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Doctoral School of Education**

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Theses of doctoral (PhD) dissertation

**Exploring the factors of lifelong learning and ICT support in vocational
secondary schools**

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2. Theoretical overview: the topic and the objectives of the research

Artificial intelligence and technological advances have brought profound changes to the labour market, making continuous updating of knowledge essential. Lifelong learning is the most effective way of adapting to change, especially for those whose jobs may be at risk.

E-learning environments can greatly facilitate this process, supporting personal and professional development. These tools not only provide information, but also help to motivate learning (Réthy, 2001; Zimmermann & Schunk, 2012) and to develop independent learning. For the younger generations, it is important to raise awareness of the importance of continuous learning and development, as it is essential for successful adaptation to economic and technological change. This requires a broad educational and social effort. To encourage lifelong learning and the effective use of e-learning tools in education, steps must be taken to create the right awareness and vision.

The focus of the thesis is on digital education and lifelong learning, with a special emphasis on the effective use of modern technological tools and methods in education (Racsko & Kis-Tóth, 2022). By examining the development of digital competences, online learning strategies and the effectiveness of digital learning environments, the thesis aims to show how these tools can support the process of lifelong learning and how the education system can adapt to the constantly evolving technological environment. The deep integration of digital education with educational theory calls for new methodological and theoretical approaches that contribute to enriching interactions between teachers and students, increasing the accessibility of learning materials and broadening the diversity of learning environments (Molnár, Gy., 2011, 2013a, 2013b, 2014). The research pays particular attention to the development of competences associated with lifelong learning, the effectiveness of e-learning and the linkages between educational technologies in supporting the long-term sustainability of learning.

On the one hand, the development of digital competences (Farkas, 2012) can increase the effectiveness of education, and on the other hand, digital technologies create opportunities for personalisation of learning processes, which is particularly important for students in VET with different prior knowledge and skills.

Our primary research objective is to explore how lifelong learning principles can be effectively integrated into vocational education and training and how digital technologies can support this process.

Based on the results, we have developed recommendations that will contribute to improving the quality of education and the competitiveness of students in the labour market, as one of the keys to the success of vocational education and training is the effective use of continuous learning and technological innovation.

The research carried out has focused on the learning factors that are key to lifelong learning, particularly among VET students. Data collection was carried out in two phases: a small sample survey and a larger sample survey.

The main aim of our small sample size (N=378) was to explore what the motivational factors for learning might be that influence lifelong learning. Of course, most of these factors are those that are specifically asked about in the questionnaire survey, i.e. they are pre-conceived, but there are also survey items where respondents themselves answer and name motivational factors, for example. The questionnaire addressed several sets of questions related to lifelong learning.

Our larger sample size (N=1260) aimed to gain a more in-depth understanding of students' attitudes towards lifelong learning, with a particular focus on motivation, self-efficacy and self-regulated learning. A Likert-scale questionnaire was designed based on the results of a previous small-sample study to assess students' attitudes towards these key competences. We aimed not only to assess the current situation, but also to understand how students perceive their own abilities and motivation, and what factors may help or hinder their willingness to learn.

In particular, we focused on the role of motivation and self-efficacy, as they are fundamental determinants of students' engagement in the learning process and their continuous improvement of their knowledge. The research also aimed to identify strategies and attitudes that can enhance students' independent learning skills and self-confidence, with a particular focus on the development of self-regulation. Lifelong learning plays a key role in personal development, labour market adjustment and social inclusion (Andr as et al., 2016).

In the course of this work, we have explored students' views on the learning factors under study and identified their presence in vocational education and training. Based on the results, we identified digital technology tools that can effectively support these processes and made concrete recommendations for the use of ICT tools in VET to promote lifelong learning.

3. Presentation of the research

The research is divided into two main phases, so the hypotheses tested focus on two different areas.

2.1. Hypotheses tested in the smaller sample (N=378)

1. Hypothesis group 1 (OKJ and higher education preferences)

- H₁ (Popularity of the OKJ) A significant proportion of students in the surveyed upper secondary vocational school not only consider the OKJ occupations to be popular, but are also committed to these occupations, plan to obtain vocational qualifications in the long term, and this commitment is influenced by factors such as the labour market value of the occupations and further learning opportunities;
- H₂ (Equivalence between VET and higher education) Students consider VET and higher education as future training alternatives in similar proportions;

2. Hypothesis group 2 (Motivational and demotivating factors)

- H₃ (motivational factors) It can be assumed that, among the many motivational factors investigated and freely expressed by students, the desire for future career advancement and increased competitiveness in the labour market are the main factors that determine their motivation to study, driven by the prospect of higher earnings and the need to develop professional skills.
- H₄ (demotivating factors) It can be assumed that, among the many demotivating factors surveyed and freely expressed by students, lack of time, family difficulties and financial problems are the biggest obstacles to students' learning, significantly affecting their commitment to lifelong learning;

3. Hypothesis group 3 (Learning periods and age)

- H₅ (end of lifelong learning) It can be assumed that students' willingness to learn does not decrease linearly with age, but shows a strong willingness to continue learning

during two distinct periods: young adulthood, when career development begins, and later in life, when the need for lifelong learning becomes more important;

- **H₆** (age maturation) For students in vocational education and training, age and level of education together influence commitment to lifelong learning, with older students and students in higher grades being more likely to show stronger commitment.

2.2. Research areas covered by the larger survey (N=1260)

2.2.1. Analysis of self-regulated learning abilities

The research sought to explore how self-regulated learning influences students' academic success and their commitment to lifelong learning. We investigated the extent to which students' learning strategies, motivations and barriers to learning contribute to their ability to plan, reflect and persevere in pursuit of their goals, and how these skills can be effectively developed in education.

Hypothesis H₇ : The development of self-regulated learning skills will be positively correlated with students' academic success and commitment to lifelong learning. It is hypothesized that higher levels of self-reflection, purposeful persistence and learning planning will increase students' academic achievement and promote the development of lifelong learning skills.

2.2.2. Analysis of self-efficacy in learning

In this research, we sought to answer the question to what extent learning self-efficacy influences students' self-confidence, motivation and academic achievement in technical secondary schools in Budapest. We wanted to investigate how increasing self-efficacy can contribute to students' long-term academic success and which pedagogical practices can help to improve self-confidence and motivation.

Hypothesis H₈ : It is hypothesized that students' learning self-efficacy will be positively correlated with their self-confidence, motivation and academic performance. It is hypothesized that students with higher self-efficacy will have higher self-confidence and motivation, which will positively influence their academic achievement and long-term academic success. We also expected that improving self-efficacy would contribute to more effective pedagogical support for students.

2.2.3. Research questions in factor analysis

Through factor analysis, we sought to gain a deeper understanding of the factors associated with lifelong learning, in particular to optimise learning processes and increase students' adaptability. Using factor analysis, we organised the original learning factors into new factor clusters that allowed us to fine-tune learning strategies and support students' learning pathways more effectively, with a particular focus on stress management and self-confidence development.

Hypothesis H₉ : It is hypothesised that through a comprehensive analysis of new factors, learning processes can be optimised and students' adaptive skills improved, which will increase learning efficiency in the long term and support the sustainability of lifelong learning.

3. Research results

3.1. Results from the small number of items (N=378)

Thesis based on 1. hypothesis group

Based on hypotheses H1 and H2 and higher education) and their analysis, the following thesis can be stated:

Thesis 1: Vocational and technical education and training play a key role in students' future career and higher education choices, especially with regard to further education opportunities in the OKJ occupations. The training structure and student preferences are in line with the principles of lifelong learning and continuous professional development, underlining the popularity of VET/PET courses and their role in supporting the transition to higher education.

Studies underlying this thesis: (Gőgh, 2017, 2018a) (Gőgh & Kővári, 2018a).

Relevance of the thesis:

The significance of the thesis lies in the fact that it highlights the key role of vocational education in the professional and academic development of students. The focus is on the link between VET and higher education opportunities, highlighting the importance of these pathways for lifelong learning and adaptation to labour market needs. This approach opens up

new perspectives for optimising training structures and supporting learner choices, facilitating the successful integration of students into higher education and professional life.

Comparison of the thesis with previous results

The works of Annamária Kiss (2003) and Gábor Faiat (2010) are most relevant in this research area, although they do not contain data directly comparable to the present study. Changes in education policy, with increasing priority given to vocational training, further increase the attractiveness of the OKJ occupations, which can be observed in the number of applications for the occupations in the schools studied. The analysis of data from the Central Statistical Office (KSH 2020, 2023) confirms the relevance of the thesis, highlighting the popularity of the VET pathways and the adaptation of the education system.

Thesis based on 2. hypothesis group

Based on the hypotheses H3 (motivational factors) and H4 (demotivating factors) and their analysis, the following thesis can be stated:

Thesis 2: Vocational high school and technical school students' learning motivations and barriers to learning show significant correlations with their aspirations for future professional success and competitiveness in the labour market. The new research reveals that students see the development of professional knowledge and language skills as the key to long-term career development, with time constraints and family and financial difficulties as the main obstacles. These findings provide a forward-looking direction for transforming educational practices, with a particular focus on promoting lifelong learning and effectively reducing barriers to learning.

Studies underlying this thesis: (Gógh, 2017, 2018a, 2018b) (Gógh & Kóvári, 2017)

Relevance of the thesis:

The importance of this thesis lies in the fact that it provides a new perspective on understanding the motivations and barriers to learning of students in vocational secondary schools and technical schools, especially with regard to their aspirations for future professional success and competitiveness in the labour market. The research sheds light on the factors that encourage students to develop their professional knowledge and language skills, as well as on

the barriers, such as time constraints and financial difficulties, that hinder them in their studies. These insights are key to the targeted fine-tuning of educational practices and policy interventions, enabling the optimisation of learning environments and the promotion of students' long-term success. Comparison of the thesis with previous findings

Studies related to the topic under review, such as the works of Bajusz (2009), Szűcs (2013), and Oláh (2019), focus on the analysis of similar motivational and demotivational factors. Of particular importance is that the factors discussed in my thesis are derived from the answers to the open-ended questions, which is even more valuable in light of the overlap. The emergence of international career opportunities is also explained by the dual language of instruction and the acquisition of relevant language skills in this case.

Thesis based on 3. hypothesis group

Based on hypotheses H5 (end-of-life learning dates) and H6 (age maturation) and their testing, the following thesis can be stated:

Thesis 3: As students grow older, they become increasingly oriented towards lifelong learning, as reflected in the shift in the end-of-learning dates. This suggests that younger age groups tend to set more specific, shorter-term goals, while older students are already considering lifelong learning, indicating an increasing commitment to learning as they age.

Studies underlying this thesis: (Gógh, 2017, 2018a) (Gógh & Kóvári, 2018a, 2019f)

Significance of the thesis:

The relevance of the thesis lies in the fact that it sheds light on the relationship between age and learning motivations, especially in the context of lifelong learning. It draws attention to the need for educational programmes and strategies to be flexible, taking into account the changing goals and motivations of students at different stages of their lives. Increasing long-term commitment to learning with advancing age is an important consideration in shaping educational policy and practice.

Comparison of the thesis with previous results

Although the issue and the results may seem obvious at first glance, there is surprisingly little relevant research available for comparison. Few similarly specific studies have been conducted on this topic so far, it is worth noting (Zacher & Froidevaux, 2021). The novelty of the results lies not in the fact of discovery, but in the fact that they provide confirmation of prior conceptions of lifelong learning, thus adding further value to the scientific understanding of the topic.

3.2. Results from the larger number of items (N=1260)

3.2.1. The thesis that emerged from the study of self-regulated learning

Thesis 4: An in-depth study of self-regulated learning in the context of vocational education and training shows that students' learning strategies, motivations and barriers are closely related to their ability to self-reflect, to persist with purpose and to plan their learning. These findings underline the importance of self-regulated learning skills for students' academic success and their progression towards lifelong learning, highlighting the need for pedagogical practices and educational policy to further develop learning environments and methodologies.

Studies underlying this thesis (Gőgh & Kővári, 2019a, 2019b, 2019c, 2019d) (Gőgh, Kővári, Racsko, 2020)

The significance of the thesis:

The significance of the thesis lies in the fact that it highlights the role of self-regulated learning in students' academic success and long-term learning abilities. It points to the need to optimise teaching strategies and learning environments to support students' self-reflective skills, goal-orientation and planning skills, thus fostering the development of competences for lifelong learning.

Comparison of the thesis with previous results

The basic aim of our research was not to re-establish the link between self-regulated learning and lifelong learning - a solid foundation has already been provided by a number of previous works in this area (Clark, 2012; Loyens et al., 2008; Zimmerman & Schunk, 2012). Instead, our focus was to identify and define areas where improvements were needed. Our study has provided concrete insights into these areas, with a particular focus on students in the sampled

institutions, but our findings can be generalised and relevant to other domestic technical vocational education and training institutions, helping to improve the effectiveness of learning processes.

3.2.2. Thesis that can be drawn from the study of self-efficient learning

Thesis 5: Self-efficacy in learning among students in technical vocational secondary schools in Budapest is closely related to students' self-confidence and motivation as well as educational outcomes. These findings indicate that increasing self-efficacy can positively influence students' academic performance and long-term academic success, highlighting the importance of developing self-confidence and motivation in pedagogical practice.

Studies underlying the thesis: (Gógh & Kóvári, 2020b) (Gógh, Racsko & Kóvári, 2021)

Relevance of the thesis:

The significance of this thesis lies in its emphasis on the key role of self-efficacy in students' academic performance and motivation. It highlights the importance of educational strategies and interventions aimed at enhancing self-efficacy as a means to promote student success.

Comparison of the thesis with previous findings

Self-efficacy learning has been linked to self-regulated learning in domestic research. Therefore, the results obtained cannot be compared with other previous findings. Perhaps the necessity of doing so is questionable, since our aim in this case was also to investigate and shed light on areas for improvement in relation to a learning factor, in this case the element of self-efficient learning.

3.2.3 Thesis resulting from the factor analysis:

Thesis 6: The new factors allow for a more comprehensive and in-depth analysis of learning processes, focusing on increasing learners' adaptability, optimising learning strategies and better managing stress and self-doubt. These dimensions improve learning effectiveness and support the sustainability of lifelong learning, allowing for the further development of pedagogical methods and the optimisation of students' individual learning

pathways. The new factors will help to further refine teaching practices, thus ensuring continuous improvement at all levels of learning.

Studies underlying this thesis: (Gógh & Kóvári, 2018c, 2021b, 2022)

Relevance of the thesis:

The significance of the thesis lies in the fact that it provides a new perspective on the understanding of learning processes, with a particular focus on fine-tuning learning strategies and addressing barriers. The new factors will allow for a more precise identification of learners' individual needs and challenges, which will contribute to improving learning effectiveness. This approach will allow for a more targeted development of pedagogical practices, contributing to the sustainability of lifelong learning and the successful development of learners.

Comparison of the thesis with previous results

Due to the research methodology and the specificity of the interpretation of the results obtained, no similar results can be found.

2. Summarising, identifying further research directions

More broadly, the results highlight the importance of vocational and technical education for students' professional and academic development, emphasising the importance of lifelong learning and adaptation to labour market needs. The research highlights that such training supports students' career development opportunities, facilitating continuous learning and successful transition to higher education.

Moreover, a deeper understanding of students' motivations and barriers to learning is essential to effectively fine-tune educational strategies that will help students succeed in their academic careers. Such knowledge provides a basis for optimising learning environments and methods, ensuring long-term learning engagement.

Research has emphasised the role of self-regulated learning and self-efficacy in academic success, showing that these skills are central to students' long-term development. The new dimensions revealed by factor analysis offer opportunities to further improve learning processes, which will help to increase students' adaptive capacities and the sustainability of lifelong learning.

The practical value of the results lies in their contribution to the further development of educational methods and strategies for student success and labour market adaptability, thereby sustaining a culture of lifelong learning and fostering continuous educational innovation.

Future research should further investigate the long-term effects of developing self-regulated and self-efficient learning, especially in the context of the use of digital tools. In addition, it is recommended that educational practices and pedagogies be fine-tuned to support more effectively the optimisation of students' learning strategies and the sustainability of lifelong learning. In particular, it would be important to extend the research to other levels of education and different fields of vocational training in order to gain a broader picture of the development of these skills and the adaptive capacity of education systems.

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