher learning so the teaching staff can optimise students' learning opportunities.

The following section will explore why effective school leadership has become so crucial. As we saw in Chapters 5–7, environmental influences play a key role here. This raises the question of what we know about the impact of school leadership on student learning, outcomes, and development. Based on the evidence, we will consider what knowledge leaders require to successfully lead their schools and how this can best be achieved. To this end, I will review some competence frameworks. In the next section, I will take a closer look at the competence framework developed in the first two phases of the research, examining its characteristics and its relationship to school autonomy and providing examples of differences between countries. As with the learning organisation model, a key issue for us will be the validity and applicability in practice of the framework developed through development-oriented research (Central5). As mentioned in Chapter 7, the remainder of this chapter will examine the links between the leadership competencies required to establish, continuously develop, and operate learning organisations and those defined in Central5. The latter did not start from the idea of learning organisations but from schools operating in a knowledge society. I aim to determine what emerges from the intersection of these two approaches. At the end of the chapter, I will summarise the findings on school leadership. This will lead us to Chapter 9, which concludes the dissertation.

8.1 Does school leadership matter?

We have often faced the fact that learning is one of the most important issues for the knowledge society in the VUCA world. Consequently, schools that equip students with the relevant and necessary competencies are crucially important in this process. The fundamental question is what makes schools successfully prepare students for high achievements. Especially focusing on the dissertation topic, what role school leadership has in enhancing student learning outcomes. Thus, the question is whether school leaders influence their students' performance? Is there any proof regarding their impact, or is this only a belief? If so, how do they do it? Despite that, there is no easy answer to why there is no developed country where school leaders have been fired for failing to influence students' academic results and/or behaviour.

8.1.1 Brief historical overview

The education system became one of the largest subsystems of society. The increasing term of compulsory schooling, the growing population taking part in education needed more and more schools, teachers, and equipment, thus more money. So, the question is obvious: whether schools act as effective learning environments and work cost-effectively. People strongly believed, especially in the US, that there is a direct relationship between the quality of schools and the students' achievements. The Coleman's report destroyed this belief that students' performance is determined by their SES (socio-economic status) and class composition (*Coleman et al.*, 1966). The report triggered a serious reaction and initiated the establishment of the effective school movement (*Rauhauser*, 1989; *Mortimore*, 1988; *Brandsma & Knuver*, 1989; *Levine & Lezotte*, 1990). This movement produced evidence regarding the school's effect on students' achievements. Also, it directed the focus on the role of school leadership. However, finding a relationship between school leadership and students' performance was very hard. Firstly, researchers looked for a direct relationship between the two factors. Beliefs and facts struggled with each other as researchers supposed that school leadership has a unique role in producing school outcomes. When the formal characteristics of leadership (level of education, duration of practice, or personal features of the heads) were related to schools' and students' results, hardly any correlation was found.

Looking for a reliable answer, it is necessary to better and more deeply understand the factors that influence students' performance and to uncover the chain of relationships between school leadership (characteristics, activities) and students' performance. Studying the systematic way the research results in the applied methods needs special attention. The methodology has significantly changed and seriously modified the relationship between the investigated factors.

8.1.2 First results – disappointing conclusions and experiences

Several research studies have been conducted to find a direct relationship between school leadership styles, activities, the formal and/or personal characteristics of leaders, and students' achievements. Several examples conclude that they have either no or a very weak relationship. The concrete results below give an overview of it. (At first, it seems these results refute the claim that school leadership matters, but it is not the end, just the beginning of the "story".)

- *Leitner* (1994) studied the student achievement data in two separate years and stated that there is little or no relationship between students' achievement and instructional leadership.
- *Bosker and Witziers* (1996) identified a weak but significant and positive relationship between leadership and achievement in their study.
- *Leithwood and Jantzi* (1999) concluded that transformational leadership has a significant but weak relationship with student identification, but not with student participation. At the same time, the researchers identified a strong direct effect on school conditions and, in turn, on classroom teaching, as reported.
- *Van de Grift and Houtveen* (1999) published their study based on Dutch experiments. They analysed leadership questionnaire responses and student national test results from 1989 to 1999. They found weak evidence that principals have an effect on their schools. However, the effects were increased.
- *Opdenakker and Van Damme* (2007) investigated the effects of school context, student composition, and school leadership on school practice and outcomes in Flemish secondary education. They concluded that school leadership only has a weak influence on school practice. However, they supposed it could happen because of the low-level educational leadership of the schools investigated. At the same time, the

authors concluded that *"nowadays there are calls to pay attention to the interrelatedness of factors, the direct and indirect effects of factors, the mediated effects of factors, and to use time-ordered modelling procedures like path analysis or structural equation modelling."* (ibid., 180).

To sum up, the relatively early research mostly tried to identify a direct relationship between school leadership (particularly educational leadership) and student achievement. These efforts yielded weak results, leading to the conclusion that school leadership has little or no influence on school and student outcomes.
Behind this conclusion, there are some reasons:

- The theoretical background was not sufficiently worked out.
- There was no clear definition of the performance interpretation and the leadership effect measurement.
- There were also research methodological problems for measuring and calculating the effectiveness and efficacy of school leadership.

Applying a metaphor, this was the period when the researchers used an optical microscope to uncover the substance structure. It was valid to identify the main structure. However, it was insufficient to study and understand the relationships among the elements like the molecule, the nucleus, and the electron. It needed a higher resolution than the optical microscope could provide, namely, the electron microscope. Who would provide the "electron microscope" for the educational leadership research?

8.1.3 The breakthrough – uncovering new relationships

Some crucial changes made it possible to find more and more evidence regarding the relationship between school leadership and pupil learning outcomes. Three milestones should be mentioned.

Firstly, new consideration was needed, as it appeared in the first attempt, regarding the investigated relationship between leadership and learning outcomes. School leadership affects student learning through a chain of factors. Thus, leadership has an indirect – and not a direct – impact on student achievement. It is important to see that direct doesn't equal strong, while indirect to weak effect. Suppose a school has a deep commitment to learning. In that case, it provides higher motivation for the students, most likely leading to better

performance. As school leadership greatly influences organisational culture – through different factors like motivation, well-organised learning processes, etc. – it reaches classroom and personal level learning, increasing its quality. This process led to the definition of new models that relate leadership and learning outcomes. One of the best examples of this is the longitudinal research conducted by the universities of Minnesota and Toronto, which was carried out in the United States (*Leithwood et al*., 2004). It proved that school leadership has a significant impact on student achievement; however, measuring this impact was challenging and required going beyond the application of standardised research instruments.

Secondly, the complexity of the relationship between leadership and learning required relevant research methods that were much more sophisticated than the earlier ones. It had to consider the non-linear, long-term relationship between the investigated factors. The new methodology combined the quantitative and qualitative tools and techniques. This, along with the new models, became the "electron microscope" of leadership research. English and Canadian universities carried out research in cooperation investigating the link between leadership and student learning outcomes (*Day et al.*, 2009). They applied the above-mentioned sophisticated model, which uncovered and explained the interrelated factors and showed the complexity of the topic.

Thirdly, the continually deepening knowledge enabled understanding of the importance of time in an organisation's development process. As the *McKinsey* report (2010) stated, schools can be in different stages of development, and moving from one stage to another might require different leadership.

All these issues should be considered when the relationship between school leadership and student learning achievement is scrutinised.

8.1.4 School leadership matters

The effect of leadership on school and student learning achievement has been a focus for a long time. Beliefs and facts struggled with each other. For several years, these viewpoints have shown that school leadership has a negligible effect on students' performance. The situation changed completely when a new generation of research models and applied methodology arose. Now it can be firmly stated that leadership has a serious effect on students' learning achievement. Moreover, *"Leadership is second only to classroom*

instruction among all school-related factors that contribute to what students learn at school", and the *"total (direct and indirect) effects of leadership on student learning account for about a quarter of total school effects"* (*Leithwood et al.*, 2004, 5). Those research studies which explored the practice and the concrete activities of certain leadership styles also served as firm evidence regarding the effects of school leadership. For *Robinson et al.* (2008, 635) proved through an extensive meta-analysis *"that the average effect of instructional leadership on student outcomes was three to four times that of transformational leadership,"* and they *"revealed strong average effects for the leadership dimension involving promoting and participating in teacher learning and development and moderate effects for the dimensions concerned with goal setting and planning, coordinating, and evaluating teaching and the curriculum".*

There are several new research results in harmony with those above. In one of them, the authors used the Leadership for Learning framework to examine how LfL (which includes instructional, transformative, and distributive leadership styles) affects student performance. The study confirmed the effects, which were partly direct and partly indirect. The study, published in 2024, demonstrates the importance of this topic. The results can be used not only by researchers but also by leaders and educators in their daily practice, as well as by education policy makers to improve the effectiveness of the school system (*Papadakis et al.*, 2024).

Another study also aims to explore the relationship between school leadership and student learning outcomes. Based on a broad analysis of recent literature, the model developed and the studies included in the analysis show that this topic is not only the focus of attention in Anglo-Saxon countries but also more widely. With its recommendations, the study also supports the development of research aimed at a deeper understanding of leadership and learning outcomes (*Özdemir et al.*, 2024).

To sum up, the existence of the leadership impact on students' learning outcomes is supported and proven by robust research evidence. Consequently, school leadership appears more frequently in educational policy and development documents, as it is considered the most effective tool for developing the quality of the educational system.

Consequences, summarized here, are in harmony with the research results presented in Chapter 7.

8.2 Leadership qualities and students' learning outcomes

The research on learning organisation presented in Chapter 7 has already provided clear evidence of the impact of school leadership on student learning outcomes. In Subchapter 8.1, I build on further research to confirm this. Two of the cited studies are worth revisiting because they not only supported the impact of school leadership on student outcomes but also provided insights into what characterises effective leadership. In the case of the two studies, the aim is not to present a comprehensive overview of the objectives, methodology, and results, but rather to confirm that school leadership is the second most important school factor in achieving student learning outcomes. In addition to providing basic information on the research programmes, I aim to highlight the findings that support the identification of school leadership competencies.

8.2.1 The Effective Leadership and Pupil Outcomes Project – aims, concept, results, conclusions

The first is a longitudinal study in England, carried out by Christopher Day and his colleagues in collaboration with three universities (the University of Nottingham, the Institute of Education, University of London, and the University of Toronto) between 2006 and 2009. The basic aim of the research was to explore the impact of school leadership characteristics (quality, types, skills, etc.) on students' academic and non-academic outcomes (learning outcomes, engagement, commitment, motivation, etc.) and to identify the extent to which variation in student outcomes can be explained by leadership characteristics *(Day et al.*, 6). The research thus addressed questions similar to those in my thesis, in which I aimed to identify the school leadership competencies necessary for developing student competencies. The learning outcomes studied by Day et al. show the acquisition, existence, and level of student competencies, while the leadership competencies are manifested in the leadership practices and behaviours they describe. This also justifies a brief overview of the research.

As we have seen so far, for example, in the case of research on learning organisations, the subject of the study requires a complex, multifaceted approach because the hypothesised effects are typically indirect. Therefore, the study should demonstrate how school leadership

can influence student learning and outcomes. Exploring this complex phenomenon naturally required a mixed-methods research design, as Figure 32 illustrates.

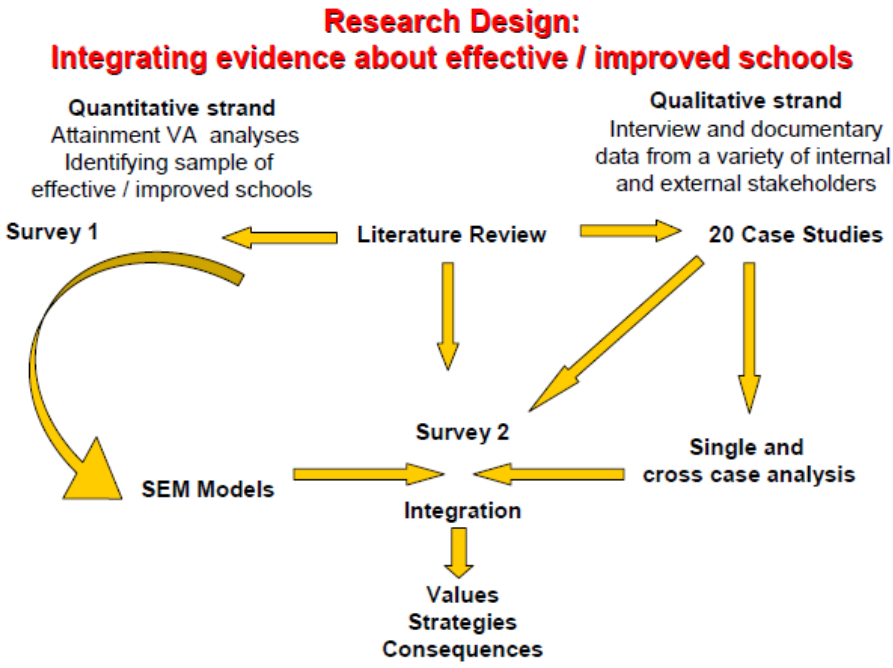


Figure 32: Research design for The Effective Leadership and Pupil Outcomes Project, Source: Day et al., 2010, 17

Without detailing the research methodology, it is evident that the study relied on the systematic application and coordination of qualitative and quantitative methods. The researchers selected three groups of schools, each characterised by continuous improvement in learning outcomes but with different baseline levels (low, medium, high) (ibid. 1, 19–20)[56] .

The research results also provided a clear orientation for the different phases of my research. The six general conclusions of Day's research can be interpreted as follows for each phase of my research.

[56] In the third research phase of this thesis, the criteria for a regionally representative sample were developed taking the procedure of Day and colleagues into account.

- The study provided strong statistical evidence of the impact of school leadership on student outcomes, through perceptions of values, leadership quality, strategic actions, and confirmed the areas through which this impact system operates. It provided clear evidence that the impact is linked to school conditions, culture, and confidence.
    - All this meant that for each phase of the research: (a) it is appropriate to focus on the competencies of school leadership, as this is a significant factor that has a clear and proven impact on students' development and learning outcomes. (b) The impact is exerted through the functioning of the organisation (school), in which organisational culture and trust play a crucial role. These are shaped to a significant extent by leadership.
- There are significant similarities and differences between schools (primary or secondary) in the role of experienced head teachers.
    - This confirmed the need for a flexible, adaptable competency framework that can be adapted to the organisational status, development, and characteristics.
- There is no single successful way to lead. However, successful leaders do have a common repertoire of leadership methodologies, value perceptions, personal and interpersonal characteristics and competencies, strategies they use, etc.
    - This leads us to conclude that there is a case for defining a general set of competencies, focusing on those necessary for leadership and important for all leaders. At the same time, it has shown us the need for a flexible framework that can be tailored to the individual. This has a strong message for applications, for example, a leadership training.
- The research found that the common leadership repertoire mentioned above is insufficient for effective and successful leadership. Leaders need to combine different strategies based on the analysis they have done. The analysis includes the development of the school, its current achievements, and the educational policy expectations, through the analysis of individuals and the synthesis of these to formulate a strategy that defines the school's development directions and promises the development of the pupils.
    - This has reinforced our thinking in terms of competencies. This requires deep, well-founded, broad theoretical knowledge, and the ability to apply that knowledge, reinforced by intention and commitment.

- The strategies used by leaders have a strong value base. The research confirmed a commitment to individual and social well-being and that this and rising standards (i.e., rising learning outcomes) should be available to all learners.
    - This result has brought into focus the importance of morale and the need to be able to translate both improvements in learning outcomes and the service of individual and social well-being into practice in schools and classrooms. That is, the leader must understand the technology of this 'translation' to judge its effectiveness and support its improvement. This requires self-awareness, self-development, and the encouragement and support of teacher learning.
- Finally, among the main conclusions, we could find that the school needs different interventions, activities and actions depending on its initial situation (see sample selection).
    - This conclusion again draws attention to the fact that leadership knowledge must be adaptive to the organisation. This obviously requires that the leader has a good knowledge and understanding of the organisation he or she leads[57] (*Day et al.*, 2010, 1–2)

Among the findings of Day and his colleagues, I will focus on those that provide additional information on the characteristics of leaders who influence student outcomes and their attitudes, values, approaches (strategies), and behaviours.

Based on a questionnaire survey of principals (primary and secondary schools), the researchers found that the school's organisational culture and climate, the interpretation and leading of learning, the way of teaching, and the students' commitment to learning are factors that significantly influence students' learning and achievement (ibid., 45–51). The questionnaire surveys identified the main characteristics and areas of leadership practice. For primary schools, these were "setting directions", "developing people", and "re-designing

[57] We note that the studies conducted in the third phase of the research confirmed that there were also significant differences in the characteristics of leadership in schools at different levels of student organisation.

the organisation". Secondary school leadership was complemented by "the use of data" and "classroom observation" (ibid., 95).

The researchers also conducted a significant number (20) of case studies using qualitative methods and analysed the results. These analyses also confirmed that there is no single good practice in school leadership that successfully influences student outcomes. Leaders were sensitive to external and internal factors and adapted their actions to the school's state of development. However, similar values and strategies for intervention and improvement were identified. The following areas emerged from the analysis of the case studies:

- Defining the vision
- Improving conditions for teaching and learning
- Re-designing organisational structures, re-defining roles and responsibilities
- Enhancing teaching and learning
- Re-designing and enriching the curriculum
- Enhancing teacher quality
- Establishing relationships within the school community
- Building relationships outside the school community (ibid., 110)

Based on both quantitative and qualitative studies, researchers have identified areas that can be well linked to leadership activities and, taking into account the general conclusions, suggest open-mindedness, complexity, learner-centred leadership, methods that guarantee results, and a focus on guiding learning and creating an inspiring learning environment. This aligns with what we have identified so far: the learners' competencies needed in the knowledge society, the learning environment required to achieve them, and the school organisation to create them.

8.2.2 Investigating the Links to Improved Student Learning – aims, concept, results, conclusions

Karen Seashore Louis and colleagues have also conducted longitudinal research in the US to assess whether and how school leadership affects student learning outcomes. The research was funded by the Wallace Foundation and conducted in collaboration with the University of Minnesota (Center for Applied Research and Educational Improvement) and the University of Toronto (Ontario Institute for Studies in Education). Spanning six years and involving nine states, 43 school districts, and 180 institutions, the basic aim of the research

(*Louis et al.*, 11) – to examine the impact of school leadership on student achievement – was essentially the same as that of the UK study. However, a significant difference was that it addressed leadership at all levels (school, district, state) and examined their interactions. The research focused on the characteristics of leadership practice, their impact on the quality of learning, the skills needed to achieve this impact, and the characteristics and circumstances of the workplace (ibid., 7). The complexity of the problem in this case also required the use of mixed research methodology. The complexity of investigating the impact system is illustrated in Figure 33, which shows the research concept.

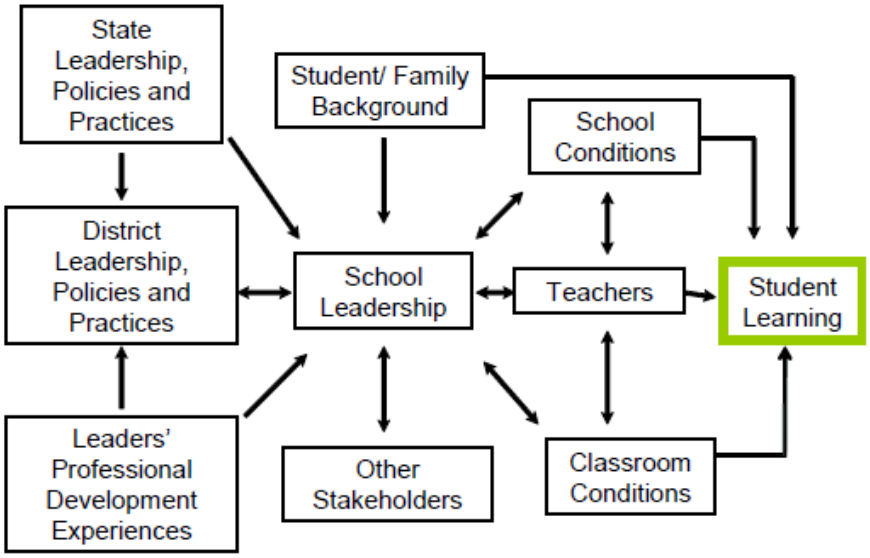


Figure 33: Leadership Influences on Student Learning; Source: Louis et al. (2010, 14)

Nor is it my aim in this research to examine in detail the methods and results achieved at each management level and, consequently, the recommendations and suggestions for the profession and policy. Here, too, I examine focusing on the institutional level of the three levels of leadership, the research outlines the kinds of knowledge and preparedness of leadership that can be said to have a meaningful impact on students' development and learning outcomes. To this end, I turn to the first chapter of Louis and colleagues' report on their research, the section focusing on school leadership.

This chapter examines and analyses the characteristics and effects of leadership based on a wide range of literature, including quantitative and qualitative studies, and focuses on leadership styles and models. The analysis of the six subchapters is summarised in the seventh subchapter. Of the six areas, as in the English research, I highlight those that have

important messages for defining leadership competencies. How researchers have interpreted the concept of leadership is important in this respect. The two defining functions of leadership were seen as *providing direction* and *exercising influence*. The authors link these functions to how leadership can balance stability with school improvement (ibid., 9–10). Essentially, they emphasise the complementarity of operational and strategic leadership (management: doing things right, leadership: doing right things).

- *Collective leadership* – interpreted by researchers as the impact of the members of the organisation, the stakeholder groups, on the organisation and its decisions (ibid., 19–36)
    - Regarding leadership competencies, this subchapter suggests (directly and indirectly) that networking, organising decisions, and partnerships are important for the manager. Leadership is based on involvement and shared responsibility rather than hierarchical, bureaucratic characteristics. This orients the procedures and organisation of learning chosen by teachers and encourages organisational learning. However, the concept of a 'flat organisation' has not been clearly confirmed. This suggests that the leader must establish a rational hierarchy that is linked to sound professional knowledge, decision-making, and responsibility.
- *Shared leadership* – similar to the researcher's interpretation of the previous one. However, while collective leadership covers a broader range of effects and decisions influencing the organisation, shared leadership focuses primarily on the actors within it. The subchapter focuses on the relationship between leadership and teachers, shared leadership between them, fostering a trusting relationship among professionals, and supporting the learning process and the learning environment. Building a professional community is given particular attention in the studies. In addition to shared leadership, this chapter analyses the impact of instructional leadership on student achievement, focusing on classroom processes to support teachers' work. Researchers have found that teacher perceptions of the leader are significantly influenced by the leader's emotional behaviour; specifically, trust in the leader is determined by competence, caring, and ethical behaviour (ibid, 37–53)
    - The subchapter allows the identification of several leadership competencies. Here and now, we can only focus on the most important ones, such as the ability of the principal to improve the learning environment, to induce

professional cooperation of teachers to improve the quality of teaching, the role of a strong internal compass as a basis for ethical behaviour, and the decisiveness combined with empathy in the leadership of teachers.

  - At this point, it is worth highlighting a quote from the subchapter in which the authors examine the relationship between education and shared leadership. *"Those advocating instructional leadership emphasise the need to maintain a singular focus on classroom practice as the key to improving student achievement, and they point to the important role of the principal as a model. Others who look at shared leadership point to the importance of creating a learning organisation in which all eyes are focused on leadership for learning. Our data suggest that these are complementary approaches, and that both may be necessary."* (ibid., 51–52) It is important to note that researchers who have examined the impact of school leadership on learning outcomes do not only speak about the importance of improvement and collaboration in general, but also link the way leadership is exercised to the creation of a learning organisation. This reinforces our finding in Chapter 7 that the learning organisation, if not the only one, is a very important form of organisational functioning that can optimise the learning environment.

- *Patterns of distributed leadership*: the researchers started from the premise that the concept of distributed leadership can be understood in individual and organisational terms. In this subchapter, they have applied this approach, drawing on literature analysis and teacher interviews, and sought to explore patterns and sources of distributed leadership. This subchapter clarified the diversity of feasibility of shared leadership along questions such as: who is involved in sharing leadership; what patterns of this are found; how does the sharing of responsibility evolve; how does this relate to school development goals (ibid., 54–65)
  - This chapter primarily supports the thinking about leadership competencies by highlighting the role of the leader's personal characteristics and intentions in implementing shared leadership. Along the way, we have explored in more depth the role of leadership self-awareness and preparedness in school leadership. This provides the basis for the leader to make informed decisions about using different leadership models and styles, based on knowledge of themselves and the organisation they lead.

- *Leadership Practices*: this subchapter focused on identifying the practices and typical activities of high-performing school leaders and teachers in a way that the practices identified were well related to everyday life and activities. The authors linked the practices that increased effectiveness to four domains based on previous research. The first was *setting directions*, which involved the shared, consensual formulation of a vision, setting goals, and setting and communicating high-performance expectations. The second was *people development*, which involved personalised support, attention, encouragement, and motivation of individuals, with a strong emphasis on treatment (respect for others), assessment, and recognition. It is important to shape attitudes and mindsets to increase perseverance. If the authors put it differently, part of it is to encourage and develop forms of teacher learning. The third is to *re-design the organisation*. This includes improving the functioning and culture of the organisation (especially the culture of cooperation), managing external and internal partnerships, and managing organisational change. Finally, the fourth area is *leading educational programmes*. This basically means leadership activities that support the systematisation and smooth and high-quality implementation of teaching-learning processes (ibid., 66–93).
    - From the above, it can be seen that the leadership attitudes and activities briefly described here are fundamental to the definition of leadership competence. These include elements related to the visioning of the organisation as well as the skills needed to develop teachers and their teams and manage the pedagogical processes of organisational change. The four broad categories of leadership activities essentially cover the professional activities of the principal, except legal, administrative, and financial activities.
- *Poverty, Size, Level and Location*: this subchapter focuses on the contextual factors that make schools, their teachers and their leaders significantly different. The composition of the student population, the educational level of parents, the poverty or wealth of the local community surrounding the school, and the size of the school all require different strategies and practices from the leader. Some of the contextual differences are those that require state intervention or even policies formulated at the state level (inclusive education, the operation of schools with large numbers of disadvantaged pupils, etc.) (ibid., 94–102)

- From the point of view of leadership competencies, this area can basically mean the leadership's understanding of values, adaptability, the task of creating and leading learning programmes adapted to different target groups of learners, or the support, encouragement and motivation of teachers working with students with multiple disadvantages.

The research of Louis and her colleagues and the leadership competencies that can be derived from it, similar to the research of Day and his colleagues presented in the previous section, are essentially in line with those derived from the learner competencies, the context of the knowledge society and the learning environment created by the school operating in it, based on phases 1-3 of my research. This is an important result because it shows that the characteristics of school leadership that have a significant impact on students' learning outcomes and the characteristics we derived from the student competencies needed in the knowledge society, as shown in Figure 1, which illustrates the research concept, are essentially consistent.

8.3 Competency framework for school leadership

We arrived at the core of the dissertation. This subchapter deals with the international experience of developing standards and frameworks for school leaders. After that, I take a brief overview of the international trends and focus on the results of the first and second phases of our research. I introduce the frameworks born in the different phases and analyse their applicability in the school leadership profession.

8.3.1 Competency framework for school leaders – international overview

The evidence presented in subsections 8.1-8.2 could go on. However, what has been given so far is sufficient to accept the importance of the impact of school leadership on student learning outcomes. Furthermore, let us consider whether we start from the perspective of leadership impacting student outcomes or from the perspective of the student competencies needed in the knowledge society, we have essentially similar leadership knowledge before us.

This means we can move on. We can examine the characteristics school leadership needs to have to have such an impact on pupils' progress and learning outcomes, as demonstrated in

the research analysed above (see 8.2). If we ask this question, it is logical to ask how we can describe and characterise school leadership. The emergence of the concept of competence and its increasing sophistication has played an increasingly important role in cultivating a wide variety of professions and preparing people for them. We have seen this in Chapter 3, where I dealt in detail with interpreting the concept, going so far as to define the definition used in the present research (see 3.1.1.5). In section 3.1.2.2, I reviewed the methods used to develop competency frameworks to demonstrate their relevance to the research phases. However, this point also provides evidence that competency frameworks are used to describe the knowledge (otherwise known as competencies) required to perform a profession in different occupations. Therefore, it was a logical decision on our part to aim at developing such a framework in the first and second phases of the research.

In doing so, we looked at several existing school leadership expectations. Typically, due to the development of evaluation systems, we found, mainly in Anglo-Saxon countries, systems that aimed to achieve quality in school leadership by setting standards (professional expectations to be met by all leaders) related to the practice of the profession. In these cases, the question always arises: What is their content? What is the expected level of performance? How can the level of compliance be assessed, i.e., how can compliance with the standards be measured? A detailed analysis of these questions would go a long way. Here, I will only attempt to present some of the key common elements of these systems. A comparative analysis of standards, competencies, and measurements could be the subject of another paper.

In the first and second phases of the present research, it was necessary to review the leading school leadership standards at the forefront of the time. This helped to think through and design how the complex activity of school leadership could be captured in terms of domains and described along categories (descriptors) (*Kirkham et al.*, 2010, 17–20; *Kirkham et al.*, 2013, 18–30). These analyses showed that both the domains of school leadership and the descriptors showed similarities and differences. The wording and the number of domains are not the same, but the content, in many cases, shows significant similarities. This is reflected in the following:

- Standards typically deal with goals and vision:
    - Setting a widely shared vision for learning (ISLLC, US, 2008)
    - Setting directions (Ontario, Canada, 2008)
    - Shaping the future (England, 2004)

- Focus on learning, learning outcomes and supporting teaching
    - Ensuring effective management of the organisation, operation, and resources for a safe, efficient, and effective learning environment (ISLLC, US, 2008)
    - Leading the instructional program (Ontario, Canada, 2008)
    - Leading learning and teaching (England, 2004)
- Management and development of the school as an organisation
    - Developing a school culture and instructional program conducive to student learning and staff professional growth (ISLLC, US, 2008)
    - Developing the organisation (Ontario, Canada, 2008)
    - Managing the organisation (England, 2004)
- External and internal relations management, staff development, motivation
    - Collaborating with faculty and community members, responding to diverse community interests and needs, and mobilising community resources (ISLLC, US, 2008)
    - Building relationships and developing people (Ontario, Canada, 2008)
    - Developing self and working with others (England, 2004)

The list could go on, but it is clear from the above that there are many similarities in the definition of leadership content areas.

A similar phenomenon can be found for descriptors. Theoretical knowledge, the knowledge of facts and concepts in context (knowledge), appeared in all the standards examined (e.g., US, England, Ontario). How activities and the ability to act were captured differed from one country to another. The ISLLC (US) used the concept of skill, which is similar to Ontario's framework. The English competency standards used the term "Professional Qualities", which included action (Is able to…) and attitude (Is committed to…). The Canadian standard included the categories of skill and attitude (these three elements were grouped under the name of competence) in addition to knowledge. It also separately describes the key activities "Practices" that belong to the domain. In addition to knowledge and skills, the ILSSC captured personal leadership characteristics under the "Disposition" category.

To sum up, the standards before and after the turn of the millennium (corrected where appropriate) show many similarities in content and descriptive categories. At the same time, however, there are also differences, which are mainly linked to the educational policy and the history of the educational system in the country concerned. It is also worth noting that in several countries (the US, England, Canada), although outside the field we are directly

examining, there has been an effort from the outset to define not only professional expectations for school leaders but also professional expectations for educational leaders at local (district) and above (state, nation) levels.

As stated in the methodological section, our starting point for each research phase was partly the same as the genesis of the standards briefly described above. There were differences in the order and definition of the content dimensions of leadership. We recorded two things in each of the three phases of the research: a) we identified school leadership and organisational (school) characteristics as competencies. We used knowledge, skills, abilities, and attitudes as descriptors. (See 3.1.1.5) The domains or dimensions of school leadership were not predefined. Still, they were derived from a detailed description of leadership activities and their grouping (See 4.2–4.4).

In the following, I will present and analyse the school leadership competency framework developed in phases 1 and 2 of the research.

8.3.2 Area-focused framework – results of the LLL-S-L

In sections 3.2.3.1 and 3.2.3.2, I presented the model and adaptation of the demand-driven competence development model (DDCDM), as well as the model used to describe and compare behavioural competencies, the RDA. Then, in subsections 4.2.1 and 4.2.2, I described the methods and tools used in the first phase of my research, including the workshops to identify competences and the purpose and instrument of the questionnaire survey. I will only refer to these in the boxes that follow and will not repeat their description. In this subsection, I will present the results of the implementation and the related issues.

The objective of the LLL-S-L project is described in subsection 1.2. The development of the school leadership competency framework in this phase meant defining the competency areas of leadership and, by identifying the behavioural competencies of the school principal, creating a leadership profile (function profile) per country using RDA. The RDA thus served three purposes in this case: a) to build a school leader competency profile (function profile) based on the views of school leaders and decision-makers in each country; b) to measure behavioural competencies based on the function profile; c) to compare school leader profiles (function profiles) and, based on this, to make recommendations for further improvement. We have seen that there are noticeable differences in profiles between countries and between

different stakeholders (school leaders, local or national education managers (decision-makers)) within countries. This raised the question of whether common competencies could be defined for school leaders in the five countries concerned.

A further question was the extent to which educational governance can influence the relevant competence profile. This was investigated using the autonomy test. This study also showed that the differences are significant.

In the following sections, I examine the results of the first phase of the research to address these questions. To this end, I will partly explore the results of the workshops and partly analyse the data collected through the questionnaire. In neither case do I aim to present all the details. From both the workshops and the questionnaire survey, I will focus on those findings that are relevant to the topic under discussion. Thus, I focus on the set of results that relate to establishing a competency framework. At most, I refer to how the results can be used for improvement (personal, training programme, organisation, system).

8.3.2.1 The competency framework arose in LLL-S-L

The development of the competences framework at this stage was based on three sources:

- The Role of School Leadership in Creating a Learning Environment that is Conducive to Effective Learning with Special Regard to the Improvement of the Quality of Teacher Activity. (*Ibolya*, 2009)
- An extensive literature review was conducted by the professional team leading the LLL-S-L project.
- The project included initial workshops with school leaders and local and national managers, followed by a questionnaire-based data collection.

The workshops and their procedures, as well as the questionnaire survey, were developed to apply the demand-driven competency development model, identifying the competency areas (structure and framework) and expectations of school leaders. However, some of the workshops were not implemented in a standard way. In Hungary, I conducted the workshops, and they went according to the original plans. In Austria and the Czech Republic, workshops were held by experts. The content and methods of these workshops only partly followed the original procedures. Finally, no workshops were organised in Slovakia and Slovenia. In these two countries, the formulation of the competency expectations was based on the

questionnaire survey. The questionnaire was designed to facilitate the creation of leadership competence profiles (*Baráth*, 2010b, 41–55).

Based on the background above, the researchers and developers working on the LLL-S-L project defined the areas of school leadership competences, which collectively covered the leadership activity, following a thorough professional discussion. This process resulted in the identification and description of nine domains. These were:

- strategy
- learning management
- organisation
- resources
- accountability
- approach to life
- moral
- leadership skills
- partnership

The questionnaire presented in subsection 4.2.1 was used to assess stakeholders' views on the importance of leadership skills (including knowledge, skills, and attitudes) in these areas. Their answers were given on a four-point scale (1: not at all important, 4: absolutely important). I summarise the results of the survey based on the 2010 research report (*Baráth*, 2010, 68–69). This survey brings us closer to answering the question of whether it is possible to create a transnational competence framework. To do so, I first provide a brief review of the sample's characteristics. As described in subsection 4.2.2, the sample was not representative of any country. However, the selection of a sufficient number of respondents allowed us to make strong assumptions based on the responses. Based on the demand-driven competency development model, it was important to ask not only school leaders, the professional practitioners about the relevance of the above areas, but also their employers, education policy makers, as they are essentially the ones who 'use' the knowledge of school leaders. Table 18 and Table 19 show the two main characteristics of the sample (distribution by country, and by school leaders and policy makers).

Table 18: The number of respondents by country

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	1 Slovenia	61	10.9	10.9	10.9
	2 Czech Republic	111	19.9	19.9	30.8
	3 Austria	100	17.9	17.9	48.7
	4 Slovakia	111	19.9	19.9	68.6
	5 Hungary	175	31.4	31.4	100.0
	Total	558	100.0	100.0	

Table 19: The proportion of decision-makers and school leaders among the respondents

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	1 School leaders	442	79.2	79.6	79.6
	2 Decision-makers	113	20.3	20.4	100.0
	Total	555	99.5	100.0	
Missing	System	3	0.5		
Total		558	100.0		

In all countries, the number of respondents was sufficient to conduct the planned statistical surveys and produce a functional profile of the school leadership profession. The number of respondents varied between 61 and 175 (Table 18). It was important to have a sufficient number of decision-makers among the respondents to construct the profile of leadership competencies. Table 19 shows that the proportion of this group is approximately 1/5, which is considered adequate.

Table 20 contains the responses by countries, within these by target groups, and overall. There are only a few responses below the average of 3.0, in all areas 1–5, 7, and 8, which received a value of 3.7 or above in at least one of the countries. This indicates that the respondents found almost all of them important or very important. Area No. 8 received the highest emphasis of all nine areas, referring to the personal characteristics and abilities of

the leader. Here, 12 of the 3-3 results (directors, decision makers, total) in 5 countries exceeded the value of 3.6. The sixth area – i.e., positive life attitude and optimism – is the only one that received a value below 3.0 (2.91 in the Czech Republic, among decision-makers). If we compare the groups of respondents in the different countries with the total responses, we can conclude that the Slovenian respondents found all areas more important on average, while the opposite is true for the Czech respondents. This means that in the case of Slovenia, 15 responses had the highest score of the 9×3=27 average (9 areas, directors, decision-makers, total respondents). In contrast, in the case of the Czech Republic, 13 responses had the lowest score. Finally, we can conclude that in most cases, the responses of the directors and decision-makers were similar (e.g., strategy: Slovenia, Austria, Czech Republic; learning and leadership skills: all countries except the Czech Republic, etc.). However, there are some cases where quite large differences occur (e.g., positive attitude to life: Slovenia, Czech Republic; ethical operation: Czech Republic).

If we compare the opinions of decision-makers and school leaders regarding the entire sample, we can find that there is virtually no difference between them. The difference between the importance of each field differs from 0.03-0.04. The picture is somewhat different when examined by country. Then we will see that in the Czech Republic, school leaders found all areas to be relatively or significantly more important than the decision-makers did. In the case of Austria, the difference was smaller, but where there is a difference, the situation is the opposite, i.e., the decision-makers assigned higher values. The response pattern of the Slovaks is similar. In the case of Slovenia, the groups differed in their emphasis on certain areas, whereas the Hungarian pattern shows that the opinions of the groups were nearly identical.

In all, we can conclude that the selected leader areas, as well as the knowledge, ability to act, and attitude of the leaders in these areas, were considered important. Although there are some differences between countries and between the opinions of the leaders and the decision-makers, it is the identical nature of the responses that is more typical. This suggests that if we wish to grasp the leader competencies in these fields, then a consensus can be reached between the countries involved. This part of the survey supports the idea of developing a transnational competency framework. We can assume that it is easier to reach an agreement on the main area than on specific tasks and activities. Developing the function profile for school leaders supports this claim, as discussed in the next point (8.3.2.2).

Table 20: The importance of competence areas by countries, Source: Baráth (2010c, 270–271)

	1 Slovenia			*2 Czech Republic*			*3 Austria*			*4 Slovakia*			*5 Hungary*		
	1 Sl	*2 Dm*	*Total*	*1 Sl*	*2 Dm*	*Total*	*1 Sl*	*2 Dm*	*Total*	*1 Sl*	*2 Dm*	*Total*	*1 Sl*	*2 Dm*	*Total*
q11 Developing a strategy: common, motivating vision, goal-oriented, preactive functioning (goal-process-result), value-oriented, ambition for sustainability.	3.83	3.71	3.80	3.55	3.27	3.52	3.68	3.70	3.69	3.63	3.71	3.64	3.71	3.57	3.69
q12 Leading the processes of teaching and learning, forming an effective learning environment, setting high expectations (students, teachers) responsibility for the quality of learning and teaching.	3.79	4.00	3.84	3.51	3.18	3.47	3.46	3.46	3.46	3.37	3.47	3.39	3.71	3.62	3.70
q13 The management and development of the school as an organisation, organisational structure in tune with goals, sharing of tasks, responsibilities and scope of authority, effective functioning, safe environment for the support of learning and development, result and future orientation, the formation of an organizational culture supporting change and cooperation, linking the school to its environment.	3.80	3.64	3.77	3.58	3.27	3.55	3.54	3.76	3.65	3.49	3.65	3.51	3.74	3.71	3.74

	1 Slovenia			2 Czech Republic			3 Austria			4 Slovakia			5 Hungary		
	1 Sl	2 Dm	Total	1 Sl	2 Dm	Total	1 Sl	2 Dm	Total	1 Sl	2 Dm	Total	1 Sl	2 Dm	Total
q14 Management of organisational resources, human resources development, directing colleagues: involvement, motivation, inspiring, constant development and training, selection, team building, tuned development and exploitation of individual and organizational knowledge for effective realization of goals.	3.85	3.79	3.84	3.52	3.09	3.47	3.68	3.70	3.69	3.54	3.76	3.58	3.79	3.71	3.78
q15 Supporting transparency, taking responsibility, being committed to quality: responsibility for consuming resources and achieving goals - for the maximal development of students (goal-oriented process control), assessment, confidence based on facts, accounting towards partners, responsibility for achieving goals.	3.77	3.86	3.79	3.29	3.27	3.29	3.46	3.56	3.51	3.36	3.59	3.40	3.50	3.52	3.50
q16 Positive view of life, optimism: future-oriented thinking and acting, resource for own self and for others.	3.60	3.21	3.51	3.45	2.91	3.40	3.58	3.55	3.57	3.45	3.47	3.45	3.55	3.48	3.54
q17 Ethical operation, the moral aspect of leadership: moral attitude, responsibility for innovations, understanding the wide socio-cultural environment of the school, taking moral responsibility for value-driven operation, social justice, equality (equal access to quality education).	3.83	3.86	3.84	3.58	3.18	3.54	3.46	3.50	3.48	3.46	3.35	3.44	3.69	3.71	3.69

	1 Slovenia			2 Czech Republic			3 Austria			4 Slovakia			5 Hungary		
	1 Sl	2 Dm	Total	1 Sl	2 Dm	Total	1 Sl	2 Dm	Total	1 Sl	2 Dm	Total	1 Sl	2 Dm	Total
q18 Leadership competencies, personal characteristics: responsible and individual decision-making, conflict management, commitment, integrating personality, co-operation, consciousness, determination, rationality, autonomy, authenticity, creativity, openness, working capacity, ability to handle stress and to learn.	3.85	3.64	3.80	3.45	3.18	3.43	3.76	3.86	3.81	3.71	3.71	3.71	3.79	3.86	3.80
q19 Partnership: co-operation, contact-making and building networks with other schools and learning organizations in the interest of effective learning, community building, being sensitive towards the mutual interrelatedness of school improvement and community development (in local community), respecting differences and building upon them, sensitivity towards and ability to react to partners' needs and expectations.	3.53	3.21	3.46	3.20	3.27	3.20	3.26	3.48	3.37	3.18	3.00	3.15	3.42	3.52	3.43

Sl: school leaders; Dm: decision makers; Total: school leaders and decision makers together; q11–q19: numbering of the competence area

8.3.2.2 Competency profiles for school leaders

Our original ambition was to identify the behaviours, activities and attitudes that characterise successful school leaders in the 21st century, in line with the competency structure (framework) that we have developed. The workshops, led by experts and planned for each country, were designed to gather information through in-depth discussions and consensus-based proposals, with the participation of both school leaders and decision-makers in local and national education leadership. Then, using a questionnaire survey with the same target group but with a broader data collection, the leadership profiles drawn up based on the information from the workshops will be refined and fine-tuned. As I mentioned earlier, this has not been achieved for all countries. I will therefore present the preparation of competence profiles and their contribution to achieving the objectives, based on data collection in Hungary.

We held two workshops in Hungary, which I ran. One was attended by school leaders and some management development consultants, while the other was attended by education decision-makers. Based on the methods described in subsection 4.2, I collected the characteristics of successful school leaders in the 21st century (i.e., the knowledge society). The workshop programme and questionnaire are presented in Appendix 2. The results of the two workshops were presented in the RDA behavioural competency model (see section 3.2.3.2 for a brief description and Appendix 1 for a detailed presentation). Based on this, a behaviour-focused description of the competencies was developed. The competency profiles for school leaders and decision-makers from the two workshops demonstrated a significant overlap of 94.87% (*Baráth*, 2010, 50). The results were obtained independently of each other, so this can be considered as an implicit consensus between the two groups involved. A final profile was created by combining the two leadership profiles through a weighting process.

As I wrote in the research report in 2010 (*Baráth*, 2010b, 50), this was based on the weighted opinions of the decision-makers and on the ranking of the characteristics describing the required leader behaviour, which was sent to the two groups. When comparing the two profiles, we can conclude that, in the case of decision-makers, the leader dimension, which

can be measured and expressed with the help of the RDA model[58], is more important. Besides the quite significant overlap, the difference between the two groups can be detected in the fact that the decision-makers pay greater attention to motivation and encouragement than practising directors (on two axes, the values are 12.3 and 11.11). Directors find that seeing things through to the end is more important than decision-makers (on axis 8, the values are 12.64 and 13.9). This difference is manifested in the fact that, in the leader-operational dimension, leader values were perceived as 53.51% by decision-makers, whereas they were perceived as only 51.27% by school leaders. Figure 34 shows the three profiles (school leaders, decision-makers, overall/ranked). The detailed description of the final (overall) profile is in Appendix 2.

[58] Just a reminder: the model allows us to characterise human behaviour along 8 axes, which can be grouped into 3 dimensions. If the behavioural characteristics are uniformly distributed (which is a non-optimal distribution) along the 8 axes, the score for each axis is 12.5%. 100% is always allocated between the 8 axes, based on the frequency of behaviours that can be associated with each of them. The variation in the percentage distribution shows the characteristics of the behavioural profile.

Hungary – workshop analysis		
School leaders	*Decision makers*	*Overall/Ranked*
		
Axis 1 2 3 4 5 6 7 8 10.5 11.11 12.96 13.6 12.05 11.4 14.51 13.87	Axis 1 2 3 4 5 6 7 8 10.60 12.36 11.8 13.55 13.2 11.45 14.4 12.64	Axis 1 2 3 4 5 6 7 8 10.5 11.11 11.8 13.58 13.2 11.4 14.5 13.88
N=7	N=14	N=21
Leader competencies: 51.27%	Leader competencies: 53.51%	Leader competencies: 52.39%
Organiser type of person, content-oriented, stable, leader 1. Pragmatic, realistic 2. Loyal, committed 3. Self-conscious and diplomatic	Organiser type, content-oriented, stable, leader 1. Pragmatic, realistic 2. Firm, organiser 3. Loyal, committed	Organiser type, content-oriented, stable, leader 1. Pragmatic, realistic 2. Firm, organiser 3. Loyal, committed

Figure 34: Hungarian school leadership profiles based on workshop, Source: Baráth (2010c), 50–51. Own editing.

The implementation of the workshops and the results have demonstrated that the demand-driven competence development model and process can be applied in practice, which is significant for the present research beyond the specific results, as it has shown the feasibility of the development model. It is worth mentioning in particular that the process enabled deep and intensive communication among the stakeholder groups, which increased both the professional grounding of the development and its acceptance among the stakeholders.

The development of the competency framework was also supported by a questionnaire survey following the workshops (see 4.2.2 and Appendix 2). The questionnaire[59] was designed to identify competencies based on several criteria: a) Identify the competency profile of the leader based on the responses. b) The statements aimed at identifying the competences should be related to the already identified areas of competence. c) They should be based on behavioural, action and thinking characteristics that can be incorporated into the RDA behavioural competence model. To meet these expectations, the questionnaire section for identifying competencies contained 32 statements, plus 2 sets of 8 statements. Of the 32 statements, 4-4 fit the 8 axes of the RDA model. Respondents were asked to rate the 32 statements along two criteria on a 4-point Likert scale. First, how typical is the statement (the activity, mindset, etc., identified in the statement) of a successful school leader in the knowledge society? This response was then used to identify *the importance of* the expectations, i.e., the profiles of functions considered appropriate by each country and respondent group. *A weighted aggregation of* these led to the profiles that could be said to be valid for each country. The second criterion was the extent to which the statements were considered typical of the leaders in the function. From this, a picture of the current situation at the time could be constructed. The divergence and distance between the two indicated the directions for improvement. From the 32 statements, we selected 2×8 statements such that one statement from each group of eight matched one axis of the RDA. Respondents were asked to rank the 2×8 statements. This essentially helped to control the consistency of the response. The logical assumption was that if one considered certain characteristics – such as

[59] The questionnaire was developed by me after consultation with the international team of experts, based on a concept I proposed.

creativity, openness, perseverance, leadership, or even achievement, etc. – to be important in the Likert-scaled assessment of the 32 statements, one would expect to rank the same or similar statements at the top of the ranking in the group of eight. Although it is undoubtedly not possible to directly compare methodologically different forms of assessment (scale assessment versus ranking), trends can be observed.

Here, too, background variables played a role in the study, particularly the job title. Based on responses to the questionnaire, a function profile for school leaders and decision-makers was developed. Merging these profiles resulted in a profile for school leaders in each country. As you can see, the process was very similar to that applied after workshops.[60] In the following, I will analyse the school leaders' competency profiles based on a questionnaire to examine their contribution to the development of a transnational competency framework. I will briefly present the Hungarian profiles, discuss their comparison across countries, and rank the 2×8 statements. In the analysis, I draw on the findings in the LLL-S-L research report, utilising some of its elements in the text (*Baráth*, 2010c, 67–95).

For an easier interpretation of the data, Table 21 and Figure 35 show the numbering and naming of the axes of the RDA, as well as the naming of the dimensions and quadrants and their relationship to the axes of the RDA. The figure and the following table illustrate the calculation of the percentage values for the dimensions based on the axis values.

[60] The development of the function profiles and their description is based strongly on the preparation and analyses of the leadership profiles carried out by Tamás Kígyós psychologist, RDA advisor; Qualitas T&G Ltd.

Table 21: Relation among the RDA axes and dimensions, Source: ibid., 71–72. Own editing.

Number of RDA axes	*Name of the RDA axe*	*Dimension*	*Quadrant*
1	Engaging, Interested	Dynamic, Relation-oriented, Operational	Extravert
2	Creative, Stimulating	Dynamic, Relation-oriented, Leading	
3	Cooperative, United	Stable, Relation-oriented, Operational	Cooperative
4	Loyal, Committed	Stable, Relation-oriented, Leading	
5	Self-confident, Diplomatic	Dynamic, Content-oriented, Leading	Autonomous
6	Independent, Self-reliant	Dynamic, Content-oriented, Operational	
7	Pragmatic, Realistic	Stable, Content-oriented, Leading	Organising
8	Firm, Organising	Stable, Content-oriented, Operational	

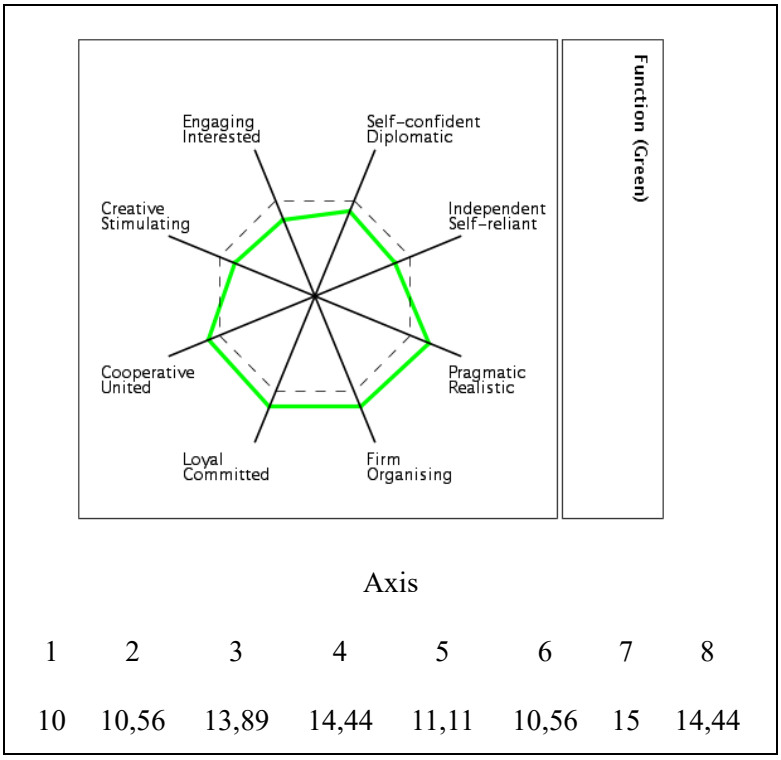


Figure 35: Slovenian function profile, Source: ibid., 72.

Table 22 shows examples how RDA scores are calculated for each dimension.

Table 22: Example for calculating the values of the RDA dimensions, Source: ibid., 72.

Dimension	*Axes belong to the dimension*	*Value of the dimension*
Dynamic	1, 2, 5, 6	10.0+10.56+11.11+10.56=42.23
Stable	3, 4, 7, 8	13.89+14.44+15.0+14.44=57.77
Relation oriented	1, 2, 3, 4	10.0+10.56+13.89+14.44=48.89
Content oriented	5, 6, 7 ,8	11.11+10.56+15.0+14.44=51.11
Leader	2, 4, 5, 7	10.56+14.44+11.11+15.0=51.11
Operating (operational)	1, 3, 6, 8	10.0+13.89+10.56+14.44=48.89

Each profile is named after the country. It is essential to note, however, that the results of the questionnaires (the functional profiles) are estimates. Neither the target groups (school principals, decision-makers) nor the weighted profile derived from them can be considered an accurate description and definition of leadership expectations in a given country. Their significance lies in the fact that they provide a professional description that can be shaped and moulded through further discussion and negotiation.

In the case of the Hungarian profiles, we can see that the final (Overall/Ranked) function profiles, prepared based on the questionnaire and workshops, differ significantly. The most important difference between the two profiles is that the one based on the workshops is clearly a leader. In contrast, the one based on the questionnaire is strongly operational. In the first profile, practicality, persistence, commitment, and confidence are most prominent, while in the second one, persistence, cooperation, winning behaviour, and independence are most prominent. Although we do not observe such a difference for the other two dimensions

(stable-dynamic and content-relationship orientation), the differences are also significantly large here.

Further differences, sometimes even larger, are found when comparing the workshop-based and then questionnaire-based functional profiles of directors. Similar, though slightly smaller, differences are found based on the perception of decision-makers (workshop, questionnaire). The claims here are supported by the figures in Appendix 2.

Overall, the Hungarian profiles for the two target groups – directors and decision-makers – are very similar and focus primarily on leadership competencies. The questionnaire-based profiles differ significantly from each other and from this one, with a stronger emphasis on the operational dimension rather than leadership.

It might happen due to different experiences. The participants in the workshops from both groups were actors who had not only been part of, but also often initiated, changes and reforms in Hungarian public education over a longer period. For them, leadership means a strategic role, a leader-type of management. The school leaders who responded to the questionnaire have significantly different perceptions of leadership based on their own lived experience. They view their role as more operational in nature. This assumption could not be answered in the first phase of the research, which lacked the tools to do so. The difference between the questionnaire survey and the profiles drawn up based on the workshops, however, suggests that working competence expectations that have an impact in practice can probably only be developed as a result of intensive consultations and discussions with the groups concerned, based on a deep understanding and acceptance.

Examining the functional profiles of other countries reveals similar differences. In the case of Austria, both groups – the most important dimension for us (leader or operational) – show a stronger operational orientation, which is even more pronounced among decision-makers. The final profile, however, is characterised by a more balanced approach. The Czech profiles are characterised by harmony and balance, while the final profile is slightly more operational than leader, with a strong emphasis on perseverance and organisation. The Slovenian profiles differ quite significantly, but the most important characteristic common to the final profile is a clear leader dimension. Finally, for the Slovak profiles, only the decision-makers' profile scores higher on the leader dimension, while the final (overall) profile shows a strong operational orientation.

The ranking of the 2×8 statements selected from the 32 statements used to construct the functional profiles provides further information on the definition of school leaders' expectations. In the following, the most important features of this are presented. (See Table 23.)

Table 23: The ranking of the axes – A comparison of two ranking orders; Source: ibid., 84.

Country	*RDA axis*							
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Austria Ranking order 1	5.	1.	8.	7.	4.	6.	3.	2.
Ranking order 2	8.	2.	3.	4.	7.	1.	5.	6.
Czech Republic Ranking order 1	5.	1.	8.	6.	4.	7.	2.	3.
Ranking order 2	8.	2.	3.	6.	5.	1.	4.	7.
Slovenia Ranking order 1	6.	2.	8.	7.	4.	5.	3.	1.
Ranking order 2	7.	1.	4.	6.	8.	2.	5.	3.
Slovakia Ranking order 1	5.	1.	7.	6.	4.	8.	3.	2.
Ranking order 2	8.	1.	3.	7.	6.	2.	4.	5.
Hungary Ranking order 1	5.	3.	7.	8.	4.	6.	2.	1.
Ranking order 2	8.	2.	3.	5.	7.	1.	6.	4.

From the rankings, it is evident that there are substantial differences in the rankings of the countries, as observed for the functional profiles, but also that there are well-identifiable commonalities. The clear ranking of the statements related to axis 2 (creative, stimulating) of the RDA is essentially a consensus result. Additionally, statements related to axis 6 (independent, self-reliant) and axis 8 (firm, organising) are mainly at the top of the ranking.

All this suggests that the definition of school leadership competency areas in the five countries studied can be considered essentially consensual, with substantial variations in

leadership function profiles within and across countries. The ranking confirmed the core characteristics of the function profiles and revealed strong commonalities in several areas. These results suggest that transnational competencies can be developed in a framework context, emphasising the need for adaptation. The results of the first phase of the research so far indicate that it is methodologically possible to construct a set of expectations for school leaders that describe the competencies of successful leaders in the knowledge society. This is common in the main directions of the content, but with marked differences in the details.

A crucial question for the research is whether the differences between the educational systems of the countries participating in the LLL-S-L project and the differences in the everyday practice of school leadership allow for the definition of transnational competence standards for leaders. The question can also be asked whether the national character of the education system and the differences arising from its history have a greater influence on the expectations of leaders, or whether the characteristics and expectations of a globalising world, the knowledge society, and the knowledge economy prevail. A deep and comprehensive answer to this question could be the subject of a separate research project. With this in mind, we have attempted to answer this question within the scope of the project. Among the educational policy impacts, I proposed investigating school autonomy through the development of a questionnaire to identify leadership competencies. It can be assumed that, regardless of the educational governance characteristic, each country expects school leaders to excel in their respective roles. The content of excellence is influenced by considering the role of schools and learning in society, including their reproduction and development, which can create significant differences in expectations. It is a different task for the school leader to adapt the learning process, its content, organisation and assessment to the current readiness, intentions and aspirations of the pupils in the school, as if the content (curricula, teaching materials, etc.) were essentially fixed and his or her room for manoeuvre was limited to organising its application. How do educational administration and policy influence the role and definition of organisational objectives? To what extent can school leaders decide on material and human resources? The answers to these questions are all closely linked to the degree of autonomy.

The questionnaire was used to investigate how school leaders and decision-makers perceive the degree of autonomy and what degree of autonomy they consider desirable. Respondents were asked to rate school autonomy overall and in four areas (selection and employment, operation control, management, curriculum and programme) using a five-point Likert scale

(from minimal to very large) and to rate the degree of autonomy they perceived as desirable (adequate, to be increased, to be decreased). I present some key findings from the research, based on the relevant chapter of the LLL-S-L project research report (*Baráth*, 2010d, 96–110). Although it would be interesting to go into the details here, I will focus on those conclusions that can be related to the development of a framework for school leadership competence.

In examining perceived autonomy, I conducted a principal component analysis, which revealed that the domains of autonomy behave as a one-dimensional scale and can thus be considered as a single variable, which can be referred to as the measure of autonomy (Table 24).

Table 24: Level of autonomy (Result of the Principal Component Analysis), Source: ibid., 97.

	Component
	1
q5H1 Autonomy and scope of action of the school leader on the whole.	0.770
q5H5 The school leader's scope of action, influence and impact on the co-workers' (teachers and other staff) selection, employment and discharge.	0.758
q5H5 A The school leader's scope of action, influence and impact on the regulation of the school functioning (e.g. organisational and operational rules). (Currently)	0.753
q5H3 The school leader's scope of action, influence and impact on the school budget and financing management.	0.713
q5H2 The school leader's scope of action, influence and impact on the curriculum and pedagogic program of the school.	0.562

Variables of autonomy satisfaction were examined for differences between countries using factor analysis. This indicates that Austria has the lowest perceived autonomy, while Hungary falls into both the medium and high categories (i.e., it differs significantly only from Austria). Slovenia is categorised as medium, and the Czech Republic and Slovakia have high ratings of school autonomy. There is no significant difference between the views

of school leaders and decision-makers, with the latter group typically perceiving autonomy[61] more highly. (See Table 25.)

Table 25: The level of perceived autonomy, Source: ibid., 98.

Country	*N*	*Subset for alpha = 0.05*		
	1	*2*	*3*	*1*
3 Austria	100	-1.00		
1 Slovenia	57		-0.19	
5 Hungary	175		0.16	0.16
4 Slovakia	110			0.26
2 Czech Republic	111			0.48
Sig.		1.000	0.099	0.154

Using regression analysis, I investigated which of the 32 statements used to construct the functional profiles describing leadership functioning and behaviour had an effect on perceived autonomy. From this, it became apparent that the factors and characteristics that require an increase in the scope of directors' freedom of action may negatively affect the degree of perceived autonomy. The explanation may be that the perceived lack of autonomy necessary for the leader limits their ability to act and achieve their ambitions. Characteristics that increase adaptability, which help the leader pursue their goals within given constraints, increase satisfaction with autonomy. In this case, the phenomenon may be explained by the fact that the leader is able to pursue their ambitions within the constraints and therefore does not experience them negatively.

Overall, the degree of perceived autonomy is correlated with the leadership competencies of the school leaders. Autonomy, like other important factors in school functioning, is

[61] The detailed data are presented in Appendix 2 in the tables "The level of perceived autonomy in the groups of directors and decision-makers" and "Means of autonomy level by country and responder groups" (Currently and needed level).

determined by educational policy and, more broadly, by considering schooling, knowledge, learning, and the social policies that reflect these. It is therefore necessary to understand, explore, and take these expectations into account when defining the competencies of school leaders. This element of the study further reinforces the need to develop an adaptive system.

Similarly, I examined opinions and responses regarding the desired autonomy. Here, respondents were asked to indicate their views on a 3-point scale [decrease (-1), appropriate (0), increase (1)] in relation to perceived autonomy. Principal component analysis here led to two variables. One includes finance and the school leader's scope for manoeuvre; the other principal component is the leader's influence on operations, regulations, and the curriculum, as well as the school's programme. The first can be referred to as *management rights* (the leader's influence on the organisation's management is included here), while the second is the *content area* (the content of the school's operations is found here). The selection and employment of teachers belong to both components, as they are partly influenced by employer considerations and partly by the content of teachers' work and the incentives to support it, which in turn relate to the content area in terms of its purpose and outcomes. (See Table 26.)

Table 26: Level of the needed autonomy (Result of the Principal Component Analysis), Source: ibid., 102.

	Component	
	1	*2*
q5P3 The school leader's scope of action, influence and impact on the school budget and financing management.	0.849	-0.112
q5P1 Autonomy and scope of action of the school leader on the whole.	0.834	0.095
q5P5 The school leader's scope of action, influence and impact on the co-workers' (teachers and other staff) selection, employment and discharge.	0.565	0.331
q5P5 A The school leader's scope of action, influence and impact on the regulation of the school functioning (e.g. organizational and operational rules). (Change)	-0.059	0.853
q5P2 The school leader's scope of action, influence and impact on the curriculum and pedagogic program of the school. (Change)	0.175	0.725

Factor analysis on the two new variables reveals that countries are grouped in distinct ways (see Table 27 and Table 28), further confirming that there are identifiable differences in preferences for leadership competences among countries.

Table 27: The change in the required level of autonomy in terms of management rights, Source: ibid., 102.

Country	*N*	*Subset for alpha = 0.05*		
	1	*2*	*3*	*1*
1 Slovenia	51	-1.3210456		
2 Czech Republic	111		-0.9756848	
4 Slovakia	110			0.3326030
5 Hungary	174			0.4615407
3 Austria	96			0.6122908
Sig.		1.000	1.000	0.115

Table 28: The change in the required level of autonomy in terms of content operation, Source: ibid., 103.

Country	*N*	*Subset for alpha = 0.05*		
	1	*2*	*3*	*1*
1 Slovenia	51	-0.5659089		
5 Hungary	174	-0.4303451	-0.4303451	
4 Slovakia	110		-0.0580446	
3 Austria	96			0.5054384
2 Czech Republic	111			0.5549930
Sig.		0.901	0.094	0.998

After standardising the three newly created indicators (degree of autonomy, management rights and content functioning), these variables were used to form six clusters. The statistical analysis assigned each respondent to the cluster to which they were closest, based on their responses to the three domains. Table 29 shows the clusters.

Table 29: The clusters of autonomy areas, Source: ibid., 103.

	Level of autonomy	*Change of autonomy – management issues*	*Change of autonomy – content (work of the school, curriculum)*
Cluster	*Mean*	*Mean*	*Mean*
1	0.11	-0.4548538	-0.4094202
2	-0.06	0.3051287	-0.2035830
3	0.18	-0.6624434	0.2511364
4	0.37	-0.3624375	0.1151556
5	-0.71	0.8394353	1.1516620
6	-0.02	0.7934511	-0.7216871
Total	0.01	0.0055517	0.0005774

The six clusters show six leadership roles and perceptions – not independent of each other, but showing differences:

- Cluster 1: the regulated leader
- Cluster 2: the organisation manager leader
- Cluster 3: the pedagogical leader
- Cluster 4: satisfied operational leader
- Cluster 5: the autonomous leader
- Cluster 6: the classic manager

The detailed description of the above leadership clusters can be found in Baráth (*2010 d*, 101-106). What is interesting to us here and now is that we can clearly identify differences in leadership competence expectations along the lines of desirable autonomy.

The clustering reveals that school leaders and decision-makers in the participating countries view different areas and emphases of leadership at various points, and that there are correspondingly many differences in the competencies required for successful leadership. This aligns with the fact that the leadership profiles drawn up based on perceptions of leaders and decision-makers in each country showed significant, but not extreme, differences, as we have shown in the analysis of the functional profiles.

It can therefore be concluded that the set of competencies – the set of desirable behaviours and patterns of action – that can be considered optimal in a given system may vary according to the characteristics of the education system. It is also worth noting that the knowledge society is not a uniform, homogeneous construct. Despite its fundamental characteristics, it exhibits significant differences in space, time, and the history that influences culture (see, for example, the Finnish and Singaporean education systems), which have serious effects on the relevant competencies of school leaders. In many respects, a successful leader needs to possess different skills if they are essentially a pedagogical leader than if they have full responsibility for the organisation's functioning, with strong authority in areas such as financing, running and developing infrastructure, recruitment, etc. This leads us further in the direction that decision-makers in educational administration can only hope to have highly qualified principals at the head of schools if they clearly define the qualifications they should possess. The formal element of clarification encompasses education, practice, and other related aspects. The defining issue is how these elements operate, including their behaviour, outcomes, and performance expectations for the school and the leader.

It also follows that the vision of decision-makers regarding the future, the future society, and the role of the school in it will significantly determine the necessary leadership competencies. One need only refer, for example, to what is at the heart of schooling: teaching or learning, however interlinked the two concepts may be.

Based on the results of the first phase of the research, it can be concluded that the competence expectations of a successful school leader in the knowledge society can be defined. These showed significant differences in content and in the priorities between the competence elements in several cases. This suggests that it is not possible to avoid examining the broader context and the knowledge of education systems, as these clearly impact the definition of expected competences. Although these elements emerged in the developmental research, they did not become prominent. The importance of this is demonstrated by the research concept of this thesis and the related analyses in Chapters 5–7.

The demand-driven competency development model has been clearly demonstrated to be effective. Not only has it led to the identification of school leadership competency areas and the development of leadership function profiles, but it has also demonstrated the potential for consensus building and its practical usefulness.

These experiences have contributed to the development of the school leadership competency framework, Central5, the key elements of which are outlined in the following subsection.

8.3.3 The Central5 framework – result of the ICSL

The aim of the second phase of the research was presented in section 1.2. The methodology, the tools used, and the detailed description of the development of the framework are described in subsection 4.3. These are referred to where appropriate.

8.3.3.1 Reforming the LLL-S-L framework

In the framework of LLL-S-L, a description of the areas of competence has been prepared. In the previous subchapter, I addressed the content of the school leadership profiles and their comparison. It was evident that there was a basic consensus on the areas of competence of school leaders, while the profiles of functions showed considerable variation. Taking into account the results, the expert group that guided the implementation of the LLL-S-L proposed, based on the workshops and the questionnaire survey, to modify the competency areas and develop a common function profile (*Baráth & Schratz*, 2010, 111–115). The RDA was available to describe and measure the leadership competencies, more specifically, the behavioural competencies. The behavioural competency model was used to support the development of the project; however, no freely available measurement tool was available to assess leadership competencies. This hindered its use and application in practice.

The primary aim of the ICSL project, defined as the second phase of my research, was to refine and fine-tune the results of the first phase, thereby developing a transnational competence framework. This was linked to its practical applicability, which presupposed the existence of methods, tools, and procedures that could be used without specific training and with free access to those involved.

This means that there is an even stronger demand for a framework that is acceptable and applicable in all participating countries. An important element of this was that the primary task of the school was to support student learning; therefore, the focus of leadership activities and competencies was also on supporting learning. The concept of schools as learning organisations was already present in the first phase of the research. It became more prominent in the second phase.

At my suggestion, the expert group agreed to retain the use of the demand-driven competency development model. The experience gained in the first phase of the research encouraged us to fine-tune the competency framework using essentially qualitative methods. A key element of this was the use of standardised workshops and expert decision-making[62]. In this phase of the developmental research, a standardised process was followed in all countries to conduct the workshops, process the results, and make decisions based on them. The process is presented in subsection 4.3.2, and the results and areas for Central5 are presented in subsection 4.3.3.

The following is a brief overview of the competency framework developed by the expert team.

8.3.3.2 Structure and content of Central5

The name Central5 itself carries a message. In terms of content, “central” suggests that learning is at the heart of the competence framework, with teaching as its main support. The phrases describing learning and teaching make it clear that it is a life situation in which the student is an active participant in the process, takes responsibility for their own learning, and that this can be supported by teaching that builds on activity and collaboration among both students and teachers. The areas surrounding learning and teaching are conducive to high-quality learning. Central" refers to the geographical location of the participating countries (Central Europe), “5” to the number of areas of competence, and the number of countries involved in the development.

The design of the areas reflects both clarity and an attempt to capture the essence of leadership and its complexity. The areas interact and influence each other. For those dealing with leadership competencies, the interconnectedness of the domains provides an opportunity for gradual immersion and learning. This is done by providing a concise description of each area, followed by a definition of five key competences. The details are completed by a description of dozens of specific competencies in each area as a whole. These elements are defined in terms of the descriptors (knowledge, skills and abilities, attitudes)

[62] It means we tend to make consensus or, at least, above then 66% percents votes was needed to decide.

described earlier (4.3.2). It is essential to note that the competence elements reflect both the strategic and operational approaches to leadership. This is why each domain is labelled "Leading and managing…" Figure 36 illustrates the structure of the framework.

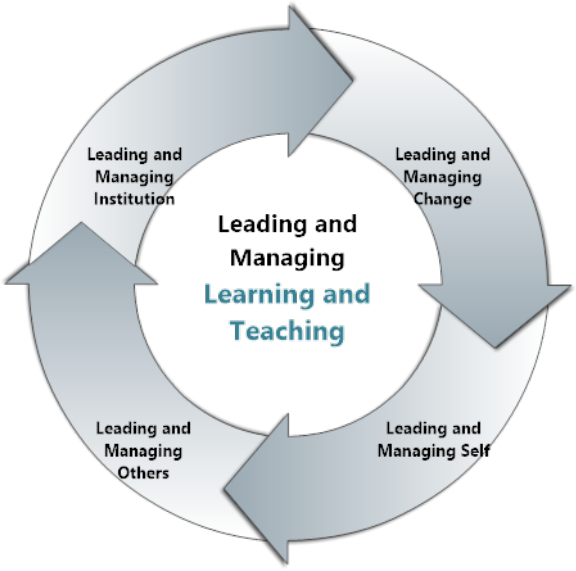


Figure 36: The structure and hierarchy of Central5, own editing

The structure of Central5 supports adaptability, enabling it to adjust to the objectives of the participants. The descriptions and interpretations of each topic are essentially the compass. It defines the content of a given area. This interpretation is supported by 5-5 key competencies in each area. In turn, a detailed unpacking of each area along the descriptors will allow a deeper understanding of the given competence area. Short case studies (vignettes) help interpret individual competences and apply them in practice (*Schratz et al.*, 2013, 43–65). The description of the competences, along with their descriptors, also supports the user in selecting and weighting the competences that are most important to them. This enables a single, transnational framework and profile to support the development and improvement of school leaders, rather than the multiple competency profiles identified in the first phase of the research. In the following, I briefly summarise the description of each of these areas. The key competencies associated with each of these areas are quoted in the chapter referred to.

A) *Leading and managing learning and teaching*: *"The core purpose of schools is learning. The role of the school leader is to create a supportive learning environment and to ensure that the resources of the school are directed to that purpose. The*

effective leadership and management of learning of all members of the school and the establishment, maintenance and the development of a learning organisation are thus primary functions of the school leader as the leading professional." (*Schratz et al.*, 2013, 46) This understanding of strategic and operational leadership of learning is in line with the concept of my research. It shows the role of leadership in creating the learning environment provided by the school's learning organisation.

a. *"School leaders ensure that learning and teaching lead to the improvement of student achievement.*
b. *School leaders establish a culture of feedback and evaluation with a view to improvement.*
c. *School leaders ensure that curricular activities meet the demands of all learners.*
d. *School leaders critically engage teachers with (research) literature to improve their teaching.*
e. *School leaders work towards achieving an inclusive learning environment." (Schratz et al.*, 2013, 46)

B) *Leading and managing change*: Describes a future-oriented leader with a clear vision who is capable of navigating the VUCA world. To this end, the principal is able to create and implement a coherent strategy with the faculty, based on consensus. It strikes a balance between change and tradition. To do this, (s)he wins over the staff.

a. *"School leaders communicate the vision for the school's future which is based on shared values and aimed at improving current practice and student achievement.*
b. *School leaders pursue a strategic approach in their daily activities by offering manageable steps to everyone to fulfil the goals set by the school.*
c. *School leaders act strategically in pursuing their school's goals and understand and are able to respond constructively to the challenges involved in the process of change.*
d. *School leaders create an environment which is open to change and establish constructive relationships with the actors involved.*
e. *School leaders share their leadership with other staff and build improvement on the deserved trust in their own and others' capabilities."* (*Schratz et al.*, 2013, 51)

C) *Leading and managing self*: Leadership requires continuous learning, knowledge, and monitoring of changes within the organisation and its people. A leader must fit into the organisation while shaping it. Employees are diverse, with different leadership styles, treatment, and motivational influences that keep them engaged. To do this, the leader must maintain their own motivation and learn by doing. Ethics and morality are key elements in this area. These are increasingly important today (think of the emergence of AI, fake news, etc.).

   a. *"School leaders critically reflect upon their personality, behaviour and actions, and (when necessary) revise their decisions.*
   b. *School leaders continuously improve their interpersonal strengths and seek to overcome weaknesses.*
   c. *School leaders keep up-to-date professional knowledge and strengths to be able to set up and reach the vision and goals of the school. (Professional – leadership and managerial development)*
   d. *School leaders recognise moral and ethical stances in relation to education, keep professional ethics and accept their responsibility. (Ethical and moral development)*
   e. *School leaders communicate effectively and show deep commitment to the education and development of students, teachers and themselves (Effective communication and commitment)".* (*Schratz et al.*, 2013, 55)

D) *Leading and managing others*: The most important elements of this are managing, motivating, evaluating, and encouraging people. Maintaining interest, encouraging cooperation, and supporting teacher learning. This also includes managing partnerships.

   a. *"School leaders inspire, motivate and encourage school staff and students and promote their positive approach to challenges in education.*
   b. *School leaders create, co-ordinate and participate on effective team working based on various forms of shared/distributed leadership.*
   c. *School leaders ensure professional development of people based on recognition of needs and requirements of the staff, school and stakeholders.*
   d. *School leaders make decisions, solve problems and manage conflicts (recognising others' considerations and different social and cultural (diversity) viewpoints.*

e. *School leaders develop a positive climate and culture supportive of knowledge- sharing and reaching common goals maintaining moral and ethical stances in leading others (School climate and moral aspects)."* (*Schratz et al.*, 2013, 59)

E) *Leading and managing the institution*. The operational and strategic management of an organisation (otherwise managing and leading an organisation) is fundamentally about creating the conditions for efficient and effective operation. Rules and the regulation of organisational processes in all areas that fall within the scope of management must function accordingly.[63]

a. *"School leaders analyse and handle effectively the school's institutional resources including financial, human, technological, physical etc. in compliance with legal requirements.*
b. *School leaders care about the public image of the school and act to maintain a positive public image.*
c. *School leaders ensure effective management of time and other resources.*
d. *School leaders channel and manage processes in a transparent way ensuring they stay within the guidelines of the system.*
e. *School leaders establish communication that engages internal and external partners."* (*Schratz et al.*, 2013, 62)

In subsection 4.3.3, I demonstrated how we transitioned from national lists of sentences prepared in standardised workshops to a common international list of sentences, based on systematic analysis and negotiation, to their breakdown into areas, and finally to the description of the resulting sentences using descriptors. Table 30 below shows the structure of Central5 along the descriptors.

[63] Differences can vary across countries and over time. For example, in Hungary, until schools were owned by local governments, large schools were economically autonomous. Today they are state-owned and the head has no financial powers.

Table 30: Number of Central5 competence elements per domain along the descriptors

Area of Central5	*Knowledge and understanding*	*Skills and abilities*	*Attitudes*
Leading and managing learning and teaching	19	32	26
Leading and managing change	10	21	11
Leading and managing self	12	31	36
Leading and managing others	22	21	18
Leading and managing the institution	16	25	16
All	79	130	107
All in all	316		

The number of items per descriptor in the table also has a message about the content of the model. Typically (with one exception, L&M self), the ability to act is the most prominent, as indicated by the number of competence elements (130). The highest number of attitudes is justified for "self", because it reflects the mindset and values that guide the leader's actions (36). Knowledge is an essential element of any active action, shaping the way of thinking and the perceptions of values. Along with this, its role is fundamentally to support action consistent with values. This explains why the number of elements of this descriptor is smaller than the other two.

This essentially achieved the intended goal; the second phase of the research resulted in a competency framework for school leaders, which partially describes the competencies of successful and effective leaders in the knowledge society. However, there are still three steps to answer the research question. First, it must be demonstrated that the Central5 competency framework (comprising the 5 domains and the competency elements formulated using descriptors within them) can be matched to the expectations developed using the DDCDM methodology. The second step is to demonstrate that the Central5 framework is practical, not simply a correct theoretical construct. The third step is to examine how Central5 relates to the leadership competencies required to establish and operate a school as a learning organisation. The following steps will be taken.

8.3.3.3 Validation of the Central5

In subsections 4.3.2 and 4.3.3, I presented the DDCDM-based procedures (standardised workshops, expert consultation forums, and expert consensus building) used in the second phase of the research, which led to the production of Central5. The R&D process is illustrated in Figure 9. We identified the needs and expectations among stakeholders using a standardized procedure. We systematized, selected, and structured the list of statements containing these using qualitative methods. Finally, based on the statements thus produced, we created the final framework using the previously defined descriptors. At the same time, a fundamental question was whether the resulting system, Central5, could be considered identical to the expectations of the international sentence list. This is particularly important for two reasons. If the answer to this question is yes, then we can consider it proven that the demand-driven competency development model can be applied in this specific case and manner, i.e., the method helped to identify the school leadership competencies required in a knowledge-based society. The positive response (yes) also means validation of Central5, i.e., the expectations identified in national workshops and then filtered, systematized, and structured in an international list of sentences can be considered essentially identical to the knowledge defined in Central5. In its absence, one can only claim that Central5 is a new system which, while it may be a professional description of school leadership competencies, is not, or not sufficiently, linked to the original expectations. In this case, it cannot be said that Central5 possesses the competencies required for school leaders in the knowledge society.

In addition to using qualitative methods to ensure the coherence of the development of the competency framework, it is also necessary to validate the output, the result. For this purpose, RDA was used. I started from the assumption that if the expectations represented by the international list of statements, the elements describing behaviour (actions and attitudes) can be matched to the skills, abilities, and attitudes included in Central5, then the two systems essentially define the same expectations. The RDA can be used to construct a profile of a school leader based on both the list of sentences and Central5. If these profiles can be considered identical overall and in their details, then we can state that the two profiles define essentially identical behavioural competencies. As a consequence of that, we can realistically assume that the knowledge (knowledge and understanding) behind them can also be considered fundamentally identical.

Figure 37 illustrates the two profiles based on the International Sentence List (ISL) and the Central 5 Skill and Ability, Attitude (S-aA) descriptors.

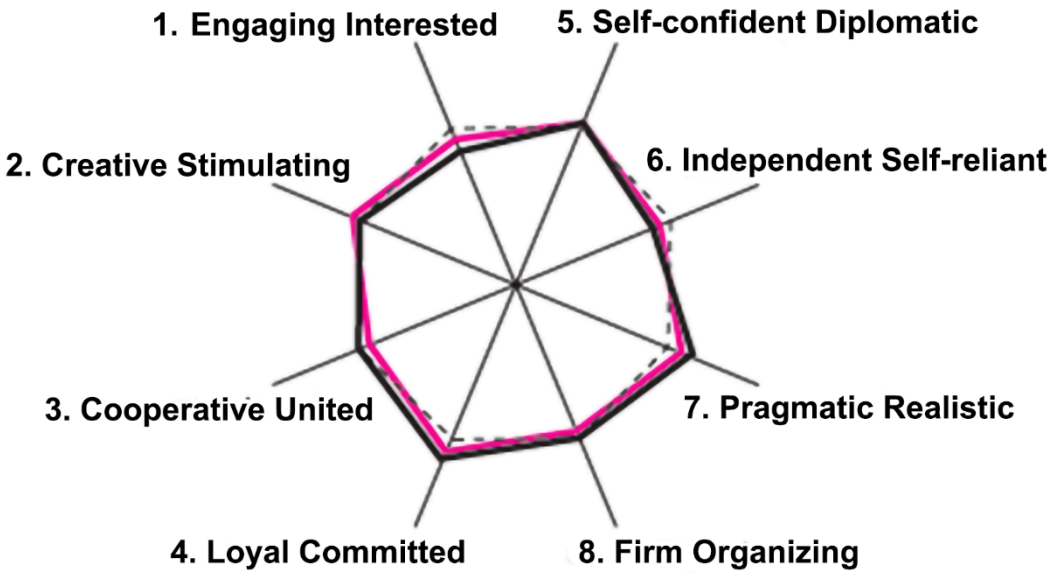


Figure 37[64]: Comparison of the ISL (red) and the Central5 skills and abilities, attitudes (S-aA) profile;
Source: Baráth & Kirkham (2013), 69.

At first glance, the two profiles appear to share strong similarities, but this is not sufficient to draw definitive conclusions. From the difference in the axial values of the two profiles, it was possible to calculate the coincidence of the profiles, with a matching rate of 93.79%. This can be considered a high degree of agreement. This is supported by the fact that the shape of the profiles is also essentially similar. Details are given in Table 31.

[64] The profiles and figures were elaborated by Tamás Kígyós, RDA advisor.

Table 31: Comparison of the scores on axes and quadrats of the ILS and S-aA profiles, Source: Baráth & Kirkham (2013), 70. Own editing.

International Sentence List (ISL) Profile								
Axis	1	2	3	*4*	5	6	7	8
	11.75	13.19	11.85	*13.29*	13.15	11.71	13.25	11.81
Quadrant	Q1	24.93	*Q2*	*25.13*	Q3	24.87	Q4	25.07
Relation	50.07	Content	49.93					
Dynamic	49.80	Stable	50.20					
Leader	*52.88*	Operational	47.12					
Skills, abilities and Attitudes (S-aA) Profile								
Axis	1	2	3	4	5	6	7	8
	10.86	12.45	12.52	14.10	12.48	10.90	*14.14*	12.55
Quadrant	Q1	23.31	Q2	26.62	Q3	23.38	*Q4*	*26.69*
Relation	49.93	Content	50.07					
Dynamic	46.69	*Stable*	*53.31*					
Leader	53.16	Operational	46.84					

The table displays the RDA per axis for the two profiles and the values calculated from them (orientation and quadrants). The underlined text indicates that both profiles exhibit a strong leadership orientation. Another similarity is that the differences in scores on each axis are less than 1%, which is not considered significant. Of course, there are also discrepancies. The ISL is balanced in the other two dimensions (content-relationship, stable-dynamic). At the same time, the S-aA profile is more dynamic. Similarly, there are differences between the quadrants with the highest percentage values (ILS: Q2, S-aA: Q4) and between the axes with the highest values. At the same time, the overall fit is high and significant in detail.

We can further investigate the fit by examining the differences between the axes for the Central5 areas and the fit between these areas. This is shown in Table 32.

Table 32: Comparison of the ILS and S-aA profiles on areas and axis

	RDA axis (%)		*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*Match (%)*
	Area										
A	*Learning and teaching*	ISL A	10.32	13.79	12.45	15.91	12.52	9.12	14.64	11.25	
		S-aA A	7.40	11.18	11.80	15.58	13.19	9.43	17.59	13.83	
		diff	2.92	2.60	0.65	0.33	-0.67	-0.31	-2.94	-2.59	*86.98*
B	*Change*	ISL B	11.36	13.89	11.03	13.57	13.95	11.45	13.62	11.12	
		S-aA B	10.35	13.98	10.40	14.04	14.58	10.99	14.63	11.04	
		diff	1.01	-0.09	0.64	-0.46	-0.63	0.46	-1.00	0.08	*95.63*
C	*Self*	ISL C	11.75	13.19	11.48	12.92	13.51	12.08	13.24	11.82	
		S-aA C	11.28	12.41	12.67	13.79	12.32	11.22	13.71	12.61	
		diff	0.47	0.78	-1.18	-0.87	1.19	0.87	-0.47	-0.79	*93.38*
D	*Others*	ISL D	13.16	14.04	11.76	12.64	13.22	12.38	11.82	10.98	
		S-aA D	14.44	15.10	13.00	13.66	11.98	11.37	10.54	9.92	
		diff	-1.28	-1.06	-1.23	-1.02	1.24	1.01	1.28	1.05	*90.82*
E	*Institution*	ISL E	9.88	9.64	13.92	13.68	11.05	11.34	15.10	15.39	
		S-aA E	10.51	9.93	13.98	13.40	11.00	11.62	14.47	15.09	
		diff	-0.63	-0.29	-0.06	0.29	0.05	-0.28	0.63	0.30	*97.47*
	Whole profiles	ISL T	11.75	13.19	11.85	13.29	13.15	11.71	13.25	11.81	
		S-aA T	10.86	12.45	12.52	14.10	12.48	10.90	14.14	12.55	
		diff	-0.88	-0.74	0.67	0.81	-0.67	-0.81	0.88	0.74	93.79
		dev	1.74	1.70	1.08	0.97	1.08	0.97	1.73	1.70	

The data in Table 32 shows that only one area (A) has a fit rate below 90%, but even this fit can be considered high. The fit is particularly high for area E, while the other three areas have percentages ranging from 90% to 96%. Only for area A are there four axes where the difference between the two profiles exceeds 2%, which can be considered a medium difference. Area D is where the difference in axis values is usually above 1% (range: 1.01–1.28). However, these can still be considered small differences. In areas B, C, and E, the

difference in axis values is typically less than 1%. This indicates that the fit of the two profiles is not only high overall (See Whole profiles in Table 32), but is also high or very high for each area. It is therefore confirmed that the procedures for coherence during development (the standardised workshops, their processing, and the overall procedure shown in Figure 9) worked well. The consistency of the output results is high, thus validating a good match between the international list of sentences and the expectations set by Central5. On this basis, it can therefore be concluded that the Central5 competency framework adequately reflects the competencies required for successful school leadership in the knowledge society.

8.3.3.4 Central5 in practice

The product developed in the second phase of the research was already suitable for practical application. The result of the developmental research was not a fixed benchmark to be met, but a framework that actors (countries, education policy makers, organisations that provided training for leaders, etc.) could adapt to their own situations. This adaptation required an in-depth understanding of the system, which further strengthened its applicability.

Chapter 7 of the ICSL research report presents several examples of how the Central5 competency framework has been adapted in the countries participating in the project. The adaptations included the analysis of a specific training programme (Leading and managing self, Austria), the comparison of the national training programme with Central5 (Czech Republic), universities providing leadership training compared their own programme with the competency framework (Hungary), experts used it to analyse the career path of leaders and to analyse the leadership profile in Slovakia, and finally the adapted system was used to analyse a shorter term leadership training programme in Slovenia. Chapter 8 presents developments in Austria, the Czech Republic, and Hungary, where experts presented measuring devices based on Central5 and their experiences with their application. Finally, it is also worth mentioning that Hungary implemented a supervision system in public

education. It included a leadership evaluation that was essentially based on Central5. The main areas of leadership competencies are the same as in Central5. [65]

The examples briefly presented here demonstrate that the framework developed was suitable for adaptation and subsequent development. Central5 was used as a basis for developing measurement tools to assess the competencies of school leaders and for personal growth based on these competencies.

This was used to justify the second step. The final remaining question is to examine the relationship of Central5 with the competencies needed to lead a learning organisation. Due to the complexity of this question, I will provide the answer in a separate subsection, Section 8.4.

8.4 Central5 and leading learning organisation – leadership competencies

The aim of Chapter 8 – based on the research concept presented in Chapter 2, see Figure 1 – is to define those school leadership competencies which enable the leadership to create and lead the learning organisation presented in Chapter 7, thus making it possible for the students to acquire the competencies required to prosper in the 21st century. However, the two research phases, which served as the source of this and were carried out as part of the LLL-S-L and ICSL projects (which led the development of Central5), indirectly focused on this; therefore, it is necessary to give a reason for the relevance of the data collection used in these two research phases in terms of leading learning organisations. The data collection (questionnaires and a series of workshops) revealed what a successful school leader needs (knowledge, capabilities, attitudes) in the 21st century. In the background, there was an organisational concept of an open, dynamic institution; consequently, this data collection can also be used to describe the leadership of a learning organisation. Although we did not specifically analyse the characteristics of the learning organisation and the expectations that could be derived from them for its leadership, conceptually, our thinking was clearly based on this organisational form. This is also reflected in the following quote from the study

[65] See the Teaching Supervision Manuals on the website of the Education Office: https://www.oktatas.hu/kozneveles/tanfelugyelet/tanfelugyeleti_kezikonyvek; accessed 03.07.2025.

volume prepared during the first research phase. *"Schools – as the individual institutions and the sub-system of education itself – operate in a rapidly-changing context, which forces them to need to be able to adapt continuously. This kind of adaptation is only possible if the institution is able to collect relevant information about itself (as well as its environment), is able to evaluate this pool of information, and, consequently, plan and implement corrective actions, where necessary. In other words, we can say that the school has to be able to function as a learning organisation. Obviously, besides the relationship between leadership and learning results, 'organizational learning' and the 'learning organisation' have been the focus of research and application."* (*Baráth*, 2011, 33–34.) The Central5 underpins this approach as well, as the notion of "learning organisation" appears several times in the research report, including in the detailed description of the area of "leading and managing learning and teaching" (*Révai & Kirkham*, 2013, 47).

To factually argue for the use of data from the two research phases referred to, I conducted a content analysis based on the competency framework resulting from the two developmental research projects and the learning organisation areas identified in the LOM4S project. I formulated the question of whether the content elements belonging to the C5 areas (the individual components of leadership competencies) could be classified into the areas of the learning organisation. This is because the characteristics of the learning organisation implicitly determine expectations related to leadership; in other words, we can infer the characteristics of leadership from the functioning of the organisation with given characteristics, so this classification is possible. As a result of this, if categorisation can be done with the majority of competencies found in the C5, this would confirm that the competency elements identified in the C5 are relevant to leading learning organisations as well. And, if this is true, based on the data collection from LLL-S-L and ICSL, the questionnaire and then later the workshops, leadership profiles can be used in a relevant way in the description of the competencies needed to lead learning organisations.

In all five areas of the C5, there are sentences that define specific knowledge about, ability for and attitude towards leadership. The comparison was carried out in a way in which I attempted to put every C5 sentence in one of the seven areas of the LO (synchronous and diachronic model). Table 33 contains the areas of the C5 and the LO.

Table 33: The areas of the Central5 (C5) and the Learning Organisation Model (LO)

Central5 (C5) competency framework	*Learning organisation model (LO)*
C5_1 Leading and managing learning and teaching C5_2 Leading and managing change C5_3 Leading and managing self C5_4 Leading and managing others C5_5 Leading and managing the institution	LO_1 Learning and teaching LO_2 Shared values, vision and goals LO_3 Knowledge sharing LO_4 Responsibility, cooperation, trust LO_5 Innovation, initiative, risk-taking LO_6 Network connections, partnerships LO_7 Leadership

Next, I will present some examples of how I categorised the C5 competency elements into the LO areas. I aim to include knowledge, skills, abilities, and attitudes among the selected elements. As mentioned above, the goal during the development of the C5 framework was to develop such a competency framework which entirely covers the operations and activities of leadership; therefore, this is broader than the set of competencies attributed to the creation and operation of the learning organisation. Logically, it had to be taken into account that there could be (and there were) competency elements in the C5 which could not be sorted into the LO. In the case of leadership competencies, five areas were defined; in the case of organisational competencies, there were seven; thus, the personal and organisational areas of competency could not be directly matched. There was an occasion when I had to split the C5 statement into two because one part corresponded to one area of the LO, while the other corresponded to another.

Below, I will present some examples of how leadership competencies in each area of C5 can be classified in the LO. In all cases, the competency element(s) will be textually described, the exact categorisation into the C5 framework will be given, and then its attribution to a given area of the LO and another part to another area of the LO.

C5_1 Leading and managing learning and teaching

- S/he knows (and understands) what a supportive learning environment is. (C5_1/K3)[66]
- S/he knows (and understands) how to create a supportive learning environment. (C5_1/K4)
- S/he is able to create a supportive learning environment. (C5_1/S1)
- S/he believes in a supportive learning environment. (C5_1/A1)

It is apparent that the knowledge of the characteristics of a supportive learning environment and the way of creating one as well as the ability to apply the knowledge and, lastly, the faith put into the importance of a supportive learning environment, are essential for a school leader who wants to create an inspiring physical and mental learning space which incites creativity. A learning environment with such characteristics belongs to the learning and teaching areas of the learning organisation model.

C5_2 Leading and managing change

- S/he knows (and understands) the values of the organisation (and the community). (C5_2/K1)
- S/he is able to observe (and interpret) economic and social processes and trends and is able to adapt the institutional strategy accordingly. (C5_2/S1)
- S/he considers it important to think in a long-term perspective and to act accordingly. (C5_2/A2)

One of the characteristics of learning organisations is knowledge of organisational and community values based on mutual agreement, adaptive strategy creation grounded in socioeconomic processes and trends, and the identification of the importance of long-term thinking and planning. In light of this, a mutual future image and the ability to create a mission form the natural knowledge base of leading learning organisations. The competency

[66] C5 marks the Central5 framework in the categorisation; the number following the underscore marks the given area (e.g. 1 marks Leading and managing learning and teaching); the letter after / shows the descriptors (K: Knowledge, S: Skills and abilities, A: Attitudes); lastly, the number after it is the number of the given competency element. Please find the description of the C5 competency framework in Chapter 4, The art and science of leading a school.

elements selected from the area of change management can thus be attributed to the learning organisation model's area of values, future image and goals.

C5_3 Leading and managing self

- S/he knows (and understands) models and tools of professional self-evaluation. (C5_3/K10)
- S/he is able to acknowledge errors as part of own learning. (C5_3/S8)
- S/he takes responsibility for professional development of self. (C5_/A4)

Sharing knowledge, building common knowledge, regularly renewing personal knowledge, and self-development belong to the fundamental characteristics of the operation of a learning organisation. Therefore, leadership as a guide, its knowledge about self-development and its competency in it, and its responsibility for personal development can be categorised into the knowledge management area of the learning organisation.

C5_4 Leading and managing others

- S/he knows (and understands) team roles; is familiar with various structures of division of tasks and responsibilities within a team. (C5_4/K5)
- S/he is able to create an effective team(s), and act either as a member or a leader of a team. (C5_4/S7)
- S/he is able to promote individual responsibility and personal involvement in school leadership. (C5_4/S20)
- S/he believes in human potential. (C5_4/A16)

One of the characteristics of the operation of a learning organisation is the partnership, cooperation, responsibility, trust, and faith in development and learning between the leadership and the associates. The realisation of this requires leadership to have organised knowledge of the operation of groups, to be able to create and build a team, and to take on a relevant role within it. Based on all this, the leadership competency elements listed here can be attributed to the area of responsibility, cooperation and trust in the operation of learning organisations.

C5_5 Leading and managing the institution

- S/he knows (and understands) the impact of community involvement and the social context. (C5_5/K11)
- S/he knows (and understands) the structure and the potential of the local community. (C5_5/K12)

- S/he is able to recognise/see the resources a certain partner might bring. (C5_5/S18)
- S/he is able to see the institution within its social context. (C_5/S19)
- S/he is open to involving social partners. (C5_5/A11)

Openness towards the environment, dynamic relationship building, participation in networks, and tracking changes in the environment in order to be able to provide proactive organisational responses are important characteristics of the learning organisation model. This assumes that the leadership understands the importance of embeddedness in the environment, the effects of the environment and the importance of including it in the organisation's operation. The leadership is not only aware of the previously mentioned notion. Still, it can also take an active part in creating connections, recognising and involving the resources in the environment that serve the development of the school. Thus, the selected competency elements can be attributed to the network operation area of the learning organisation.

Next, I will present questions that arise upon the categorisation of certain C5 elements. As stated at the beginning of the analysis, C5 had some elements which could not be categorised into the LO. For example, some important competencies in the organisation's operative leadership (C5_5) did not fit into the LO's system. Such were the competency expectations of quality assessment, quality development, the regulation of processes, educational law or financing, HR, and relationships of interest (even though certain elements of these could be categorised).

- S/he knows (and understands) models, methods and tools of quality assessment and development, and their cyclic relationship to each other. (C5_1/K7)
- S/he knows (and understands) the legislation related to labour and the school. (C5_4/K6)
- S/he is able to analyse the financial situation: recognise needs (financial) and identify where resources have to be spent to achieve the school's goals. (C5_5/K6)
- S/he is able to access and use a variety of funding routes/resources. (C5_5/K7)
- S/he is able to handle a budget effectively, that is to stay in credit or break even and to allocate according to agreed priorities. (C5_5/K8)
- S/he considers the legal context in which schools operate. (C5_1/A18)
- S/he is able to make workable complex HR processes – from selection to the retirement. (C5_4/S4)

- S/he is able to realise interest for implementing education policy and innovations. (C5_2/K14)

There were some C5 statements that could be attributed to certain LO areas by separating them, or the given competency expectation could be attributed to two LO areas.

- S/he knows (and understands) securely the concepts of both pedagogy and andragogy. (C5_1/K1)
    - S/he knows (and understands) securely the concepts of pedagogy. LO_1 Learning and teaching
    - S/he knows (and understands) securely the concepts of andragogy. LO_3 Knowledge sharing (learning of adults)
- S/he is able to set high expectations for self, teachers and students. (C5-1/S7)
    - S/he is able to set high expectations for students. LO_1 Learning and teaching
    - S/he is able to set high expectations for self, teachers. LO_2 Shared values, vision, goals
- S/he is able to cater for meaningful collaboration in curriculum development. (C5_1/S26)
    - On the one hand, this can be linked to LO_1: Learning and teaching, as it shows how curricula are developed. On the other hand, it can also be attributed to LO_4: *Responsibility, cooperation, trust*, because it shows that there is professional cooperation within the organisation. The categorisation depends on what is stressed: curriculum development or its development through collaboration.

Lastly, it posed a dilemma whether to exclude LO_7 Leadership (because the C5 is about leadership competencies in its entirety, all expectations could have been formally placed here) or to attribute leadership competencies to it as well. When considering this, I categorised personal statements, expectations and the management of human resources under the *Leadership* area of the operation of the learning organisation.

In the following, I will summarise the connection between the elements of the Central5 competency framework and the Learning Organisation Model. Table 34 shows how many statements (competency expectations) could be found along the knowledge, skills and abilities, and attitudes descriptors in the areas of the C5. Table 35 displays how many leadership competency expectations could be attributed to the areas of the LO from C5 through content analysis. (The total number of categorised statements surpasses the total

number of the C5 statements because, as expressed earlier, some of them had to be split into two; additionally, some could be attributed to two fields as well.) Finally, Table 36 shows the connection between the areas of the C5 and the LO. Where the word “Yes” is written in the given cell in the table, that refers to the fact that some or numerous statements could be attributed to the given area of the LO from the given area of the C5. In cases where the given cell contains the word “No”, I either could not find a statement that could be attributed to a given area of the C5 to the area of the LO, or the number of these was 1 or 2. Based on content analysis, I considered such cases to be those in which there is no meaningful connection between the given areas of the two models.

Table 34: The number of competency expectations in the areas of the C5

The area of the C5	*Number of competencies*
C5_1 Leading and managing learning and teaching	77
C5_2 Leading and managing change	42
C5_3 Leading and managing self	79
C5_4 Leading and managing others	61
C5_5 Leading and managing the institution	57
Total	316

Table 35: The number of competency expectations attributed to the areas of the LO based on the content analysis of the C5

The area of the LO	*Number of competencies from C5*
LO_1 Learning and teaching	41
LO_2 Shared values, vision and goals	55
LO_3 Knowledge sharing	25
LO_4 Responsibility, cooperation, trust	45
LO_5 Innovation, initiative, risk-taking	48
LO_6 Network connections, partnerships	53
LO_7 Leadership	40
Left out statements	14
Total	321[67]

Table 36: The connection of the areas of the C5 with the areas of the LO based on the content analysis

	C5_1 Learning and teaching	*C5_2 Change*	*C5_3 Self*	*C5_4 Others*	*C5_5 Institution*
LO_1 Learning and teaching	Yes	No	No	No	No
LO_1 Learning and teaching	Yes	Yes	Yes	Yes	No
LO_2 Shared values, vision and goals	Yes	No	Yes	Yes	No
LO_3 Knowledge sharing	No	No	Yes	Yes	Yes
LO_4 Responsibility, cooperation, trust	Yes	Yes	Yes	Yes	No
LO_5 Innovation, initiative, risk-taking	No	Yes	No	Yes	Yes
LO_6 Network connections, partnerships	No	No	Yes	Yes	No
LO_7 Leadership	4	3	5	6	2

[67] The difference is due to the repeated statements.

Based on the content analysis and built on the data in the tables of Table 34–36, I can conclude the following:

- The definitive majority of competency expectations in the C5 leadership competency framework (302 of 316 or 95.6%) could be attributed to a given area of the model that describes the operation of the learning organisations (LO), relying on the fact that, based on the characteristics of the organisational operation, the leadership competencies required for a given operation could be unequivocally deduced.
- Based on the content analysis carried out, there were no areas of the C5 which were left out of the attribution to the operation of the learning organisation.
- Only the C5_5 area is connected to a few LO areas (two of the seven); however, its connection to these two is intensive.
- Compared with others, fewer statements were categorised in the field of knowledge sharing (LO_3), suggesting a connection to the relative newness of this area in school leadership.

With the description of the procedure of content analysis and the presented examples, I aimed to illustrate the systematic process which results in the factual conclusion that the research phases carried out in the LLL-S-L and ICSL programmes in order to define the school leadership competencies in the 21st century (knowledge society), the databases thus created and the analyses based on these could be used in a relevant way to describe the leadership of learning organisations as well. If we take the questionnaire-based research in LLL-S-L, the questionnaire used there is appropriate in terms of content to identify the leadership characteristics of learning organisations. Another way of putting this is that if I were to ask the question not what is needed to be a successful school leader in the 21st century (in the knowledge society), but what are the skills of someone who develops students' skills necessary in 21st-century societies in a learning organisation, this would essentially lead to the formulation of the same questions or statements including the LLL-S-L questionnaire. Likewise, the questions used to orient the content of the interactive workshops held in the context of LLL-S-L and ICSL, which supported the collection of 21st-century school leadership characteristics, could be considered equally relevant for identifying characteristics of learning organisation functioning.

Based on all this, the research phases carried out between 2010 and 2012, and their results can be well integrated into the research concept as reflected in Figure 1; therefore, presenting

earlier research and carrying out additional analysis are reasonably integral parts of this paper.

Further, considering Figure 2, the effect mechanism of the leadership, we could successfully identify those school leadership competencies indispensable to establishing, developing, and running a school as a learning organisation. The content analysis presented above confirmed that the Central5 competency framework, developed during the first two research phases, essentially aligns with the capacities required to lead a school operating as a learning organisation. This is particularly evident in the professional and pedagogical management of the school. As mentioned earlier, certain elements of Central5 (law, finance, etc.) could not be classified under the LO areas. Their importance is not in question. However, when considering learning-focused leadership aimed at developing student competencies in the knowledge era, these elements fall outside the scope of the study. So, continuing our journey in Figure 2, the learning organisation can provide relevant learning opportunities for students, enabling them to gain the competencies necessary for their well-being in the 21st century and to act as responsible citizens in their local and global society.

9. CONCLUSIONS, DISCUSSION POINTS AND FURTHER QUESTIONS

9.1. Introduction

Figure 1 interprets the concept of my dissertation. I followed the diagram, pursuing the answer to the research question: specifically, whether we can identify the leadership competencies essential to prepare learners in a knowledge society, and if so, how we can achieve this. Behind the main research question, I identified additional questions that also need to be answered. In the following, I will answer these questions.

9.2. Answering the research question

The starting point for the research was the concept of a knowledge society. I intend to identify the school leaders' competencies that make them effective and successful in preparing their students for the knowledge society. The research concept, as illustrated in Figure 1, defines a path to achieving the aim and answering the main research question. If we go down this path, we must immediately recognise two challenges. We should explore the learners' competencies in the 21st century, and having obtained the results, it is not possible to derive directly from this set of competencies those that school leaders should possess. However, it was possible to infer the characteristics of the school leadership. This required the transfer mechanisms that I have formulated in relation to the main research question. By examining the competencies of 21st-century learners, exploring this from multiple angles and sources, it was possible to see that their determination is linked to global processes and socio-economic changes. Therefore, it was necessary to explore and identify the characteristics of these changes and processes. Chapter 5 explored and systematised information on these topics.

From this, I could deduce the identification of the characteristics of the learning environment that enabled the acquisition of learner competencies, which implicitly implied repeatedly the characteristics and expectations of school leaders. Chapter 6 introduced the most important results regarding the mental and physical learning environment considered important for

21st-century learners. The learning science, innovation, and characteristics of the digital age support further fine-tuning of the requirements for school leadership.

In the third step, I examined what characteristics of an organisation (school) that is able to create an optimal learning environment for acquiring the learner competencies required by the knowledge society. I identified this in the functioning of the learning organisation. This led to the question of what leadership competencies are needed to shape and run a school as a learning organisation. The empirical research on the topic of learning organisations provided a solid basis for drawing unambiguous conclusions on the characteristics of leadership from the functioning of the school. Chapter 7 explored the learning organisation model in general and provided details about research examining the relationship between the learning organisation model, school leadership, and students' academic and non-academic knowledge and development. Regional research enabled the development of a new learning organisation model for schools and the identification of the characteristics of school leadership from the organisational model. This part builds strongly on the third research phase, which I described in Subchapter 4.4.

The first and second phases of my research had the same starting point: the knowledge society. The two research phases aimed to identify and elaborate a competency framework for school leaders who are successful in the knowledge society. As I mentioned, this approach focused on student learning and was considered an important capacity for organisational learning. However, the source of developing the competency framework was those demands that arose on behalf of stakeholders who used – directly or indirectly – the knowledge of school leaders. This approach is based on the demand-driven competence development model, which led to the development of Central5. As discussed in Subchapters 8.2 and 8.3, this competency framework proved flexible, usable for various tasks (such as selecting and developing school leaders, creating a training program for school leaders, etc.), and covers all the main areas of school leadership. Thus, the first and second phases of my research proved that it is possible to develop a competency framework for school leaders in the knowledge society.

Arriving at this point, the fundamental question that needed to be answered was how the framework of school leadership competencies (Central5), which emerged from the developmental research conducted in the first and second phases, relates to the leadership competencies needed to create and operate a school as a learning organisation. The analysis carried out in sub-chapter 8.4 provided strong evidence that the school leadership

competencies required to develop learner competencies in the knowledge society and the school leadership competencies needed to establish and operate a school as a learning organisation are essentially the same; therefore, the research question was answered. Indeed, the competency framework developed in phases 1-2 of the research can be considered essentially identical to the expectations derived from the needs of the knowledge society.

This way I could bound the results that arose from the first and second research phases with the results that came out from the third research phase. So, the competencies that characterise successful school leaders in the knowledge society (Central5) are the same as those required from school leaders who can establish an optimised learning environment for learners to acquire the competencies they need to enter the knowledge society. Figure 38 helps to review the process described above. The left side of the figure shows the development of the competency framework (Central5) as a result of research phases 1-2. The right side of the figure follows the logic of my research (see Figure 1), according to which we can start from the learner competencies required in a knowledge society and arrive at the definition of school leader competencies. The latter are those necessary for the creation and operation of a learning organisation and can be defined on the basis of phase 3 of the research. The essential correspondence between these and the content of Central5 shows the answer to the research question.

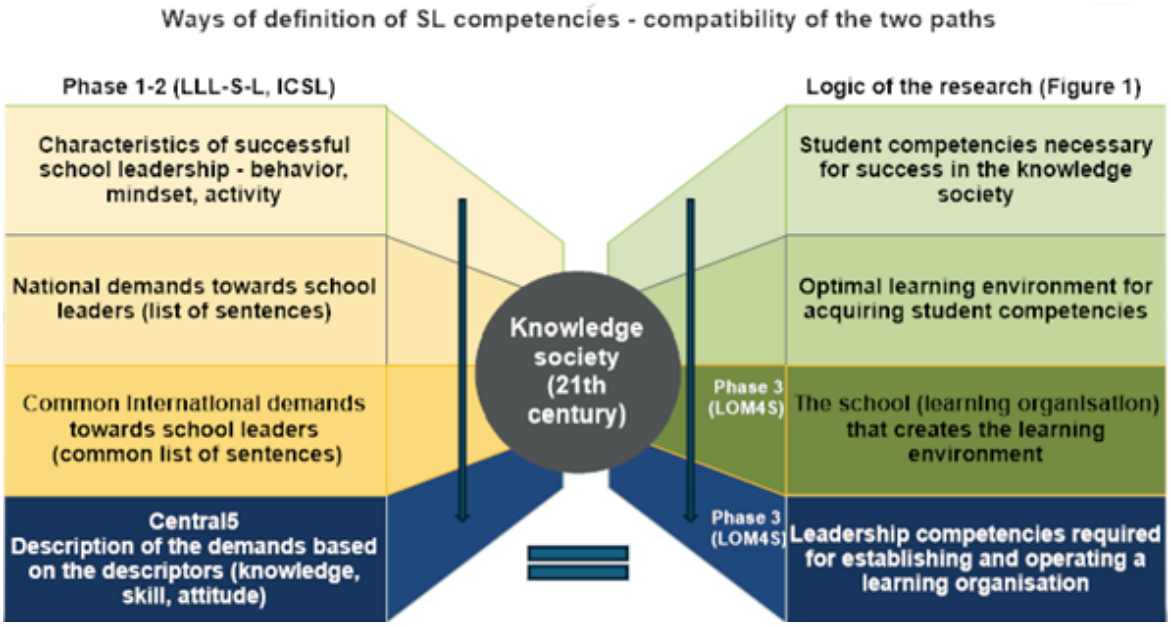


Figure 38: Comparability of the Central5 and SL competencies for a learning school, own editing

Two other elements confirm the results. One is the research on effective school leadership, which has provided firm evidence that school leadership is the second most important school factor in the development of pupils and their learning outcomes. The research discussed in Subchapters 8.1 and 8.2 was therefore aimed at demonstrating the effectiveness of leadership, rather than identifying its competencies. However, as we have seen, the characteristics, mindsets, and key activities of school leadership that successfully improve student outcomes, typically implicitly through referrals (such as motivating teachers, setting high expectations for students and teachers, setting clear vision and goals, creating a culture of collaboration, etc.), could be outlined based on the research presented. The characteristics of leadership that emerged from this research essentially coincided with those we had in Central5.

This can be further confirmed by the fact that an examination of the English, American, and Canadian school leadership competency frameworks (standards), which have a strong research base, also revealed that these frameworks essentially define the same school leadership competencies.

To sum up, we can say that, based on transitivity:

- Based on the learner competencies needed to thrive in the knowledge society in the 21st century, we can identify, along the lines of the research concept, the school leadership competencies. School leadership possessing these competencies will establish the optimal learning environment in schools, enabling students to learn and acquire the competencies necessary to enter the knowledge society.
- If this set of school leadership knowledge essentially aligns with the school leadership competencies that effectively support students' development and learning (which we have discussed based on the longitudinal research reviewed in Section 8.2). In that case, there is empirical evidence that the set of competencies developed in response to the research question is effective.
- A further strengthening is the fact that other school leadership competency frameworks (standards) were also found to be significantly similar in our study.
- Since the research concept led us to the learning organisation characteristics, and from this, we can derive leadership competencies, we still had to see how these competencies relate to the leadership competency framework (Central5), which is the result of phases 1-2 of this research. The analysis in Subchapter 8.4 confirmed that they are essentially the same. Thus, for reasons of transitivity, Central5 can be

considered identical to the school leadership competencies that support the functioning of the learning organisation and, hence, the acquisition of the competencies students need in the knowledge society. Due to its transitivity, this set of competencies can also be considered effective. Furthermore, its substantial convergence with competencies derived from other frameworks renders it valid not only in the Central European countries but also in knowledge societies in general.

9.3. Methodological issues

Behind the primary aim and task of the present research, another objective also included the question of what methodology is appropriate for defining competencies, which is practically an adaptive framework. The wide range of applications of the competency framework, including selection, training of leaders, development of training programmes, evaluation of leadership work, etc., called for a methodology that is theoretically sound yet practical and grounded in stakeholder views.

The conceptual background discussed in Chapter 3, which includes the understanding of competence, meets the need to use concepts and approaches that are scientifically sound. The model of demand-driven competence development, as presented in Chapter 4, shows that it is possible to apply the concept of competence in practice in a professional, targeted, and in-depth manner to define competencies for a specific profession – in our case, school leadership.

This dissertation does not aim to discuss approaches and procedures specifically aimed at school and leadership development. It is worth noting, however, that the application of the competing values model supports this direction, including leadership development based on the same model.

9.4. Questions and trends regarding school leadership competencies

This field, from both practical and research aspects, is an interesting and continuously developing area of education. There is even more evidence regarding the importance and effect of school leadership on students' learning (see *Papadakis et al.*, 2024; *Özdemir et al.*, 2024 in Subchapter 8.1.4). The knowledge society values learning and, through it, the organisations and actors that contribute to high-quality learning. Our VUCA world requires

that the competencies of different role players, including school leaders, be continually updated. That is why the development of competency frameworks belongs to the topics under scrutiny. We can find several examples of it. *Tai Mei Kin and Omar Abdull Kareem* (2019) analysed the situation of schools and their leadership under the Fourth Industrial Revolution, concluding that there is an urgent need to enhance school leadership competencies. They developed a new competency model, which has leading learning at its heart. The first competency frameworks or standards were developed over 30 years ago. They were sometimes modified and reworked; however, the fast-changing world and new challenges (e.g., AI, global issues) increase the need for that. This is supported by several comparative studies (e.g., *Larochelle-Audet et al.*, 2019; *Riveros & Wei*, 2019). The earlier standard or framework underwent significant changes, as seen in England[68] and the US.[69] We can consider that the new frameworks and standards focus even more on students' learning and their results. School leaders are required to possess a strong, future-oriented mindset, with a focus on values and morals. The competencies are frequently described in terms of action and/or behaviour. All these stress the relevance of the DBR we have applied and of the service design methodology. These tendencies suggest to us the way of development, and the content of Central5 aligns with the actual processes in this field. At the same time, there is a need to pay attention to the change process in the knowledge society and to keep leadership tasks and competencies in harmony with the changing world.

There are several research topics and directions that seem fruitful to explore in the future. One of the most current topics is the role of AI in education and, more generally, the digital competencies of leadership (*AlAjmi*, 2022; *Karakose, Polat & Papadakis*, 2021[70]). AI influences learning both inside and outside the school, having a strong effect on learning motivation. It seems applicable not only in the teaching process but also in leading and managing various processes within a school. However, there are several risks in using AI. There is a crucial debate about the topic, and more evidence is needed to determine whether

[68] Guidance Headteachers Standards 2020, https://www.gov.uk/government/publications/national-standards-of-excellence-for-headteachers/headteachers-standards-2020#introduction; visited: 04.07.2025.

[69] Professional Standards for Educational Leaders, https://www.npbea.org/wp-content/uploads/2017/06/Professional-Standards-for-Educational-Leaders_2015.pdf; visited: 04.07.2025.

[70] Studies about the importance of school leaders' digital competencies during the COVID-19.

and how it can help or hinder the educational process at different levels of schooling. The global challenges (poverty, the growing gap between the rich and the poor, the pursuit of economic growth versus the Earth's finite resources, global warming and its consequences, etc.) all require an attitude and capacity to be informed. Schools and school leadership have an inevitable role in supporting the rising generations to understand and act actively for the well-being of our society. It supposes that school leaders have a strong moral compass in this process. What do we know about it?

We have investigated the relationship between the school leader competency profile and school autonomy. It would be interesting to know more about this relationship. Going deeper, it can be a question of how educational policy and administration want and can influence the role of school leadership, the way of thinking about learning, and, as a consequence of that, the school leadership's effects on vision and daily operations of schools.

Another interesting and important area for further research could be the interactions and mechanisms of influence that can be identified in the relationship between school leadership and teaching staff. It is obvious that leadership shapes the teaching staff's values, mindset, and professional activities. At the same time, the functioning of the teaching staff, their feedback, and, in some cases, their assessment of leadership affect school leadership, its functioning, and the competencies required to lead a school.

This is reinforced by the fact that the impact of school leadership is predominantly indirect in the area of the school's core activity, namely, the development of students. This impact is primarily realised through the teaching staff.

To summarise: learning plays a crucial role in knowledge societies. The changes and transformations we are witnessing and living through – the emergence of AI, global problems (such as preserving our environment and addressing the need for growth), societal divisions (between the rich and the poor), and the distinction between real and fake news – all enhance the value of knowledge. The traditional place to acquire it, by common agreement, is school. For this to remain so, the school itself must change. It will continue to have the task of preserving tradition, but only an adaptable, flexible organisation that is also aware of its own learning will be able to do this effectively. This is a condition for its survival. This requires strong leadership with a strong moral compass, professionally prepared to serve the well-being of individuals and society. It may be seen from this essay that these general, even idealistic, expectations can be brought close to the goal. With

systematic work, they can be revealed, broken down, defined, and developed. It is ultimately a journey; there is no final destination. Just as setting up and running a learning organisation is not a journey from A to B, but a continuous journey. Adaptation to a changing environment must be created anew, which requires a change in organisation and leadership. Constructively and proactively. The thesis aimed to make a small contribution to this.

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APPENDIX 1

The Role Diagrammatic Approach[71]

A model for describing, measuring and developing competencies

The Role Diagrammatic Approach – competence model to interpret and compare requirements

Our aim was to create a demand-driven competency profile for school leaders. We consider behaviour as the manifestation of competencies. Thus, if we want to measure them, we need an established tool for identifying and characterising human behaviour. There are several applicable models in the field of human resource management. We chose one that is suited to measure the behaviour at different levels and that gives information about where possible development is needed. In this way it is also possible to demonstrate the complete process from forming the competency profile to its application. The selected model was the Role Diagrammatic Approach (RDA), which is also suitable to describe job profiles or training profiles (expected competencies one should reach by the end of a training course). This feature of the RDA makes it possible to compare jobs and training and/or jobs and people, and draw conclusions regarding their match. These conclusions can serve as pointers for development, which can mean personal development as well as modification of the job requirements or elaboration/correction of a training programme.

Behind them we also applied the the RDA to characterize schools as learning organisation as taking into consideration the organisational behaviour it was possible to establish profile for learning schools.

[71] This is the slight adaptation of Baráth (2013): *The Role Diagrammatic Approach.*

The RDA model

According to the developers (van Harten & Wolbers, 2005), the RDA is "an integral model" (based on a holistic view of humanity) for describing the behaviour of a human being. It not only pays attention to effective behaviour but also to ineffective behaviour. The RDA includes more than 30.000 words and expressions to characterise different kinds of behaviours. It results in a very fine-tuned description of people, jobs, training and development.

>> Behaviour and values in the RDA

Behaviour

Behaviour is the most crucial factor when we want to match employees and jobs. Behaviour is very person-dependent and it mirrors the style of how individuals cope with work (van *Harten & Wolbers*, 2005, 6). Analysis of behaviour is of vital importance since the skills and abilities of a person are apparent and visible from her/his actions. It can be seen whether s/he possesses the ability to co-operate with others. This will be apparent only if s/he is actually able to work together with other people, to listen to their views, to be relied on and to be willing to accept help from others, to enjoys teamwork, and so on.

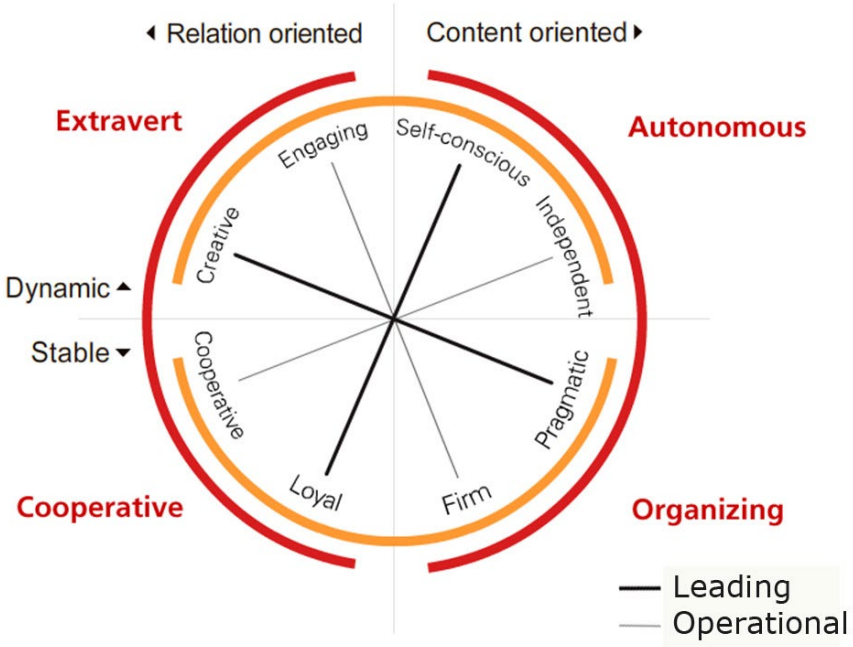
Values

Values serve as the driving force for the behaviour of individuals. They function whether you are consciously aware of them or not. Providing a deeper insight for somebody regarding her/his values helps her/him to become more focussed in their work, building up her/his career, and so on. An analysis of values – by comparison with the individual's behaviour – shows how value-driven a person's behaviour is. It also helps to define recommendations, since a person is only willing to make efforts to change his/her behaviour if s/he feels it important, in whatever s/he deems valuable.

>> Axes and dimensions of the RDA

Axes of the RDA diagrams – on the more detailed figures – have two titles. These aren't the same, nor are they synonyms, however the second title has a relation to the first one – e.g. *Engaging* and *Stimulating* or *Pragmatic* and *Realistic*, etc. – and gives a more detailed insight into the specific characteristics. (Words and expressions we use to describe human behaviour are firstly clustered into 8 groups. These are then identified with the first title (e.g. *Engaging* or *Pragmatic)*. In these groups we can find a subgroup of words and expressions which helps us fine-tune our description, these subgroups have the second title as *Stimulating* or *Realistic*.)

The eight semi-axes of the model are as follows (leader semi-axes are highlighted in bold):



RDA dimensions and axes

Behind a certain semi-axis we can find the words and expressions which refer to someone's the behaviour that is often related to a certain kind of performance. Following this, we will briefly describe each semi-axis of the RDA in the study from Harten and Wolbers.

"Axis 1 Engaging: having the ability to build and maintain relationships, good presentation, attentive

Interested: having interest in others, sensitiveness, openness and listening well

Axis 2 Creative: humour, positive attitude, enthusiasm, fond of others, enjoying life

Stimulating: capable of motivating and inspiring others, involvement, to get the best out of someone

Axis 3 Co-operative: team player, the focus is on being together and a good common understanding

United: aimed at experiencing closeness, tight relationships, sympathetic

Axis 4 Loyal: compassionate, showing appreciation, sincerity in relationships

Committed: taking care of the well-being of others, patient, reliable, solid

Axis 5 Self-conscious: aware of own and others' qualities, ready for action, showing initiative

Diplomatic: representative, attentive and obliging, able to improvise, flexible

Axis 6 Independent: aimed at freedom, avoids being tied down, wants 'carte blanche' to make own decisions" (*Harten & Wolbers*, 2005, 9–10)

Self-reliant: clear relation to oneself and others, self-determination, dare (based on *Harten & Wolbers*, 2005)

"Axis 7 Pragmatic: matter-of-fact and practical attitude, sharp judgement, functional and result-oriented

Realistic: objective, face value, good at observing, critical, seeing possibilities and limitations

Axis 8 Firm: steadfast, careful and diligent, strong perseverance (and determination)

Organizing: goal and planning oriented, strives for well-considered choices and clear targets"

(ibid.)

We shortly describe three dimensions of the RDA that are most important and used for our purposes.

Dimension 1: Dynamic – Stable

A dynamic personality is typically extroverted, can handle and manage constant changes and variations well, and focuses mainly on external matters and in relation to the outside world. When using the RDA a "stable" personality on the other hand is interpreted as more introverted, finds repetition and consistency important as these ensure safety and security, and prefers focusing on inner matters. The horizontal co-ordinate axis denotes this dimension.

Dynamic: axes 1, 2, 5, 6;

Stable: axes 3, 4, 7, 8

Dimension 2: Relation-oriented – Content-oriented

A relation-oriented person prefers to work with other people, her/his relationship with other people is of utmost important for her/him. S/he is willing to co-operate, nurtures a good atmosphere for the group. On the other hand, a content-oriented person finds work in itself important, and prefers to focus on the task rather than the person performing it. S/he considers very important the result of the work. This dimension is denoted by the vertical coordinate axis.

Relation-oriented: axes 1, 2, 3, 4

Content-oriented: axes 5, 6, 7, 8

These two dimensions draw up four quadrants, which denote the main orientation of one's personality.

Dimension 3: Leader – Operational

In the RDA model, all four quadrants comprise two semi-axis which are related to the roles others can fulfil in an organisation. The leader and the operational roles can be differentiated from the axes. "Leader" style doesn't reflect on the formal role position, much on such

behaviour as when you can inspire and admire others, provide goals for your group, you are loyal (to the organisation). A leader is characterised by self-awareness, easy decision-making and pragmatism (e.g. the ability to judge whether or not certain tasks can be realised under certain circumstances). “Operational” behaviour means – among others – good presentation and communication, readiness for co-operation, carrying work independently or working diligently, pursuing the final result, and never stopping before ending the tasks.

Leader: semi-axes 2, 4, 5, 7

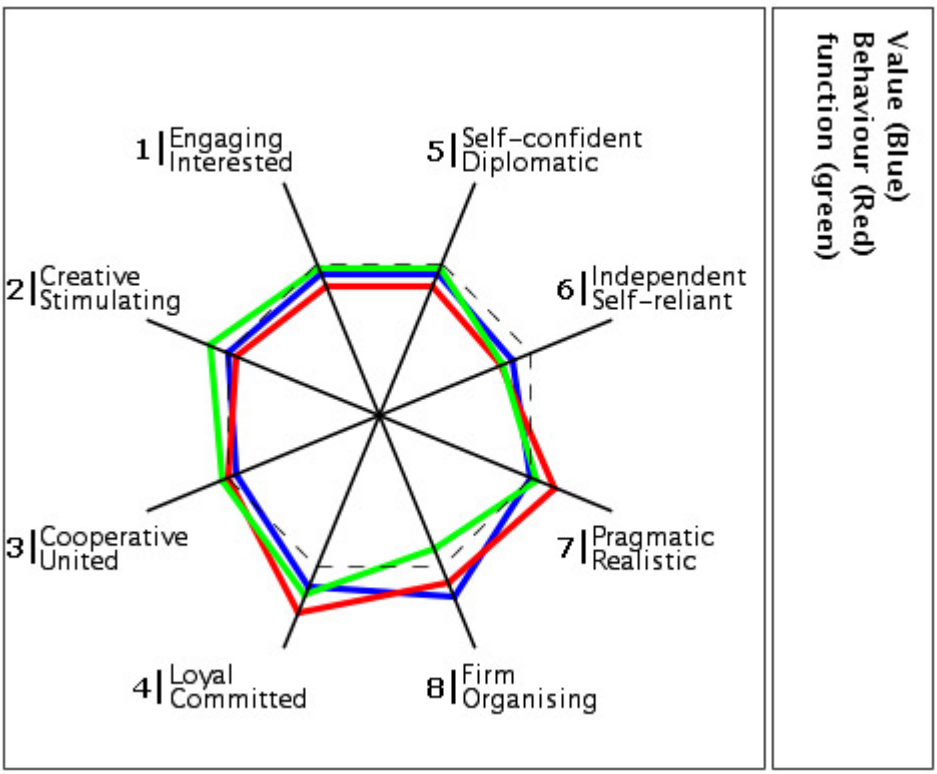
Operational: semi-axes 1, 3, 6, 8

Application of the RDA model

When we used the RDA to help defining the competencies required for a given job or to be acquired by finishing training, we placed the expectations (defining forms of behaviour, activities, mind-sets; see the definition of the expectations in chapter 3, especially 3.3.1) in the model by looking at the frequency of occurrence in the model clusters of each expectation and display of these on the axes of the chart; these can be regarded as a map of human behaviour. If we want to examine how a person suits a certain job profile, it is necessary to define the person’s profile first and then compare this to the profile of the job. The definition of the personal profile is done by two online questionnaires; one covers behaviour while the other gives an idea about the individual’s value perception.

>> Interpreting the RDA diagram

We would like to enable the reader to interpret the different RDA figures. Therefore we have selected one of them to describe and provide examples how the figures and numbers give insight into the phenomenon under scrutiny.



Behaviour, values and job profile in the RDA

The red octagon on the diagram shows the person's behaviour; the blue one shows the person's values; the green represents the transnational profile. The format of the red and blue octagon is determined by the results of the two online questionnaires which were filled in by the person. The scores s/he reached on the different axes define the percentages and so the shape of the figure. The octagon drawn with dashed line is the arithmetic mean (average) which is 12.5% on all the axes. The dashed octagon does not represent an optimum but a form of behaviour when the person's competence along the axes (behavioural clusters) is at the same level. This is not an optimum because that is determined by job expectations and may show deviations from an even distribution (e.g. firmness, reliability, stability and pragmatic thinking are highly valued for an accountant, while creativity, optimism and the ability to convince others are important for a designer).

The green octagon is the transnational profile which was created in the project and inserted into the RDA model, to make it measurable and expressive. The sentences in the Central5 descriptions – which define a particular behaviour (attitude, action or mind-set) – can be lined up along the axes and in this way the percentage distribution can be displayed to enable the diagram to be drawn.

>> "Reading" the diagram

We can make different kinds of comparison based on the RDA data and figure. Firstly, we can compare the behaviour and value profile of a person. The axis/axes, where behaviour reaches the highest value (the red octagon), is/are the person's most efficient fields of operation lie. Where the behavioural score is low there is room for improvement. It is apparent that behaviour is value-driven where the score on a particular axis are more or less equal (the red and the blue lines cross the particular axis at nearly the same point). The person may have so-called "traps" (these cannot be read from the diagram directly) which, through a stress on positive behaviour, may have negative effects on the environment as well as on the individual (e.g., optimism may be stimulating but, if extreme, the person may be dreaming; or humour helps a lot in solving conflicts but not when overdone – the person may become the clown of the team). It is to be noted that not everybody has these kind of traps. The individual can improve where the value-rating scores higher (in percentage terms) than behaviour. This is because it reflects that the form of behaviour in question is more important for the individual than actually reflected in his/her behaviour.

Secondly, we can compare a job profile (green) with a personal behaviour profile (red). Where the behavioural score is lower than the job profile score it means that the person underperforms in relation to the job requirement. If the behaviour is higher than s/he is able to provide the greater performance, as is required. Using all three profiles helps to identify those points where the employee or candidate has lower performance than the job needs, and look for those development possibilities which bring her/him closer to fulfil the requirements.

Naturally, what differences prove to be significant is the important issue. Based on the available, detailed statistics it is possible to decide whether or not a particular difference would be considered significant. This kind of analysis, however, belongs outside the brief of this short introduction to the RDA model.

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APPENDIX 2

LLL-S-L documents

LLL-S-L – workshop plan for Hungarian school leaders' group

Műhelyprogram – Igazgatói profil meghatározása

Tevékenység	*Módszer*	*Eszköz*	*Idő*	
Köszöntés, a projekt rövid bemutatása *Abari-Ibolya Emese*	előadás	ppt	10.00-10.10	10'
A műhely céljának bemutatása, egyeztetése Vezetői kompetenciák és meghatározásuk – néhány nemzetközi példa *Baráth Tibor*	előadás	ppt	10.10-10.30	20'
Az igazgatókkal kapcsolatos elvárások megbeszélése Előzetes kérdéslista kiadása – csoportban megbeszélik *Baráth Tibor – Cseh Györgyi – Szabó Mária*	kártyás lekérdezés	kérdéslista, kártyák	10.30-11.40	70'
Milyen tevékenységeket kell végeznie, hogyan kell működnie, viselkednie egy vezetőnk ahhoz, hogy ezeknek az elvárásoknak meg tudjon felelni? A tevékenységeket, viselkedési formákat, viszonyulási módokat mondatokban gyűjtik össze csoportonként. (A példamondatokat előre meg kell mutatni számukra.) *Baráth Tibor – Cseh Györgyi – Szabó Mária*	csoportmunka, majd plenáris bemutató és vita	példamondatok flip-chart	11.40-12.40	60'
A kilenc-tíz legfontosabb mondat kiválasztása *Cseh Györgyi*	Súlyozás	flip-chart	12.40-12.55	15'
Zárás, összegzés – folytatás *Abari-Ibolya Emese*			12.55-13.00	5'

A műhely forgatókönyve – magyarázat, értelmezés

1. A projekt bemutatása

Célirányos bemutatásról van szó, a fő elvárt eredmény, a nemzetközi szinten egyeztetett vezetői kompetenciastandardok kidolgozása. Célszerű világossá tenni, hogy mi az, ami elvárható egy egyéves fejlesztési programtól, és mi nem.

Pl. elvárható a kompetenciastruktúra definiálása és értelmezése; nem várható el, hogy ez széles körű szakmai és társadalmi egyeztetésre épülve, bevezetésre kész módon és eszközökkel felszerelve készüljön el.

Alapvető cél lehet:

- input nyújtása az EU szintű standardok kidolgozásához
- hozzájárulás az egyes országok standardjainak kidolgozásához, a folyamat elindítása és/vagy továbbvitele (a kezdő állapottól függően)

2. A műhely célja, a vezetői kompetenciastandardok kialakításának néhány nemzetközi példája

Az előadás célja kettős. Az első az, hogy kontextusba kívánja helyezni magát a műhelyt két szempontból:

- Hogyan illeszkedik a bemutatott projekt célja a magyarországi felkészülési folyamathoz?
- Milyen nemzetközi és hazai előzményekre támaszkodhat maga a szakmai tervezés, megvalósítás

Itt lehet bemutatni az LLUK-t és annak fejlesztési módját, valamint utalni a hazai kompetencia alapú fejlesztésekre, standardok kidolgozására (pl. OKJ).

A másik cél a műhely konkrét céljának meghatározása: hozzájárulás az intézményvezetőkkel szemben támasztható szakmai elvárások meghatározásához.

Itt jelenhet meg, hogyan támaszkodik módszertani szempontból a műhely az LLUK-ben alkalmazott eljárásokra. Ezen ponton lehet magát a műhelyt belehelyezni egy fejlesztési folyamatba.

3. A vezetőkkel kapcsolatos elvárások összegyűjtése

Ez a blokk azt célozza meg, hogy a résztvevők a saját szempontjaik mentén (oktatáspolitikus, oktatásirányító, szak-vagy szakmai szervezet képviselője, szakértő) fogalmazza meg, mikor lenne elégedett egy iskolavezetővel a XXI. században.
A munka csoportokban zajlik (létszámtól függően 2-4 csoport jöhet létre). A vitát segítendő kapnak egy kérdéssort a résztvevők. A megbeszélésre, az elvárások tisztázására kb. 30 perc, majd ennek – a kártyás lekérdezés módszeréhez illeszkedő – megfogalmazására további 10 perc áll rendelkezésre.
Az elvárásokat strukturáljuk, rendszerezzük. Ez lényegében egy lehetséges kompetenciastruktúra alapját adhatja meg.

4. Milyen a sikeres, eredményes vezető?

Az elvárások figyelembe vételével ebben a munkafázisban a résztvevők – ismételten csoportokban – azt gondolják végig, és fogalmazzák meg, hogyan működjön, milyen tevékenységeket lásson el, milyen attitűddel viseltessen a vezető különböző dolgok, helyzetek iránt. A meghatározás tehát tudatosan nem a kompetenciák megfogalmazását várja el, hanem azok építőköveinek azonosítását.
Ehhez példamondatokat kapnak a résztvevők. Kb. 30 perc áll rendelkezésre a csoportoknak arra, hogy a vezetők működésével kapcsolatos konkrétumokat megfogalmazzák. Ezt bemutatják, majd összegezzük és súlyozzuk.
A folyamat eredménye egy részletes leírás – mondatok gyűjteménye – arról, hogyan működjön, tevékenykedjen a vezető. A mondatok közül a legfontosabbakat a résztvevők kiemelik (8-10 darabot), ami megadja a részletes leírás hangsúlyait.

A folytatás az lehet, hogy ez alapján készül egy szöveges leírás a vezetői kompetenciákról, amit a csoport megkaphat véleményezésre, korrekcióra.

Hasonló módon lehet a folyamatot a vezetőkkel lebonyolítani. Adott esetben ilyen típusú műhelyek segíthetik a szélesebb megismerését a már azonosított kompetenciáknak, lehetővé teszi róluk a szakmai, társadalmi vitát, és ezek alapján a megegyezés kialakítását.

Szeged, 2010. április 20.

Baráth Tibor

Peer Learning Activity and Expert Workshop

May 4-5, 2010, Slovenia

Workshop session on expectations from effective school leader

Goal of activity: provide a basis for the competency framework to be finalized in the framework of the project

Goal of session 1: collecting inputs from participants on their expectations from the effective school leader

Goal of session 2: inputs of participants on what activities an effective leader should undertake, how they should function, behave, what attitudes should perform in order to reach the expectations

For both sessions work will be facilitated in groups, for session 2 the activities, behavioural patterns, manners will be collected in sentences.

Input for session 1:

Expectations from an effective school leader

In your opinion what tasks should school leaders undertake?
Could you define what professional knowledge, skills are the most important in their case?

Expectations:

- ✓ They should be reactive or proactive?
  - Reactive or passive adaptation: constitutional change occurs only after and due to the forcing power of changes in the given environment
  - Preactive adaptation: the leadership of the organisation accomplishes organisational changes due to the quick and effective adaptation to expected environmental change
  - Proactive or interactive influence: the organisation attempts to modify, change the environmental conditions in order to enlarge their scope for action
- ✓ The head teacher should be a leader in pedagogy and/or a manager? Is it important to separate the two, or work together better?
- ✓ They should be strong in strategic planning or operational tasks?

- ✓ Should leading tasks be separated? If yes, to what extent? How?
- ✓ Is a “provider/server” (setting directions, providing resources) or a “controller” type of leader is more effective?
- ✓ Does the leader should take or avoid risks? Should they avoid or adapt to uncertainty? Which one is more important?
- ✓ Is it important that the organisation exploits all opportunities or is it more necessary to guarantee a stable, balanced functioning? Which one is more relevant?
- ✓ The layout of the organisation should be flat or hierarchical? To what extent?
- ✓ The processes in organisational development should be directed by the leader, or it should be a task of an independent expert?
- ✓ Can it be an expectation from the leader to build and maintain partnerships around the institution, take an active part in networking, or this task should be given to someone else?
- ✓ Should he/she be able to make decisions individually or he/she should always ask for the advice of the governing body? (Board of directors, school board etc.)
- ✓ Should they be able to improvise well or everything should be realized in a systematic way?
- ✓ Should they be cooperative with their colleagues and their competitors?
- ✓ Should they motivate for creativity or precise implementation?
- ✓ Whose expectations should they consider the most: maintainer, labour market, teachers, other clients?
- ✓ What is more important: the output or the process, process orientation?
- ✓ Is an optimistic, positive attitude important; if yes, to what extent?
- ✓ Are personal appearance, resourcefulness/quick-wittedness and definiteness important? If yes; how much?
- ✓ In case of handling problematic situations what is considered more effective: if the leader considers all risk factors and barriers in advance and finds the solution considering all, or if he/she considers problems as opportunities and manageable risks for a better outcome?
- ✓ When solving conflicts what should they focus on more: to expose the reasons and find the solution in a rational way with the elimination of emotions, or they should be able to create an atmosphere where cooperation and mutual support will lead to the solution?
- ✓ In evaluation the main focus should be on individual abilities or personal achievements?

- ✓ What is more efficient: if the leader is aware of special abilities of his/her colleagues (possibilities and limits) and makes use of them for the organisation, or works hard on solving tasks and sets an example for colleagues?

The concept of the questionnaire

The definition of school leaders' competencies, the survey of the competency framework

The goal of the questionnaire is to gain information on the first version of the competency framework having been developed in the project: School Leadership for Effective Learning. The answers can held the modification, finalization of the competency matrix in order to reveal what further steps are needed to adapt the framework to the everyday practice of selection, education and in-service training of school leaders.

We would like to find an answer to the following:

6. According to the views of policy and decision makers/school leaders, how much the competency framework defined covers the main competency areas, which are crucial for for an effective school leader in a knowledge based society?
7. What are the proportions of the framework?
8. What activities, ways of behaviour do the subjects find important and to what extent these are present in the daily practice of school leaders?
9. How similar or different is the competency framework found necessary by decision makers and school leaders in your country?
10. What are the differences in the different groups of leaders? (e.g. level of education, size of residence, experiences gained in developments etc.).

The structure of the questionnaire

In the questionnaire the 1st-2nd parts should be used in all countries (these are built on the results of the national workshops implemented in Hungary) following these, you can insert your own questions in case you find it relevant. The background questions are the same everywhere.

5. Questions concerning the competency framework (for the analysis of its suitability, complexity).
    a. Importance, absences, ratios etc.
6. The analysis of leaders' operation, behaviour
    a. The definition of main characteristics of behaviour with the help of 32 statements (importance, presence in practice).
    b. With the classification of 2x8 characteristics chosen from the 32 characteristics, the analysis of inner coherence of the previous choice.
7. Background questions.

Background

1. Personal data
    a. Sex, age, level of education, leadership experiences, participation in leadership training, experiences in school improvement (national, international programmes)
2. Institutional data
3. The perception of own educational system regarding the level of autonomy
    a. Global perception based on the leaders' autonomy in operation
    b. Perception based on different areas: management, educational plan/programme, perception of employer and rules regarding the institution

Questionnaire – School leaders in the 21st century

Dear Respondent,

We live in a continuously changing world, where knowledge and lifelong learning plays a role with a growing importance. In information society the role of education is of growing value, the basis for development is motivation (willing to learn) and the ability to act. In this new era school still plays a crucial role in the proper access to education, however this role is changing to a great extent: new contents, methods appear in its daily practice, the focus is shifted from teaching to learning.

The primary question is what competencies leaders should possess today in order to make their school successful in the 21st century. We would like to find an answer for this dilemma in the framework of an international project: *School Leadership for Effective Learning* coordinated by Tempus Public Foundation in Hungary with the participation of the following countries: Austria, the Czech Republic, Slovakia and Slovenia. Our goal is – based on the widespread gathering of information – to define those competencies (knowledge, skills, abilities and attitudes) which are crucial for effective school leaders.

For this process we would like to ask for your help. Please fill in the questionnaire attached (it takes about 30 minutes) and help to make our process of data collection as effective and objective as possible revealing the opinion of decision and policy makers, school leaders, trainers of school leaders on relevant competencies.

Thank you for your valuable contribution. For the results of this international survey, please contact……on national level or find information on the website of TPF at http://www.oktataskepzes.tka.hu/life_long_learning_strategia.php?subMenuId=916 from October 2010.

1. Please rate on a 4-grade scale how important the areas listed below and preparedness in them (knowledge, capacity and attitudes) is for an effective school leader in a knowledge based society. (1 – not important at all, 2 – not very important, 3 – mostly important, 4 – very important)

	Areas of leadership and their short description	*1*	*2*	*3*	*4*
1	Developing a strategy: common, motivating vision, goal-oriented, preactive functioning (goal-process-result), value-oriented, ambition for sustainability.				
2	Leading the processes of teaching and learning, forming an effective learning environment, setting high expectations (students, teachers) responsibility for the quality of learning and teaching.				
3	The management and development of the school as an organisation, organisation structure in tune with goals, sharing of tasks, responsibilities and scope of authority, effective functioning, safe environment for the support of learning and development, result and future orientation, the formation of an organisational culture supporting change and cooperation, linking the school to its environment.				
4	Management of organisational resources, human resources development, directing colleagues: involvement, motivation, inspiring, constant development and training, selection, team building, tuned development and exploitation of individual and organisational knowledge for the effective realization of goals.				
5	Supporting transparency, taking responsibility, being committed to quality: responsibility for consuming resources and achieving goals – for the maximal development of students (goal-oriented process control), assessment, confidence based on facts, accounting towards partners, responsibility for achieving goals.				
6	Positive view of life, optimism: future-oriented thinking and acting, resource for own self and for others.				
7	Ethical operation, the moral aspect of leadership: moral attitude, responsibility for innovations, understanding the wide socio-cultural environment of the school, taking moral responsibility for value driven operation, social justice, equality (equal access to quality education).				

	Areas of leadership and their short description	*1*	*2*	*3*	*4*
8	Leadership competencies, personal characteristics: responsible and individual decision making, conflict management, commitment, integrating personality, cooperation, consciousness, determination, rationality, autonomy, authenticity, creativity, openness, working capacity, ability to handle stress and to learn.				
9	Partnership: cooperation, contact making and building networks with other schools and learning organisations in the interest of effective learning, community building, being sensitive towards the mutual interrelatedness of school improvement and community development (in local community), respecting differences and building upon them, sensitivity towards and ability to react to partners' needs and expectations.				
10	Anything else you find important to add not listed above:				

2. Please grade the following statements according to two aspects: 1. How important they are in a knowledge based society for an effective school leader (for this aspect please rate the column: Importance), 2. According to your experiences, how true these statements are for the majority of school leaders in reality (for this aspect please rate the column: Characteristic). (1 – not important at all/characteristic at all, 2 – not very important/ characteristic, 3 – mostly important/characteristic, 4 – very important/characteristic)

		Importance				*Characteristic*			
	Statements	*1*	*2*	*3*	*4*	*1*	*2*	*3*	*4*
1	Knows the conditions of the (micro and macro) environment and follows up with changes								
2	Uses the appropriate people for the appropriate processes (builds on strengths and weaknesses), knows their demands, manages different possibilities, takes into consideration their abilities and capacity.								
3	Has confidence in his/her colleagues but always keeps track of processes without blindly trusting anyone.								
4	Keeps difficulties a challenge to solve.								
5	Handles problems with the interested stakeholders in an open process.								

		Importance				*Characteristic*			
	Statements	*1*	*2*	*3*	*4*	*1*	*2*	*3*	*4*
6	Involves colleagues in the strategy building process.								
7	Is able to think in possibilities in connection with the successful, long-term operation of the organisation, considers diverse possibilities based on advantages and disadvantages.								
8	Uses the methods of tolerance and empathy.								
9	Involves his/her colleagues/co-leaders in the decision making process.								
10	After evaluating results, he/she sets new goals.								
11	Co-operates with other institutions, organisations on national and international level (e.g. school leaders, local governments, community organisations, parents).								
12	Committed to his/her school, work and colleagues								
13	Takes responsibility for his/her decisions and acts even if they are unpopular.								
14	Keeps track of national and international trends of his/her profession.								
15	Able to take into consideration basic principles even at difficult decisions to make.								
16	Finds teamwork an important value, supports it in different ways.								
17	Has good communicational and contact making skills.								
18	Able to accept reasonable counter arguments, admit own mistakes and is able to correct them.								
19	Able to enforce own ideas, will and interests.								
20	Able to distribute making decisions and tasks, if necessary.								
21	Able to form and develop a community.								
22	Able to think in a structure, able to oversee processes from planning to realization phase.								

		Importance				*Characteristic*			
	Statements	*1*	*2*	*3*	*4*	*1*	*2*	*3*	*4*
23	Persistently works on fulfilling his/her goals.								
24	There is consistency between his/her words and acts.								
25	Able to use opportunities, widen the scope for action.								
26	Makes efforts to keep high level of quality in his/her work (high expectations in education regarding teachers and students).								
27	Able to manage difficult situations, and crises.								
28	Able to form an environment that supports creativity and innovation.								
29	Supports innovative grass-roots initiatives.								
30	Has a positive view of life.								
31	Has a vision for the future of his/her organisation.								
32	Continually develops his/her leadership/management skills through in-service trainings and self-development.								

3. Please grade the following statements according to their importance in the case of a successful school leader. (1 – most important…, 8 – least important) This order of rank DOES NOT show the importance of statements, but their relation to each other.

	Statement	*Rating*
1	Has confidence in his/her colleagues but always keeps track of processes without blindly trusting anyone.	
2	Is able to think in possibilities in connection with the successful, long-term operation of the organisation, considers diverse possibilities based on advantages and disadvantages.	
3	Involves his/her colleagues/co-leaders in the decision making process.	
4	Co-operates with other institutions, organisations on national and international level (e.g. School leaders, local governments, community organisations, parents).	
5	Has good communicational and contact making skills.	

	Statement	*Rating*
6	Able to think in a structure, able to oversee processes from planning to realization phase.	
7	Has a vision for the future of his/her organisation.	
8	Continually develops his/her leadership/management skills through in-service trainings and self-development.	

4. Please grade the following statements according to their importance in the case of a successful school leader. (1 – most important…, 8 – least important) This order of rank DOES NOT show the importance of statements, but their relation to each other.

	Statement	*Rating*
1	Takes responsibility for his/her decisions and acts even if they are unpopular.	
2	Keeps track of national and international trends of his/her profession.	
3	Able to take into consideration basic principles even at difficult decisions to make.	
4	Finds teamwork an important value, supports it in different ways.	
5	Able to accept reasonable counter arguments, admit own mistakes and is able to correct them.	
6	Able to enforce own ideas, will and interests.	
7	Persistently works on fulfilling his/her goals.	
8	Able to form an environment that supports creativity and innovation.	

5. What is your opinion about the scope of action in decision making or acting possibilities of a school leader? (1 – minimal, 2 – little, 3 – average, 4 – large, 5 – very large) Would you increase or decrease the autonomy of school leaders for optimizing their scope of action? (→ appropriate, ↑ it should be increased; ↓ it should be decreased)

	Statement	*1*	*2*	*3*	*4*	*5*	→	↑	↓
1	Autonomy and scope of action of the school leader on the whole.								
2	The school leader's scope of action, influence and impact on the curriculum and pedagogic program of the school.								
3	The school leader's scope of action, influence and impact on the school budget and financing management.								

	Statement	*1*	*2*	*3*	*4*	*5*	→	↑	↓
4	The school leader's scope of action, influence and impact on the co-workers' (teachers and other staff) selection, employment and discharge.								
5	The school leader's scope of action, influence and impact on the regulation of the school functioning (e.g. organisational and operational rules).								

6. In case you have any further comments or remarks, please use this space to share them with us:

7. Data of respondent:

1. Age: | | |

2. Gender:

1 – male

2 – female

3. Highest level of qualification:

5 – Master degree + PhD

4 – Master degree (license for teaching students at age 14 to 18)

3 – Faculty of teacher training (license for teaching students at age 10 to 14)

2 – Teacher's training college (license for teaching students at age 6 to 10)

1 – other degree or diploma (Bachelor level)

4. How many degrees do you have?

1 – one degree

2 – more than one degree

5. What is your present status?

6 – director general

5 – deputy director general

4 – school leader

3 – deputy school leader

2 – finance manager

1 – other manager, please describe: ……

6. Leadership/Management experiences

3 – more than 15 years of experience as a manager/leader

2 – between 5-14 years experience as a manager/leader

1 – less than 4 years experience as a manager/leader

7. Experience in school development

4 – managing more than 5 school development projects, or/and contribution as a school leader

3 – managing 3-5 school development projects, or contribution as a school leader

2 – managing 1-2 school development projects, or contribution as a school leader

1 – does not have any experiences in this field

8. The administrative status of your habitation:

1 – township

2 – town

3 – city

4 – capital

9. Size of the school:

1 – age of the students: _____ (e.g. 6-14 year)

2 – number of students: _____

3 – number of teachers: _____

10. Type of the training provided by your school:

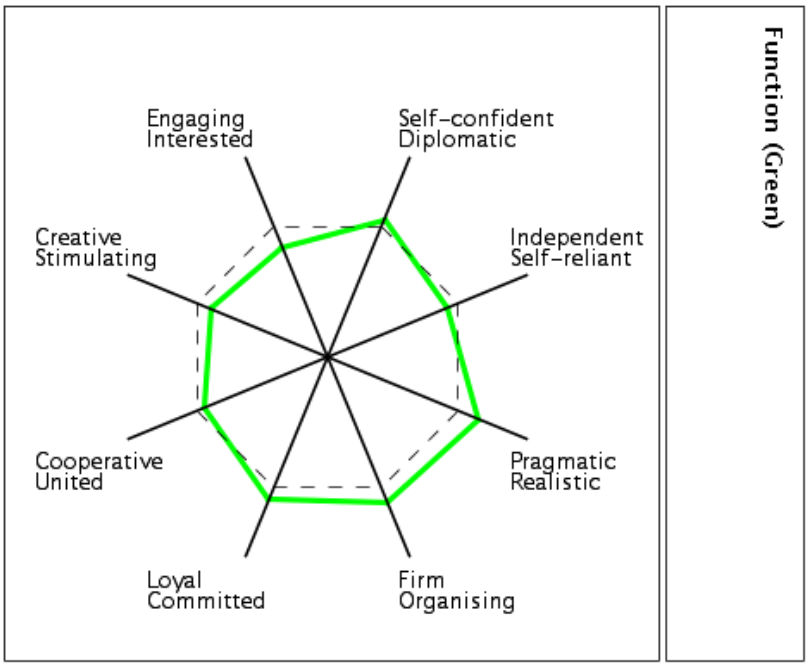
1 – general education

2 – vocational education

3 – combined (general and vocational education)

Hungarian school leadership profile – A detailed description of the final profile based on the workshops

The competence profile based on the two workshops carried out with Hungarian school leaders and decision makers. The following profile is the overall/ranked version. The detailed description comes after the figure and data.



Axis

1	2	3	4	5	6	7	8
10,5	11,11	11,8	13,58	13,2	11,4	14,5	13,88

N=21
Leader competencies: 52.39%
Organiser type, content-oriented, stable, leader 1. Pragmatic, realistic 2. Firm, organiser 3. Loyal, committed

This person is an organising type, who performs the tasks systematically and pays special attention to the realistic evaluation of processes and circumstances. At the same time, this person can co-operate with his/her environment and is a reliable person.

This person is content-oriented, which means that for him/her the completion of tasks is more important, as well as formal and content compliance rather than caring about who he/she is surrounded by. This person is stable, likes to know what he/she can expect from whom, and can operate in an environment where clearly-defined rules govern the operation.

The managerial competences of this person are stronger than the operational ones, and he/she is loyal to the objective and the organisation. This person is practical and always knows what to do next.

His/her behaviour is characterised by pragmatic thinking and practicality. This person sees the opportunities and limitations of him-/herself as well as others, and pays attention to what is possible in certain situations. Due to his/her pragmatic approach, which often leads to the required results, people ask for and respect his/her opinion. When problems occur, this person is not thrown off balance and generally approaches things rationally. In problematic situations he/she does not blame others or him-/herself, but tries to find the core reason, via which he/she can change the situation.

He/she can keep a certain distance, and put things into perspectives, does not allow his/her emotions and prejudices to dominate, does not blow things out of proportion. In his/her work, this person is objective and realistic. He/she is capable of analysing both content and values, and this is what he/she builds his/her assessment and judgement on. This person has realistic expectations from his/her colleagues, is capable of clearly articulating them and gives a feedback to them on where they are in a process. When this person is faced with matters that he/she finds unrealistic, he/she behaves in a critical way in order to adjust things to the right proportions and possibilities available.

This person is reliable and honest in his/her relationships. In relationships, he/she finds mutual trust important. This person finds important that others can count on him/her and vice versa, he/she can also count on them. Because this person is reliable, he/she can keep secrets vested in him/her.

In his/her work, this person can reach his/her aims in a concentrated and organised manner. He/she organises work in a thought-out manner, where it is clear who does what and who has what kind of tasks. He/she allocates the workload along clearly and precisely defined

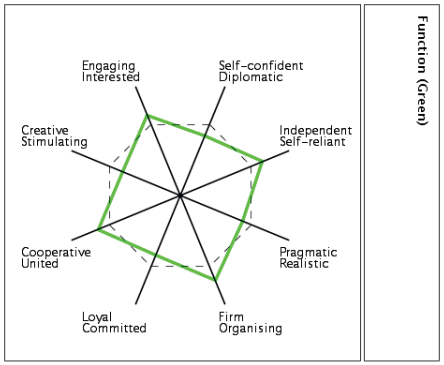
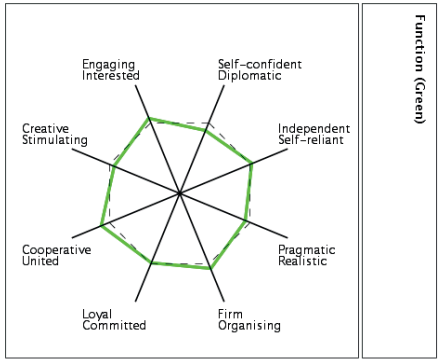
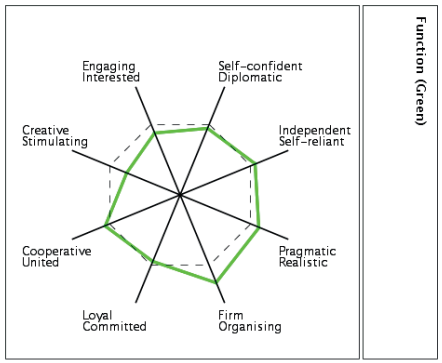
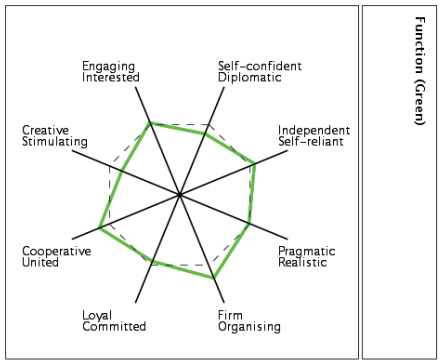
agreements, and sets tasks while paying attention to the fact that the execution of these tasks should be done with identical criteria. During work, he/she endeavours to create an atmosphere in which people mutually respect one other and mutually trust one anothers' abilities. He/she finds self-evaluation important, and strives to emphasize his/her as well as others' competences.

In cases of disagreements and conflict situations, he/she accepts to be attacked. He/she does not create a problem out of things and is able to forgive without giving up his/her views and principles. If later it turns out that he/she was wrong, this person can admit it. Due to his/her supportive and share-taking attitude, this person can fit best in a work environment, where there are clear-cut expectations.

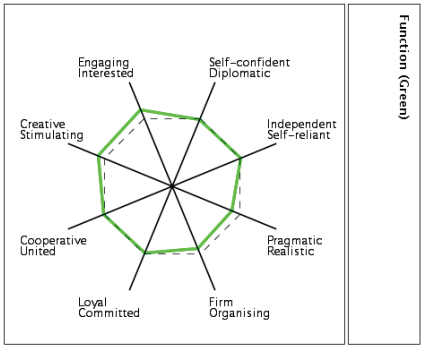
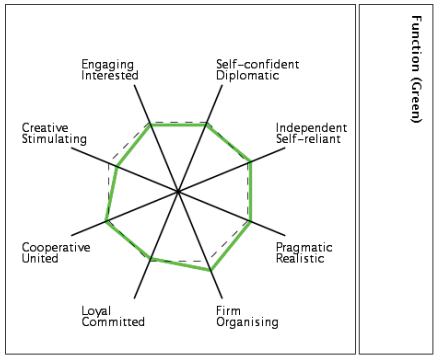
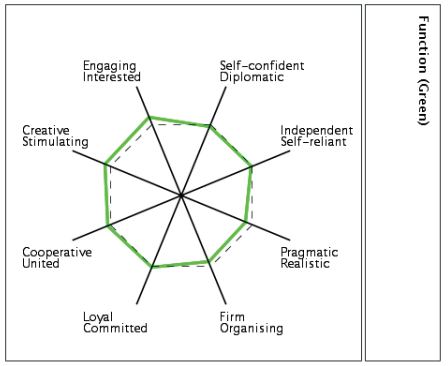
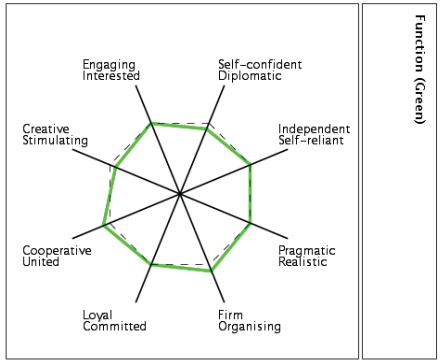
In his/her behaviour, dynamism is dominant. This person knows what he/she is doing, often initiates, thus he/she can reach realistic and achievable goals, which can strengthen his/her confidence in his/her own abilities. When it comes to decision-making, this person can clearly articulate his/her viewpoints and can stand by what he/she has said. This person provides colleagues with the opportunity to talk and let their opinions be heard. Finally, this person allows colleagues to come to a decision and to start working on realising it.

School leadership profiles country by country

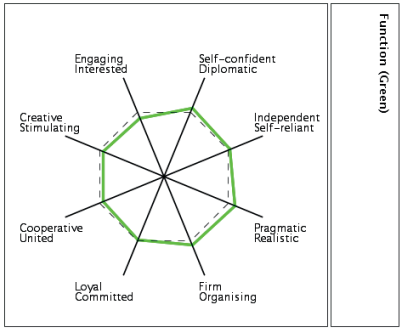
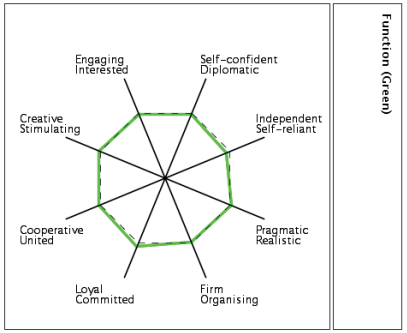
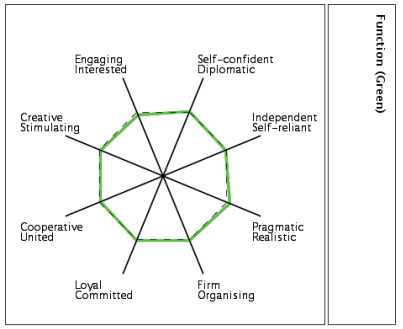
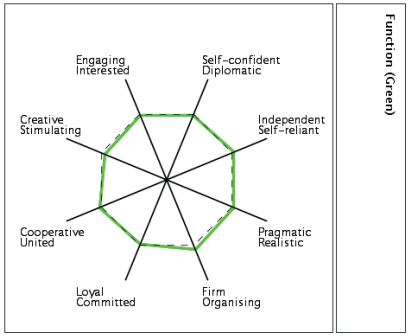
Hungary – questionnaire data analysis

School leaders	Decision makers	Ranked	Overall
			
Axis	Axis	Axis	Axis
1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
14,04 10,09 14,47 10,53 10,53 14,47 10,96 14,91	13,33 11,67 13,89 12,22 11,11 12,78 11,67 13,33	10,98 9,47 13,26 11,74 11,74 13,26 14,02 15,53	12,75 10,29 14,22 11,76 10,78 13,24 12,25 14,71
N=159	N=21	N=180	N=180
Leader competencies: 42.11%	Leader competencies: 46.64%	Leader competencies: 46.97%	Leader competencies: 44.99%

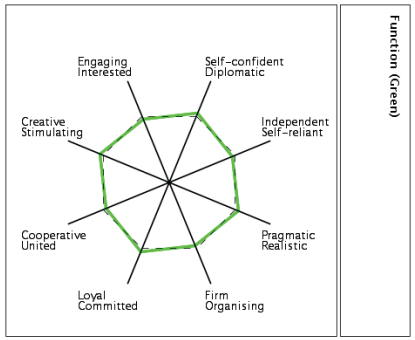
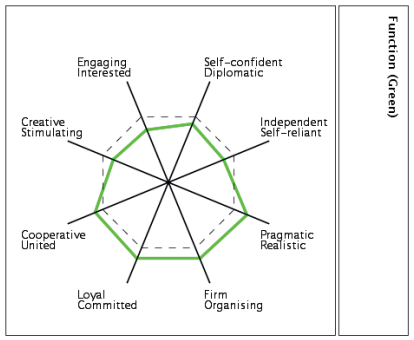
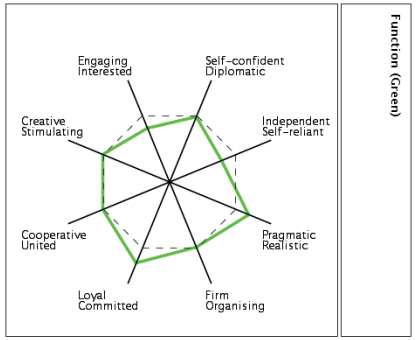
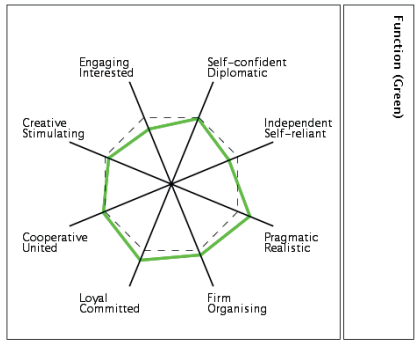
Hungarian competency profiles – questionnaire

Austria			
School leaders	Decision makers	Ranked	Overall
			
Axis 1 2 3 4 5 6 7 8 14,04 13,6 12,7 12,28 12,28 12,72 10,96 11,40	Axis 1 2 3 4 5 6 7 8 11,98 10,94 13,02 11,98 11,98 13,02 13,02 14,06	Axis 1 2 3 4 5 6 7 8 13,70 13,44 12,90 12,63 12,09 12,36 11,29 11,55	Axis 1 2 3 4 5 6 7 8 12,5 11,46 13,54 12,5 11,46 12,5 12,5 13,54
N=50	N=49	N=99	N=99
Leader competencies: 49.12%	Leader competencies: 47.92%	Leader competencies: 49.38%	Leader competencies: 47.92%

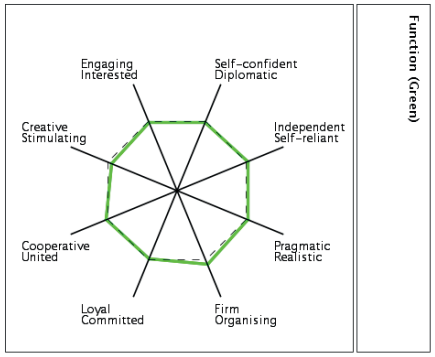
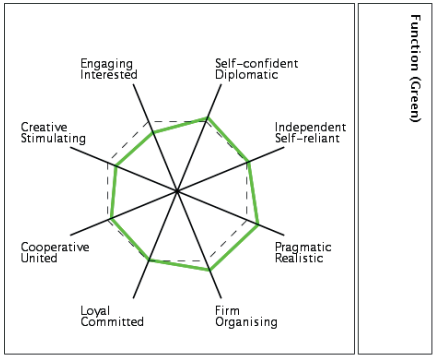
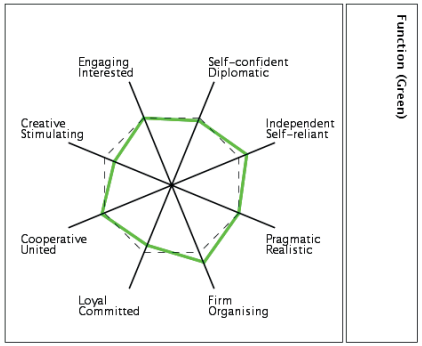
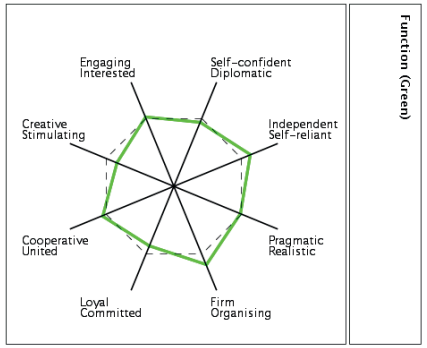
Austrian competency profiles – questionnaire

Czech Republic			
School leaders	Decision makers	Ranked	Overall
			
Axis 1 2 3 4 5 6 7 8 11,27 11,76 11,76 12,25 13,24 12,75 13,73 13,24	Axis 1 2 3 4 5 6 7 8 12,28 12,72 12,72 13,16 12,28 11,84 12,72 12,28	Axis 1 2 3 4 5 6 7 8 11,9 12,3 12,3 12,68 12,69 12,3 13,09 12,69	Axis 1 2 3 4 5 6 7 8 12,25 11,76 12,75 12,25 12,25 12,75 12,75 13,24
N=100	N=10	N=110	N=110
Leader competencies: 50.98%	Leader competencies: 50.44%	Leader competencies: 50.76%	Leader competencies: 49.01%

Czech competency profiles – questionnaire

Slovenia			
School leaders	Decision makers	Ranked	Overall
			
Axis 1 2 3 4 5 6 7 8 11,90 13,1 11,9 13,1 13,1 11,9 13,1 11,9	Axis 1 2 3 4 5 6 7 8 10 10,56 13,89 14,44 11,11 10,56 15 14,44	Axis 1 2 3 4 5 6 7 8 10,14 12,68 12,68 15,22 12,32 9,78 14,86 12,32	Axis 1 2 3 4 5 6 7 8 10,29 11,76 12,75 14,22 12,25 10,78 14,71 13,24
N=36	N=13	N=49	N=49
Leader competencies: 52.4%	Leader competencies: 51.11%	Leader competencies: 55.08%	Leader competencies: 52.94%

Slovenian competency profiles – questionnaire

Slovakia			
School leaders	Decision makers	Ranked	Overall
			
Axis 1 2 3 4 5 6 7 8 12,26 11,79 12,74 12,26 12,26 12,74 12,74 13,21	Axis 1 2 3 4 5 6 7 8 10,53 10,96 11,84 12,28 13,16 12,72 14,47 14,04	Axis 1 2 3 4 5 6 7 8 12,5 10,65 12,96 11,11 12,03 13,89 12,55 14,35	Axis 1 2 3 4 5 6 7 8 12,72 10,53 13,16 10,96 11,84 14,04 12,28 14,47
N=94	N=16	N=110	N=110
Leader competencies: 49.05%	Leader competencies: 50.87%	Leader competencies: 46.29%	Leader competencies: 45,61%

Slovakian competency profiles – questionnaire

The level of perceived autonomy in the groups of directors and decision-makers

qtype Type of questionnaire		*N*	*Mean*	*Std. Deviation*	*Std. Error Mean*
q5H1 Autonomy and scope of action of the school leader on the whole. (Currently)	1 School leaders	440	3.15	0.857	0.041
	2 Decision-makers	113	3.24	0.947	0.089
q5H2 The school leader's scope of action, influence and impact on the curriculum and pedagogic program of the school. (Currently)	1 School leaders	439	3.53	0.943	0.045
	2 Decision-makers	113	3.54	1.027	0.097
q5H3 The school leader's scope of action, influence and impact on the school budget and financing management. (Currently)	1 School leaders	439	2.69	1.186	0.057
	2 Decision-makers	112	2.78	1.121	0.106
q5H5 The school leader's scope of action, influence and impact on the co-workers' (teachers and other staff) selection, employment and discharge. (Currently)	1 School leaders	439	3.38	1.306	0.062
	2 Decision-makers	113	3.05	1.475	0.139

qtype Type of questionnaire		*N*	*Mean*	*Std. Deviation*	*Std. Error Mean*
q5H5_A The school leader's scope of action, influence and impact on the regulation of the school functioning (e.g. organizational and operational rules). (Currently)	1 School leaders	440	3.80	0.897	0.043
	2 Decision-makers	113	3.69	1.010	0.095

Means of autonomy level by country and responder groups (Currently and needed level)

	1 Slovenia			*2 Czech Republic*			*3 Austria*			*4 Slovakia*			*5 Hungary*		
	1 Sl	*2Dm*	*Total*	*1 Sl*	*2Dm*	*Total*	*1 Sl*	*2Dm*	*Total*	*1 Sl*	*2Dm*	*Total*	*1 Sl*	*2Dm*	*Total*
q5H1 Autonomy and scope of action of the school leader on the whole. (Currently)	3.18	3.43	3.24	3.44	3.91	3.49	2.54	2.82	2.68	3.28	3.71	3.34	3.06	3.38	3.10
q5P1 Autonomy and scope of action of the school leader on the whole. (Needed level)	-0.51	0.08	-0.37	-0.20	0.36	-0.14	0.98	0.76	0.87	0.69	0.35	0.64	0.80	0.24	0.74
q5H2 The school leader's scope of action, influence and impact on the curriculum and pedagogic program of the school. (Currently)	2.39	2.79	2.48	3.72	3.82	3.73	3.02	3.42	3.22	3.52	3.35	3.50	3.91	4.33	3.96
q5P2 The school leader's scope of action, influence and impact on the curriculum and pedagogic program of the school. (Needed level)	-0.45	-0.08	-0.37	0.45	0.36	0.44	0.60	0.47	0.54	0.47	0.47	0.47	0.19	-0.05	0.16
q5H3 The school leader's scope of action, influence and impact on the school budget and financing management. (Currently)	2.59	3.29	2.76	3.05	3.82	3.13	2.10	2.14	2.12	2.91	3.31	2.97	2.54	3.00	2.59
q5P3 The school leader's scope of action, influence and impact on the school budget and financing management. (Needed level)	-0.67	-0.33	-0.59	-0.52	-0.36	-0.50	0.79	0.78	0.78	0.71	0.41	0.66	0.86	0.33	0.79
q5H5 The school leader's scope of action, influence and impact on the co-workers' (teachers and other staff) selection, employment and discharge. (Currently)	3.70	3.86	3.74	3.89	4.27	3.93	1.42	1.66	1.54	3.60	4.41	3.72	3.47	4.10	3.55

	1 Slovenia			2 Czech Republic			3 Austria			4 Slovakia			5 Hungary		
	1 Sl	2 Dm	Total	1 Sl	2 Dm	Total	1 Sl	2 Dm	Total	1 Sl	2 Dm	Total	1 Sl	2 Dm	Total
q5P5 The school leader's scope of action, influence and impact on the co-workers' (teachers and other staff) selection, employment and discharge. (Needed level)	-0.22	0.38	-0.07	0.25	0.64	0.29	0.98	0.73	0.86	0.52	0.24	0.47	0.46	0.24	0.44
q5H5_A The school leader's scope of action, influence and impact on the regulation of the school functioning (e.g. organizational and operational rules). (Currently)	3.56	3.64	3.58	4.05	4.00	4.05	2.92	3.16	3.04	3.93	4.35	3.99	3.92	4.29	3.96
q5P5_A The school leader's scope of action, influence and impact on the regulation of the school functioning (e.g. organizational and operational rules). (Needed level)	0.21	0.42	0.25	0.64	0.82	0.66	0.81	0.57	0.69	0.28	0.06	0.25	0.16	0.00	0.14

Sl: school leaders; Dm: decision makers; Currently: evaluated on a 5-grade Likert scale; Needed level: calculated from a 3-grade scale (-1: the level of autonomy should be diminished, 0: the level of autonomy is appropriate; 1: the level of autonomy should be increased)

APPENDIX 3

ICSL – documents

Identifying the leadership competencies – Brief description of the workshop

1. Goals of the workshop

The workshop is based on the former cooperation among the CE countries and continuation of the project we carried out in 2010. That project aimed at developing a measurable competence structure on transnational level for school leaders. The new, two years project wants to reach a more elaborated version of competencies. In harmony with these goals the workshop aims the followings.

- Dissemination and share of the information, the achieved results from the former project(s).
- Orientation of the participants (their thinking) via drawing up the attention on the importance of school leadership, its role in improving learning in schools.
- Further development of the existing competence structure, profile, and making it more detailed based on common work and understanding.
    - This is the key goal of the workshop, and so the greatest part of the time should be reserved for that.

2. Participants of the workshop

As we agreed during the start-up meeting it would be advisable to organise heterogeneous groups which make possible an intensive and deep discussion about the role, tasks, activities and responsibilities of the school leaders. It is important to make clear for the participants that you require from them to keep that role, that viewpoint you invite them to take part in the workshop. This situation fosters that every participants think about the requirements towards school leadership from their special viewpoints. These viewpoints and the requirements based on them can be differ and crash with each other. They can inspire to be realistic while they are forming their own expectations – at the same time it is important to focus on requirements of the 21st century, so the focus should be on the future not on the past – and understand deeply that other viewpoints can be also relevant.

Suggestion for the composition of the participants:

- Decision makers – they are the user of the school leaders' knowledge
- Acting school leaders – they are of the owner of the school leadership knowledge
- Teachers – they are the subject of the school leadership knowledge, that means they work are very much influenced by the idea, activities, behaviour of the school leaders
- Other possible participants (if possible, just make some colour)
    - Parents
    - Experts

Optimal number of the participants: 15–20

The ratio of the first three subgroups: about 1/3.

3. Draft of the programme

The workshop should be planned for about 5-6 hours. The shorter duration means that there is only one two defined breaks. You can find a possible agenda for the workshop

As we discussed during our first meeting in April, the main structure of the workshop should be following. When groups are mentioned in the following, means the subgroups of the participants, who are grouped into 3-4 small groups including 5-6 members. These small groups should be heterogeneous as well.

a. Introduction, discussion of the agenda, expectation towards the workshop. It is only some minutes but help the participants to be tuned up the workshop.
    a. You ask them to tell:
        i. their name
        ii. the institution from where they come and their position
        iii. two reasons why they accepted the invitation to take part in the workshop; this point help them to be ready to deal with the topic of the workshop; you will also see their motivation and attitudes towards the situation.
b. Presentation about the context of school leadership, professional background of the development of the competence structure. This part is the theoretical background of the competence development (why it is so important; what do we know about the effect of leadership; what way of the development was decided our expert group and why (see:

demand-driven competence development, the case of LLUK, applying modern HR model for describing and comparing the results from different countries; etc.).

c. Facilitated discussion about the school leadership, they role and responsibilities in the different fields (9 are defined) – who can be a successful leader. This part we can use those areas we have developed using the results of the workshops and the international literature on this topic. The discussion help the participants to focus on their requirements, think about the successful leader from their own perspective, and they can crash their idea with each other. It is not aimed at making agreement or defining concrete competences. Some suggestion how to work with the groups:
    a. You organize the participants into heterogeneous groups (possible to form these groups based on the participants list and ask them to work in defined groups).
    b. You can give the list of the 9 leadership area that we defined on our project report, and ask them to share their idea about the successful school leader in the 21st century (tasks, function (activities in relation to skills, behaviour, attitudes). It is important to stress them to focus on their own role (e.g. school leader, decision maker, teacher or other).
    c. If you think you can use the list of questions we had it in our workshop in Brdo.
d. Requirements towards the school leaders (Query with card, use the structure we define). After the discussion (see point c.) where they think about their requirement, perceptions of school leadership they should make a common list based on group agreement. You will find the detailed description of the query with card in the following.
    a. You define the aim of the group work: after the facilitated discussion the groups should make agreement regarding the most important characters of the successful school leaders.
    b. The question: What requirements can be defined for the successful school leaders in the 21st century?
    c. Composition of the group: the same then in the earlier task.
    d. Every group get 6 cards (optimal to use 1/3 of a A/4 120 grams sheet)
    e. Firstly, every participant has 3-5 minutes to think about the question and try to form his/her own answer. (They can write them down for themselves.)
    f. After that the group members have a discussion about their answer, and they should make agreement regarding those statements, requirements towards school leaders they consider the most important. They should write one thing (some

words, or one expression) on one card. The groups can have 15 minutes (max. 20' minutes) to make the agreement.

g. You gather the cards from all groups. (If you have 5 group, then 5×6=30 cards; the 30 is the about the maximum number of the cards.) You will put the cards on a flipchart or on the wall.
h. You cluster the cards into the 9 area we have defined. E.g. if there is the motivation on card and the incentive on the other, then they can put in the same area.
i. If you are not sure whether you put the card into the right cluster, then you can ask that group which wrote the certain card.
j. If you are not sure what the card means you can ask the group which wrote it to explain it shortly.
k. The facilitated discussion helped the participants to focus on their own thoughts, form their own opinion. This phase stimulates them to focus also on others opinion and make agreement. This group work prepares the group for the next phase in which they should form a detailed list of their requirements towards the school leaders.
l. This part of the group work can take about 25 minutes.

e. Identifying the required actions, behaviour, attitudes (group work). Based on the work point d. the groups should form short sentences which will describe ONE action, ONE behaviour or ONE attitude that should characterize the successful school leaders' work. It is crucial that one sentence can include one requirement. Usually one group from 30-50 sentences.
f. Merge of the requirements defined by the groups. It is the crucial point of the workshop. All sentences are important. All different sentences should keep which were listed one small group. The WS leaders facilitate the group to select the same sentences, and from them only one should be kept. The result of this part of the WS is a common and agreed list of the required behaviour, activities and attitude of the school leaders.
    a. If you have 4-5 groups then you should ask them to write their sentences on a flipchart and – after finishing their work – put them on the wall close to each other.
    b. You can start with the first flipchart and number those sentences which are agreed by the whole group. If you find the same sentence on another flipchart, then you delete/cross out that or those.

c. Take one after the other the flipcharts you will have the merged and agreed list of sentences which describe the optimal functioning of the school leader.
d. If it is possible for you, the best way to put these sentences into an Excel file and number them as they appear on the flipcharts. After that print this file for every member of the whole group.

g. Weighting of the statements (highlighting the most important 20%). Every participant should have the common list (see point f.d.), and they can vote on them. Everybody has the same number of votes. The number is the 20% of the number of the statements on the common list. (E.g. if the number of the statements are 80, then 16; if 93 then 18,6à19, etc.) Votes can be divided among the elements of the common list. Taking the example that we have 93 statements then every participant has 19 votes. They can give all 19 votes on one selected statement, or they can select 19 items for the 19 votes, or any other distribution is possible between these two special ones. The votes have to be counted (with the control that the numbers are right, because the development of the profile is based on the list and the highlighted number of the statements).
h. Give information about the continuation of the development of the competence structure and profiles
i. Short presentation about the existing results.

A possible agenda for the workshop

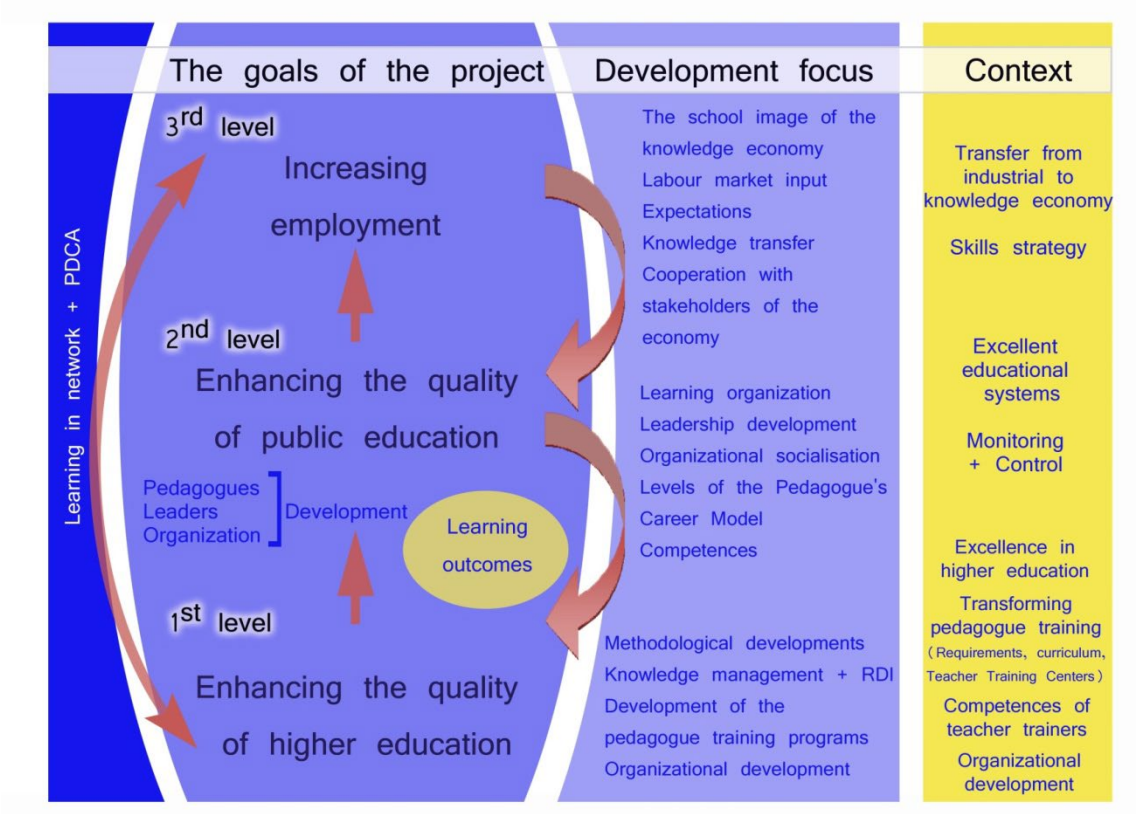
Activities	*Time*
Greetings, the planned programme of the workshop	5’
Short introduction (participants introduce themselves using suggested aspects; see point a. above)	20’
Goals of the workshop, the professional background of the definition of the competences, process and procedures (see point b. above)	35’
Coffee break	10’
What competences should the school leaders have in the 21st century to become a successful leader? Discussion about the requirements based on given aspects. (see point c. above)	40’
What requirements can be defined for the school leaders? (Query with card; see point d. above)	50’
Lunch and coffee break	30’

Activities	*Time*
Description of the behaviour which is in harmony with the requirements that were formed during the previous group work. (see point e. above)	40’
Merging the results of the group work, making a common list of the requirements. Prioritization of the list, weighting of the requirements. (see the point f. and g. above)	60’
Closing, summary (see h. and i. above)	10’

APPENDIX 4

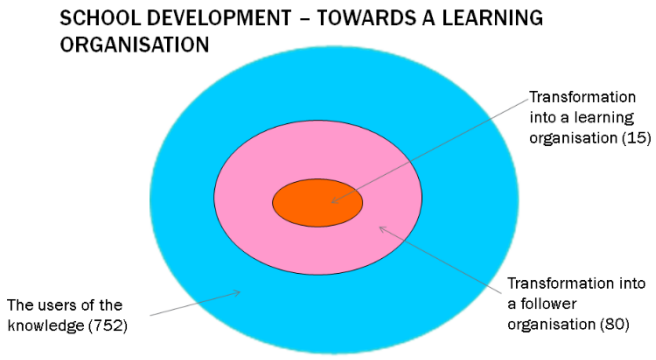
LOM4S – DOCUMENTS

Concept of the Mentor Network 2.0



The concept of renewing teacher training – University of Szeged

Figure 1 draws up the relations and the impact system which appear in the knowledge economy and knowledge society as a consequence of the interbounded relation among the HE (teacher training, 1st level); process and effectiveness of the public education (2nd level); world of labour of the knowledge society (3rd level). Our approach based on that the teacher training, the needs-based CPD influence the quality on personal level (teacher) and on organisation level (school and management).



Systematic development of school towards learning organisation

We plan a complex diagnosis of the 15+80 schools measuring their organisational status and competences combining the investigation on the level of key persons and school. (It is based on a holistic model which combine the Competing Values Framework (*Quinn & Cameron*); the Role Diagrammatic Approach (*Harry Oude Wolbers*), and SWOT.

We plan to develop a special diagnosis toolbox for supporting the development of schools towards learing organisation. It is based on Senge' model and want to integrate different aspects like organisational behavior, economic, leadership.

Learning organisation behaviour – sentence list

	Common values, vision, objectives (38)
	Principles, values (20)
1	Knowledge-sharing is valuable at the school.
2	The workers of the organisation regard motivation as a key factor in the process of successful learning.
3	The workers of the organisation are dedicated to continuous professional development and learning.
4	Cooperation is considered a norm in the organisation.
5	Each and every student's learning outcome counts.
6	The organisation's operation and culture are built on trust.
7	The principle of equity is applied by the organisation.
8	Each and every teachers' suggestions and ideas are valuable.
9	Teachers are characterised by autonomy within the defined professional frameworks of the organisation.
10	The organisation operates alongside the principles of quality.

11	The critical analysis of the present practices is an important role within the organisational culture.
12	The diversity of opinions is considered valuable.
13	The members of the organisation require continuous feedback on their own practice.
14	The teaching staff regularly requires that common value concepts are articulated in addition to objectives.
15	All colleagues are equal partners within the organisation.
16	Colleagues concentrate on the essence of things, and they can clearly see system-level correlations.
17	Colleagues see and examine phenomena that influence education and teaching in their long-term context.
18	Teachers regard the learning of learning and continuous self-development valuable.
19	Teachers set an example and they communicate the importance of lifelong learning to their students.
20	Teachers are regarded as adult learners who are capable of self-regulation.
	Vision (8)
21	The vision of the organisation is well-known and accepted by everyone.
22	The organisation has a jointly articulated written vision, which is regularly revised.
23	The workers are dedicated towards the common vision and objectives.
24	Every worker can make a contribution to the organisation's vision and objectives.
25	The vision serves as a guideline for the operation of the members of the organisation.
26	The organisation realises that its task is to enable students to use their knowledge adaptively in a changing environment.
27	The organisation can see what the next reachable development phase is and steers its own operation in that direction.
28	Teachers can define the next step in their professional development and they steer their professional learning in that direction.
	Objectives (10)
29	The strategic objectives of the organisation are well-known and clear for all.
30	The professional and personal objectives of the colleagues are adjusted to the organisation's strategy and the strategic objectives.
31	In its pedagogical programme, the organisation articulates measurable targets.
32	Based on the organisation's objectives, it is clear for all what their tasks are.
33	Procedures and tools appropriate for the realisation of the objectives are used.
34	The organisation revises its objectives and sets new ones if necessary.
35	The organisation has coherent and accepted objectives that define the course of everyday work, decisions and long-term planning.
36	The organisation's objectives enable the application of development tools that help the organisation and its members to be competitive.
37	One of the main objectives of the organisation and its members is to regularly renew their knowledge in the interest of continuous development.
38	The curriculum is in harmony with the organisation's objectives.

	Responsibility, cooperation, trust (amongst teachers and for themselves) (37)
	Characteristics of the organisation's operation (12)
1	Internal knowledge-sharing is part of the organisational culture.
2	The organisation has an established mentoring culture.
3	The organisation shapes its internal environment and infrastructure in a way that it gives room to community life and recreational activities.
4	Besides teachers, assistant professionals also work in the organisation (pedagogical assistants, school psychologist, child protection workers).
5	Collective ideas and wishes are important in the life of the organisation.
6	Colleagues continuously monitor the processes leading to performance in the light of the common vision and objectives.
7	The organisation regularly compares its results with those of other, similar institutions.
8	The organisation uses external assessment results (national, research-related ones) when evaluating itself.
9	There is a working group or process within the organisation whose task is to reflect to the operation of the organisation.
10	Self-reflection and development-centred way of thinking characterise the organisation.
11	At set times, the organisation makes a self-diagnosis, the aim of which is to better understand its own operation.
12	The organisation uses the results of the regular self-assessments when preparing its organisational development plans.
	Organisational communication (8)
13	There is two-way communication in the organisation, which works efficiently for all those involved.
14	All information gets in time to the addressee who needs it for their work, in a credible way.
15	The organisation uses varied forms of communication.
16	The organisational communication effectively supports constructive professional cooperation.
17	Active professional communication takes place within the organisation; there are regular pedagogical and professional dialogues and discussions.
18	The organisation communicates actively and efficiently.
19	The members of the organisation openly stand by their opinions, they discuss their problems, their fears and difficulties in an honest manner.
20	Decisions are preceded by broad-range professional discussion.
	Responsibility, cooperation, trust (amongst teachers and for themselves) (11)
21	Colleagues take part in the work of professional groups with various aims.
22	Teachers take the responsibility for their own self-development.
23	Workers have personal and professional development aims.

24	Colleagues endeavour to inspire each other in order to generate creativity and use this for professional development.
25	Teachers consider all feedback, reflection or even criticism as an opportunity for development.
26	Workers continuously improve their personal and group learning as well as their cooperation.
27	Colleagues cooperate and mutually support each other.
28	Workers are dedicated to the organisation.
29	In order to achieve their own objectives, teachers consciously plan and control their learning process.
30	Workers can freely express their constructive critical observations regarding management processes.
31	If a colleague needs to be substituted due to further training, they can cooperate and solve it.
	Teacher performance evaluation (6)
32	The workers' efforts, initiatives and performance are informally evaluated within the organisation.
33	The workers' efforts, initiatives and performance are formally evaluated within the organisation.
34	A performance evaluation is in operation within the organisation, during which the workers' objectives and performance are annually assessed.
35	Workers regularly evaluate their own pedagogical work.
36	Teachers perform their activities alongside commonly accepted quality criteria.
37	The organisation holds in high esteem and supports those colleagues who come up with a novel proposal to solve a problem.
	Knowledge-sharing (26)
	Knowledge-sharing amongst teachers (13)
1	Colleagues regularly visit each other's lessons.
2	The teacher community regularly deals with the improvement of their own work efficiency.
3	Colleagues take time to perform reflective learning situation analysis.
4	The organisation allocates enough time for the workers to reflect on each other's activity.
5	Workers look for tried and tested solutions, and they spread these around in the organisation and integrate them in their daily practice.
6	In order to bring ideas to the surface, moderation techniques are regularly applied.
7	Information from other schools and professional organisation are used for supporting learning.
8	Self-organised learning groups and professional teams operate within the organisation.
9	Teachers form a professional community to promote intensive knowledge-sharing and professional communication.

10	The organisation supports the spontaneous formation of knowledge-sharing groups, and treats these as an opportunity for mutual development.
11	The organisation supports and acknowledges intra-network initiatives, as a result of which new knowledge can be generated in the organisation.
12	The organisation is characterised by routine and regulated knowledge-sharing forms that promote the renewal of teaching. (Frequent workshops, open lessons, lesson observations, regular analyses of data on learning outcomes, discussions about the learners' individual learning problems, spontaneous exchange of experiences).
13	Workers share the relevant contents found in professional literature.
	Knowledge-sharing amongst students (4)
14	The organisation supports the broad-scope self-organising activities of the students.
15	The organisation supports teaching methods and learning organising procedures during which students can gain experience in knowledge-sharing.
16	The organisation operates various cooperation forums where students from different classes and grades can communicate with each other and can ask each other for help.
17	Teachers build on the possibilities of student-student learning both inside and outside the classroom, and in extracurricular processes as well.
	The organisational and technical background of knowledge-sharing (9)
18	The organisational culture fosters internal knowledge-sharing.
19	The organisation has a wide range of internal knowledge-sharing forms.
20	Internal dissemination works efficiently.
21	It is typical of the organisation that workers inform each other of the knowledge and practices they learnt in further training programmes.
22	Relevant information (methodological contents, theoretical knowledge, assessment results) is shared in data-bases available for all within the organisation and on joint surfaces.
23	Rich informal learning spaces are available even for teachers.
24	Teachers find it important to share and learn about professional contents and innovative ideas.
25	The infrastructure necessary for gaining new knowledge and to perform knowledge-sharing is available.
26	The organisation places special emphasis on learning and practising knowledge-sharing.
	Innovation, initiative, risk-taking (15)
	Innovation (5)
1	The organisation is innovative, i.e. capable of internalising, creating and applying novel approaches and solutions.
2	The members of the organisation come up with innovative methods and procedures.
3	The members of the organisation integrate innovative methods and procedures in their everyday practice.
4	Students' initiatives are also part of the organisation's innovative activities.
5	The members of the organisation regularly take part in some kind of innovative development.

	Proactivity and adaptability (6)
6	The organisation and teachers can find what the advantages for the learners are even in forced external changes.
7	The organisation has a strategy for dealing with the conditions that mostly effect operation.
8	Reacts to key problems in a flexible way.
9	The organisation can set “screenplays”, i.e. analyse the expected effects of changes and predict possible directions for the context of these changes.
10	The organisation makes an action plan prior to launching development programmes.
11	Teachers often experiment with new learning organisational methods and try new tools and practices.
	Risk-taking (4)
12	The organisation’s operation, culture and climate support colleagues’ initiatives and risk-taking.
13	The members of the organisation are aware of the nature of innovation and developments, and they count with the temporary drop characterising the initial phase of these development programmes.
14	The members of the organisation believe that experimenting with new teaching methods and tools fosters learner success.
15	The organisation accepts that attempts can fail and they consider these as a natural part of the learning process instead of mistakes.
	Network, partner relations (23)
	The organisation as an open system (7)
1	The members of the organisation are open to new ideas, they support initiatives that bring closer to reaching common goals.
2	The organisation has the knowledge, the techniques and tools necessary for exploring the environment.
3	The organisation continuously collects theoretical and practical information from its environment.
4	The members of the organisation are in continuous interaction with their environment and pay attention to the events that do or can influence the institution.
5	From time to time, the organisation reviews, assesses, and then renews its positions and convictions about its environment.
6	There is a wide range of those who influence the organisation’s operation (non-teaching staff, students, parents, educational researchers and research programmes, pedagogical service institutions’ workers, public education experts, specialist consultants, other schools’ teachers and leaders with their proposals and advice).
7	The organisation pays special attention to the demands of the world of labour.
	Cooperation with external partners (6)
8	Builds a rich system of contacts, which is operated continuously.
9	If necessary, the help and services of external consultants, professional communities and professionals are used.

10	Cooperates with lower and higher school levels in order to establish transparent and crossable learning routes.
11	Works together with its competitors constructively.
12	The organisation also takes part in international cooperation and exchange programmes or projects.
13	The workers in the organisation regularly try other schools' good practices.
	Network operation and learning (5)
14	The organisation and its workers are members of formal and informal networks where they can learn and share knowledge.
15	The organisation can effectively foster the adaptation of its own knowledge and good practices in other organisations.
16	Decisions on network membership are made according to needs and necessities.
17	Its network relations are characterised by trust and a high degree of willingness to cooperate.
18	It often works on solutions to its own problems with other organisations who are in a similar situation.
	Cooperation with students and parents (5)
19	Workers, students and parents feel free to communicate with each other, and they have open and constructive dialogues with each other.
20	Workers try to establish good personal relations with the parents of the students.
21	It is important for the organisation and the teachers alike that parents take an active part in the life of the school.
22	The workers of the organisation pay special attention to the needs of the students when planning school work.
23	The organisation is open to the initiatives and ideas of students, parents and teachers alike.
	Learning and teaching (34)
	Teachers' responsibility for student development (6)
1	Workers continuously endeavour to make their students more and more successful in all aspects of their activities.
2	Teachers continuously try to achieve that their students' cognitive, personal and social competences improve.
3	Teachers find it important to teach their students democracy and active citizenship.
4	There are case discussion groups where teachers who teach one student discuss their experiences.
5	In their appropriate scope of responsibility, colleagues pay attention to dealing with their students' individual problems.
6	Teachers monitor learner paths at a personal level (as well), to this end, they take shared responsibility with the players affected in the success of this process.
	Applied learning organisational methods (11)
7	Teachers consider group-work as a natural context for learners' learning.
8	Planned pedagogical processes and applied methods consciously develop the student community.

9	Teachers develop students' self- reflection and responsibility in their own learning process.
10	In the interest of the students, workers discuss teaching methods and tasks.
11	Adaptive pedagogy and differentiation are accepted and applied by the teaching staff.
12	Joining and integrating various objects is part of the teaching and learning practice.
13	In the course of planning the curriculum, teachers use extracurricular possibilities.
14	Problem-focused teaching and learning – as education philosophy and method form part of the teaching and learning processes.
15	Students are active players of the teaching and learning process.
16	Teachers use various motivational procedures to make the students identify themselves with the school, and to make the students regard learning as a sensible and valuable activity.
17	The methods teachers apply are based on the former knowledge of the students.
	Evaluation (8)
18	The efficacy of the teaching programme is under continuous monitoring.
19	The organisation performs internal assessments in order to judge work efficiency.
20	Teachers use various evaluation forms and techniques for the assessment of their students, and they pay special emphasis on development-centred evaluation.
21	The pedagogical programme is regularly examined for fitness.
22	Students are involved in the analysis and evaluation of their own learning process.
23	Student-government receives a role in the evaluation of the teaching and learning process.
24	Teachers expect their students to actively perform tasks that pose optimal challenge to them without overloading them.
25	Teachers clearly communicate their expectations to the students, and this is in harmony with the applied evaluation practice.
	The emotional and physical environment of learning (9)
26	The learning environment – especially the infrastructure – is in harmony with the pedagogical methods.
27	The infrastructure of the school supports modern teaching and learning processes.
28	Teachers endeavour to establish personal relationship with their students.
29	Teachers build on the internal motivation of the students, as well as on their fields of interest and emotional attitude.
30	Within the organisation, the students' representation is regarded as a learning opportunity, therefore the work of student governments is supported.
31	A relation built on trust between students supports learning processes.
32	The wider scope of social environment forms an integral part of the students' learning environment.
33	Students can actively shape their learning environment.
34	The school provides a safe environment for its students.
	Learning-centred leadership (26)
	The strategic and operative management of learning and teaching (4)

1	The quality of teaching and learning is in the focus of the leaders' mind.
2	The leader decides on whether to take part in development projects if it supports learner efficiency.
3	The leader decides on whether his institution should join educational networks after examining its true needs and necessities, and the assessment of the institution's capacities.
4	Within the organisation, the leader has a strategic responsibility for joining individual and organisational learning and knowledge.
	The strategic and operative management of organisational changes (8)
5	Shared leadership works.
6	Leaders take steps for the welfare of their workers, the avoidance and treatment of their burnout.
7	The leadership tools and methods are in harmony with the organisation's internal and external factors.
8	The organisation is characterised by the adaptive use of human resources.
9	Leadership supports development projects that enable local innovative processes and fosters the fulfilment of professional tasks.
10	The leader can aptly assess and treat the border between survival and adaptivity.
11	Internal development projects are launched in order to broaden the scope of competencies the teaching staff.
12	Leaders regularly monitor the achievement of common objectives with the involvement of colleagues.
	The strategic and operative management of the teaching staff (14)
13	Leaders motivate their teaching staff to prepare students and to become active and useful members of the society.
14	The professional development of the teachers happens in a way that it utilises workplace and informal as well as non-formal workplace learning.
15	Leadership supports group learning paths with active tools.
16	Leaders promote the idea of reflective situational analysis as a learning method as well as group case analyses.
17	Leadership continuously develops the teachers' competencies in line with the competencies of the organisation.
18	Amongst the objectives of the organisation and its everyday operation, taking care of the students' and workers' mental health is important.
19	Leaders give support to the development of workers (worktime allowance, financial support, professional recommendations.
20	Leaders motivate the creativity of their workers, inspire professional and personal development.
21	Leadership promotes the professional initiatives of teachers.
22	Leaders consciously develop teacher community.
23	Leadership supports the settling down of starter teachers, their adjustment and organisation socialisation.
24	Leaders expect high-standard professional work from their colleagues.

25	Leaders pay attention to the individual needs of teachers
26	Workers and leadership regard each other as partners.

Summary

	Common values, vision, objectives (38)
	Responsibility, cooperation, trust (amongst teachers and for themselves) (37)
	Knowledge-sharing (26)
	Innovation, initiatives, risk-taking (15)
	Network, partner relations (23)
	Learning and teaching (34)
	Learning-focus leadership (26)

Sentences in total: 199

LOM4S – QUESTIONNAIRE

There were 3 questionnaires [teacher (43 pages), deputy director (38 pages), director (23 pages)]. These questionnaires associated with this dissertation are available on the following link: https://qualitas-my.sharepoint.com/personal/qualitas_qualitas_hu/_layouts/15/onedrive.aspx?id=%2Fpersonal%2Fqualitas%5Fqualitas%5Fhu%2FDocuments%2FQualitasOD%2F2026%2FNem%20projektek%2FBarath%5FEKKE%5FNTDI%5Fdoktori%5Fanyagok.

The relationship between the learning organisation and the learning environment

The study aimed to investigate the relationship between the functioning of the learning organisation and the learning environment (student and teacher). To this end, new variables were created to measure the teachers' workplace and students' learning environments. The variables were created using factor analysis (factor analysis with alpha factoring, promax rotation, eigenvalue > 1 selection).

Given that this study focused on what works in schools and how it works, we used statements about the learning organisation that ranked the functioning characteristics on a four-point Likert scale. The factor analysis resulted in 4+3 factors for the learning environment as follows:

- learning environment for students 4 factors
- workplace learning environment 3 factor

The variables created, their names, the names of the variables that make up the factor, the content of the statement and the standardised value are given below.

Student Learning Environment – Factor 1 (SLE1)

SLE1: A student-centred pedagogical approach to competence development

- JT13TSZ15-[Teachers always clearly communicate their expectations to students, and their assessment practices are consistent with this.] [CHARACTERISTIC] 0.658
- JT13TSZ18-[Teachers always strive to have a personal relationship with their students.] [CHARACTERISTIC] 0.638
- JT13TSZ7-[All teachers in our school teach students by example the importance of lifelong learning] [CHARACTERISTIC] 0.637
- JT13TSZ17-[Teachers always expect their students to actively complete tasks that are optimally challenging and do not overload them.] [CHARACTERISTIC] 0.598
- JT13TSZ9-[In our school, teachers consider it important to educate students about democracy and active citizenship.] [CHARACTERISTIC] 0.595
- JT13TSZ3-[In our school, the methods used always build on the students' prior knowledge.] [CHARACTERISTIC] 0.566
- JT13TSZ19-[Teachers always build on opportunities for students to learn from each other.] [CHARACTERISTIC] 0.447
- JT13TSZ13-[When planning the curriculum, teachers always take advantage of the opportunities offered by extracurricular activities.] [CHARACTERISTIC] 0.418

Student Learning Environment – Factor 2 (SLE2)

SLE2: Credible, supportive teacher

- JM8TSZ29-[Teachers use a lot of demonstration and explanation in lessons; they can attract their students' attention.] [CHARACTERISTIC] 0.743

- JM8TSZ25-[Their students can turn to teachers with confidence because they always know the right answer.] [CHARACTERISTIC] 0.703
- JM8TSZ34-[Teachers help their students to resolve conflicts with each other.] [CHARACTERISTIC] 0.601
- JM8TSZ24-[Teachers do justice between their students when they are in conflict with each other.] [CHARACTERISTIC] 0.562
- JM8TSZ28-[The most important thing for teachers is that their students achieve good results in their subjects.] [CHARACTERISTIC] 0.508
- JM8TSZ26-[Teachers are fair, they set the same tasks and requirements for all students.] [CHARACTERISTIC] 0.465
- JM8TSZ33-[Teachers regularly reward and, if necessary, punish students.] [CHARACTERISTIC] 0.352

Student Learning Environment – Factor 3 (SLE3)

SLE3: Collaboration, experiential learning, knowledge sharing

- JT13TSZ28-[In our school, knowledge sharing between students in different classes and/or grades is substantial.] [CHARACTERISTIC] 0.754
- JT13TSZ4-[In our school, teachers see group work as a natural medium for student learning.] [CHARACTERISTIC] 0.669
- JM8TSZ38-[Teachers do not appear much in lessons, but rather concentrate on analysing and guiding students' work and learning.] [CHARACTERISTIC] 0.564
- JM8TSZ4-[Problem-based teaching and learning is the most common element of classroom processes.] [CHARACTERISTIC] 0.542
- JM8TSZ7-[My colleagues involve their students in the analysis and evaluation of their own learning process and performance] [CHARACTERISTIC] 0.538
- JM8TSZ36-[Teachers try to get children to work independently in class because that is how you find out how much you know.] [CHARACTERISTIC] 0.493
- JM8TSZ30-[Teachers will aim to ensure pupils work together in small groups as often as possible to solve problems.] [CHARACTERISTIC] 0.493

- JT13TSZ27-[Students always take on an organisational role in developing a learning situation (e.g. organising projects).] [CHARACTERISTIC] 0.393

Student Learning Environment – Factor 4 (SLE4)
SLE4: Supporting self-regulated learning

- JM8TSZ20-[Teachers, when they see that their students are not starting the task well, immediately guide them towards the correct solution.] [CHARACTERISTIC] 0.634
- JM8TSZ39-[If students do not start well with a task, teachers help them to find out for themselves.] [CHARACTERISTIC] 0.588
- JT13TSZ5-[In our school, all teachers develop students' self-reflection and responsibility.] [CHARACTERISTIC] 0.522
- JM8TSZ32-[Teachers encourage their students to find out for themselves what the right solution is.] [CHARACTERISTICS] 0.425

Factors in the learning environment at work

Workplace Learning Environment – Factor 1 (WLE1)
WLE1: Reflective learning and knowledge sharing supported by leadership

- JM2TSZ26-[In our meetings, we always present new ways of organising learning or other professional opportunities.] [CHARACTERISTIC] 0.922
- JM2TSZ19-[Staff always take time to carry out reflective learning situation analysis] [CHARACTERISTIC] 0.844
- JM2TSZ22-[In our school, the staff always present the knowledge and practices they have acquired in the training courses to each other.] [CHARACTERISTIC] 0.738
- JT13TSZ21-[We regularly use moderation techniques to bring ideas to the surface.] [CHARACTERISTIC] 0.690
- JM3TSZ5-[Our director always analyses the work of his colleagues.] [CHARACTERISTIC] 0.623

- JT11TSZ5-[I regularly receive feedback from my colleagues to support my professional development] [CHARACTERISTIC] 0.551
- JT11TSZ19-[I am always involved in analysing data related to learning-teaching processes.] [CHARACTERISTIC] 0.529
- JM3TSZ20-[The school leadership views all teachers as adult learners capable of self-regulation] [CHARACTERISTIC] 0.490
- JM3TSZ16-[Our head teacher is fully committed to teamwork in the classroom.] [CHARACTERISTIC] 0.481
- JT13TSZ23-[Teachers form a professional community for intensive knowledge sharing and professional communication.] [CHARACTERISTIC] 0.469

Workplace learning environment – factor 2 (WLE2)
WLE2: Commitment, expectation, community

- JT13TSZ25-[If someone has a problem, they can count on the help of their colleagues.] [CHARACTERISTIC] 0.636
- JM3TSZ31-[Management expects a high level of professionalism from staff on a continuous basis.] [CHARACTERISTIC] 0.570
- JT13TSZ22-[It is important for all teachers to share and learn about professional content and innovative ideas.] [CHARACTERISTIC] 0.543
- JT13TSZ12-[In the interest of the students, the staff always discuss the way of teaching and the tasks with each other.] [CHARACTERISTIC] 0.326

Workplace learning environment – factor 3 (WLE3)
WLE3: Ideas, experimentation, innovation

- JT11TSZ18-[I regularly use materials or ideas found on the internet in my lessons.] [CHARACTERISTIC] 0.578
- JT11TSZ8-[I regularly try out good practices of others, incorporate innovative tools / learning management methods in my pedagogical work.] [CHARACTERISTIC] 0.572

- JT11TSZ9-[I very often invent my own innovative tools / learning organisation methods, either independently or with colleagues] [CHARACTERISTIC] 0.572
- JT11TSZ14-[I regularly draw ideas from non-professional forums (e.g. film or conversations with friends or parents).] [CHARACTERISTIC] 0.563

Additional aggregate variables were created from the factors by averaging them. The resulting variables are used to describe the learning environment for students (SLE) and teachers (WLE). Additional new variables:

(SLE1+SLE2+SLE3+SLE4)/4 = SLE

(WLE1+WLE2+WLE3)/3 = WLE