DR. ZOLTÁN SZŰTS

THE THEORETICAL FRAMEWORK OF DIGITAL PEDAGOGY AND ITS

APPLICATION IN THE PROCESS OF TEACHING AND LEARNING

Doctoral Dissertation Thesis

Supervisor: dr. Tünde Lengyelné Molnár

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Content

The aim of the dissertation

The dissertation aims to construct the theoretical framework of digital pedagogy that can be applied in public and higher education to make the teaching and learning process more efficient. In the theoretical framework, we use an interdisciplinary: pedagogical, sociological, communication, and media science approach. Based on empirical research, we propose a digital transformation of traditional forms of education and, in conclusion, present the pillars of the theoretical framework.

The basic premise of the work is that the theory, history, and phenomena of online communication and media form a complex, unified universe with the pedagogy, specifically with didactics, and the accurate mapping and learning of the building blocks and dynamics of the former world is a prerequisite for a useful methodological framework. The work considers two fixed elements from the didactic triangle: the teacher and the student. It also assigns a third, the classroom, to these two main elements. This classroom is augmented into the virtual world also extends on online communication channels and media platforms. In our theory, thought research, we intended to get closer to answering the problem of expanding the role of the teacher and the classroom space within digital pedagogy. Our goal is to create a theoretical framework that forms an integral part of pedagogical practice, based on universal principles of education and communication science, and not just a collection of good practices with thoughtful and useful advice.

Our basic premise is that smart devices, networks, online communication, and digital content should only be used in education if they are more efficient than traditional devices, and therefore useful in terms of time, energy, and resources invested in technology. In our dissertation, we identify and examine the advantages of digital pedagogy over "traditional" teaching methods. Digital pedagogy supports students' creativity, helps to acquire knowledge on a broader scale and faster too; develops more effective cooperation horizontally with peers; enables the development of educational processes based on peer-to-peer relationships, learning from each other. Digital pedagogy is based on the principle that the environment of the information society "teaches" students not to be afraid to make mistakes. It advocates a better understanding of the info-communication systems they use in their experiments, leads them to a greater degree of autonomy, where they ultimately participate in curriculum development in the context of web 2.0 platforms, which can be made even more effective by strengthening knowledge

If the methodology of digital pedagogy is applied in teaching and learning with insufficient awareness and possession of appropriate digital competencies, the adverse effects easily hinder the achievement of pedagogical goals. Negative effects include the onset of digital dementia due to a lack of storage of knowledge, distraction, and constant compulsion to reward teachers, which can lead to an unfulfillable expectation of teachers, simplistic thinking, keyword-seeking behavior, the deterioration of social relations.

Previous works

Dissertation's background is based on our books: The Metaphors of The World Wide Web, published by Osiris Publishing in 2013 and our Online - History, Theory, and Phenomena of Internet Communication and Media published by Wolters Kluwer in 2018. In addition to the

two volumes, we have published dozens of journal studies and conference papers on educational science, more precisely on digital pedagogy, the list of which is given in the appendix.

The novelty of dissertation

Our dissertation's novelty presents the pedagogical issues in a structural context with the issues of online communication and media. We undertake to interpret digital pedagogy not as a new, independent - reform, radical deschooling trend - but as an integral part of the formal education system, on an equal footing with traditional teaching methods in an ecosystem, through its fabrics. Our work's significance is that we use historical, theoretical, pedagogical experience and observational methods, as well as empirical methods in the analysis of a phenomenon. An example of this is the examination of the new interface of pedagogy, the screen, from both a technological and a cultural point of view. In this case, our study simultaneously covers the issues of hypertextuality and pictorial turn, as well as how linear stories anchor the reader, what cognitive processes occur during rapid jumping on links, and what changes such technical elements bring to education, like the appearance of high definition resolution.

The structure of the dissertation

The dissertation is divided into seven main chapters, and they are split into further subchapters. The introductory part aims to present the assumptions, statements, and questions, and ultimately to set up our nonconventional hypotheses. In the second part, we present the pedagogical discourses of the information society. In the third part, we present the transformation that has led to the development of the information society and digital culture. The paradigm-shifting effects of info-communication technologies, applications, networks, and interactive content are relevant in narrating digital pedagogy. The fourth and most extensive part examines the phenomenon of digital pedagogy. The narrative we outline in the historical section aims to show how digital devices, networks, media, and content have moved from the category of illustration and aids into the world of ever-present info-communication. Next, in the theoretical part, which includes our thought experiments, we try to combine the revolutions of information processing, the theory of cultural evolution, the history of the development of human cognitive abilities, the issue of artificial intelligence and the human mind (learning), the unintended consequences of the World Wide Web, the Library of Babel interwoven with hypertext, the challenge of reeding from screens and dromology. Thus, we finally arrived at the fifth chapter, which, in possession of the previously reported knowledge, deconstructs, and places didactics in a unified theoretical framework. Because in our dissertation, he attempts to present the inseparable relationship between digital pedagogy and communication and media science. For this reason, the chapter focuses on the interaction between changing communication patterns and digital pedagogy and discusses the pedagogical aspect of Internet communication and media phenomena. Here we also attempt to present the possibilities of expanding the classroom and the role of the teacher. The sixth chapter presents our study and its results. The seventh and concluding chapter summarizes the results of the dissertation, draws the theoretical framework of digital pedagogy, and covers its most important pillars.

Definitions of digital pedagogy

We refer to digital pedagogy as a simplification of all the phenomena that assume the use of digital tools, content, and info-communication technologies in the teaching and learning process. Digital pedagogy is thus, in fact, an umbrella, a collective term, with no form boundaries, but only a core of gravity. In digital pedagogy, devices serve the achievement of pedagogical goals, while also having a more significant impact on teaching methods than any previous aids. According to Lajos Kis-Tóth and Tünde Lengyelné Molnár, digital pedagogy is „a set of tools, technologies, organizational activities, innovative processes that facilitate the communication, processing, flow, storage, and coding of information and communication, making it faster, easier and more efficient."[1] In our view, digital pedagogy is an abstract that combines all these phenomena, as it describes the encounter of pedagogy and technology. According to András Benedek, digital pedagogy is a traditional or constructive pedagogical, i.e., teaching and learning method, in which both the teacher and the student use computers and IT tools: "Today's digital pedagogy aims to account with all the challenges and opportunities that affect students and educators in the information society."[2]

In our definition process, we argue that the pillars of digital pedagogy, in addition to nomenclature, are digital communication and media, often referred to as info-communication. For example, György Molnár makes ICT's main classification as follows: ICT as a tool; organizational technique; media; development and society-building process and as a practice.[3]

The horizon of digital pedagogy in our interpretation is vast. It involves, on the one hand, the use of digital (basically info-communication) tools in the classroom, while at the other end of the register, the teacher presence is represented by distance learning encoded in the platforms. Many have already dealt with the phenomenon of digital pedagogy. Much of the work focuses on the use of specific smart devices, applications, digital platforms or frameworks, and possibly related measurements, contributing to the discussion of the topic. A smaller part is made up of empirical work that examines the role of cognitive change, memory, or even attention. The smallest group belongs to theoretical dissertations, which explore functional predecessors, parallels, historical analogies, epistemological issues, and extend to other disciplines' territory while forming their long-term theories.

Our definition of digital pedagogy is that digital pedagogy is a system of classroom or distance learning methodologies embedded in the information society, in which the teaching and learning process is based on info-communication tools, screens, databases, and digital content. This content is created in a traditional or social media system. The methodology of digital pedagogy is device orientated but resistant to technical obsolescence. It is characterized by multimedia content that strives for more realistic representation, a high degree of student interaction, and proactive behavior, as well as the conscious use of tools. Digital pedagogy expects a higher degree of digital competence from the teacher than the student. It makes it possible to expand the role of the teacher and the classroom, as well as the cognitive abilities of the students.

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[1] Kis-Tóth Lajos és Lengyelné Molnár Tünde, *IKT innováció* (Eger: Líceum Kiadó, 2014)
[2] Benedek András, szerk., *Digitális pedagógia: Tanulás IKT környezetben* (Budapest: Typotex, 2008)
[3] Molnár György, *Korszerű technológiák az oktatásban* (2015), https://regi.tankonyvtar.hu/hu/tartalom/tamop412b2/2013-0002_korszeru_technologiak_az_oktatasban/adatok.html [Letöltve: 2020.05.26]

Augmenting the representation and perception of reality with digital technology brings educational processes to new ways of representation.

The history of humankind, since Gutenberg, i.e., for more than half a millennium, no form or medium of communication has been so firmly embedded in the subsystems of culture and society, the world of work and management, and thus fields of information and learning, such as the Internet. The digitally supported online ecosystem, which displays information through a screen interface and stores and transmits knowledge in databases, has brought about a paradigm shift in education evolution. Our starting point is that the long paradigm shift that has taken place since the advent of the World Wide Web in 1990 and the mass spread of digital technology to this day, even in a traditional complex system such as the world of teaching and learning, has brought and will continue to bring reversible changes. These changes result from a combination of Internet communication and media, and more precisely, online existence, the information society, digital devices, and interactive visual content. Our mediatized world is in a permanent beta state; the gravitational core seeks to attract particles from more and more areas of life and digitally charge them.

Teaching and learning can, in our view, also be interpreted as a process of transmitting, receiving, and internally processing information, our approach is declared to be communication and media science. Teaching and learning already occur in the information society, so we need to make it clear that communication and media can only be understood by closely linking science and educational theory, and finally shaping current and future educational processes with a stable methodology. This idea is the basis for discussing an effective, learner-centered teaching and learning process based on didactic principles, with pedagogical goals in mind. Benő Csapó sheds light on "the problems describing human thinking as information processing, the analyzes that parallel human and machine information processing," and the "problems and untapped opportunities of school education."[4] Réka Racsko formulates a critique of the current state of education when she writes that the environment, culture, and continually coming external stimuli pose a challenge to the human nervous system. However, the education system is lagging, not following the transformation associated with increased information flow; the predominance of writing, reading, and counting have remained, while information acquisition, processing, storage, and sharing are already based on the nature of the network.[5] Emese K. Nagy identifies it as a problem that the teacher does not usually differentiate during education and can take into account individual differences between students.[6]

Theoretical framework

In the philosophical approach of digital pedagogy, we rely significantly on the syncretizing, constructively polemizing, and narrative-creating works of Bertalan Komenczi.[7] Cornerstones of the universe constructed by Komenczi and quoted in this chapter are interdisciplinary

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[4] Csapó Benő, „Oktatás az információs társadalom számára," *Magyar Tudomány* 48, 12. sz. (2003): 1479.

[5] Racsko Réka, *Digitális átállás az oktatásban*, Iskolakultúra Könyvek 52 (Budapest: Gondolat Kiadó, 2017): 40.

[6] K. Nagy Emese „A digitális eszközök helye a Komplex Instrukciós Program szerint szervezett tanórákon." *Iskolakultúra*, 27. 1-12. sz. (2017)

[7] Komenczi Bertalan, *Információ, ember és társadalom* (Eger: Líceum Kiadó, 2009)

theorists who also fertilize the intellectual tendencies of the present, such as James R. Beniger[8], American historian and sociologist; Marshall McLuhan[9] Canadian philosopher, communications researcher, forerunner of information society research; Merlin Donald[10] Canadian psychologist; Michael Tomasello[11], American psychologist, communication and social cognition researcher; Manuel Castells[12] Spanish sociologist and information society researcher; John Searle[13] american philosopher; István Hernád[14], Hungarian psychologist and cognition researcher; Neil Postman[15] American media philosopher; Csaba Pléh[16] Hungarian psychologist; László Z. Karvalics[17] Hungarian information society researcher. We correlated new authors to them during the presentation of our line of thought. These are Yuval Noah Harari[18] Israeli historian, Walter Ong[19] American cultural historian and philosopher, György Csepeli[20] Hungarian social psychologist and information society researcher, George Landow[21] American literary and art historian; Espen J. Aarseth[22] Norwegian electronic literature and video game researcher; and Paul Virilio[23] French philosopher.

Assumptions and statements

We hypothesize that the theoretical framework of digital pedagogy must be characterized by the consideration determining when and when digital technology should not be used in education. This approach should take into account the obsolescence of tools and formats and the rapid development of technology, students' digital competencies, and ever-changing content consumption habits. It must prioritize the conscious use of digital technology for pedagogical purposes, and to formulate methodological proposals with general validity.

The statements that help us build our unified theoretical framework are: teaching and learning in the environment of info-communication technology, digital and interactive media content, and online networks can be effective if it is based on a unified theoretical framework. A change in pedagogical approach is needed, based on the fact that devices in digital pedagogy not only play an illustrative and auxiliary role but also bring a new approach that defines the

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[8] James Beniger, *Az irányítás forradalma* (Budapest: Gondolat-Infonia, 2005)
[9] Marshall Mcluhan, *A Gutenberg-galaxis: A tipográfiai ember létrejötte* (Budapest: Trezor Kiadó, 2001)
[10] Merlin Donald, *Az emberi gondolkodás eredete* (Budapest: Osiris, 2001)
[11] Michael Tomasello, Michael Tomasello, *Gondolkodás és kultúra* (Budapest: Osiris, 2002)
[12] Manuel Castells*, The Information Age I-III*. (London: Blackwell, 1996 – 2000)
[13] John. R. Searle, „Minds, brains, and programs," *Behavioral and Brain Sciences* no. 3 (1980)
[14] Steven Harnad, „The Annotation Game: On Turing (1950) on Computing, Machinery, and Intelligence," *The Turing Test Sourcebook: Philosophical and Methodological Issues in the Quest for the Thinking Computer*, eds. Robert Epstein and Grace Peters (Dortrech and Boston: Kluwer, 2004)
[15] Neil Postman, *Amusing ourselves to death* (New York: Viking Penguin, 1984)
[16] Pléh Csaba, „A webvilág kognitív következményei, avagy fényesít, vagy butít-e az internet?," *Korunk* 22, 8. sz. (2011)
[17] Z. Karvalics László, *Információ, társadalom, történelem* (Budapest: Typotex, 2003)
[18] Yuval Noah Harari, *21 lecke a 21. századra* (Budapest: Animus Kiadó, 2019)
[19] Walter Ong, *Orality and Literacy. The Technologizing of the Word* (London – New York: Meuthen, 1982)
[20] Csepeli György, *Ember 2.0. A mesterséges intelligencia gazdasági és társadalmi hatásai* (Budapest: Kossuth Kiadó, 2020)
[21] George Landow, *Hypertext 3.0: Critical Theory and New Media in an Era of Globalization* (Baltimore: The Johns Hopkins University Press, 2006)
[22] Espen J. Aarseth, „Ergodikus irodalom," *Replika*, 40. sz. (2000)
[23] Paul Virilio, *The Aesthetics of Disappearance* (Boston: MIT Press, 2009)

process of teaching and learning. The presence and extended use of technology in the classroom can only be effective if pedagogical, communication, cultural, and sociological factors are taken into account at the same time. The role of the framework thus developed is not to create a new reform pedagogical trend, not to destroy the traditional school system, but to shape and embed the existing formal education approach in the context of the information society, and everything from the screen and the network. Interactive learning leads to the expansion - augmentation - of the role of the teacher and the classroom.

Empirical research goal and hypotheses

Our empirical research goal was to explore the situation among Hungarian practicing teachers using a questionnaire and a semi-structured online interview. Little has been done so far on comprehensive research with a similar purpose and content. The focus areas targeted by the survey are the digital transformation, the conscious use of digital tools in everyday life; peculiarities of the learning environment; classroom activities, learning organization and methodology; content, and curriculum delivery. We also examined concepts related to the cognitive, affective effects of digital devices on students, ideas for the educational and informal use of digital devices, pedagogical experience, good methodological practices, and in summary, the offline and online characteristics of knowledge sharing.

Hypothesis	
H1. The teaching experience has a positive effect on the amount of use of info-communication tools.	*questionnaire*
H2. Teachers involved in digital in-service training are significantly more open to developing their own content.	*questionnaire*
H3. The type of settlement of the institution does not affect the openness to the application of info-communication methods.	*questionnaire*
H4. Completing digital training has a positive effect on application of digital pedagogy in their teaching practice.	*questionnaire*
H5. The type of settlement of the institution and the participation in in-service teacher training impact the openness to the application of info-communication methods.	*questionnaire*

We examined our hypotheses in the traditional sense with quantitative research. Our further research goal was to explore a situation among teachers in the digital pedagogy field with the help of a questionnaire. Only a few comprehensive pieces of research with a similar purpose and content have been carried out so far. Our research, based on a representative sample conducted between 28 April and 10 May 2020, seeks to understand the views, attitudes, thinking,

and conceptual web of the pedagogical target group, supporting the possibility of modeling in the field. The research was organized by the Digital Pedagogy Research Group of the Eszterházy Károly University and the Digital Pedagogical Methodology Center. Within the framework of the project "Measurement-evaluation and digital developments, development and renewal of innovative educational organization procedures (EFOP-3.2.15-VEKOP-17-00001)" related to the public education framework, the EKE research group also analyzes the received data based on other aspects.

Sample, sampling, number of respondents

The test sample is representative; the sampling procedure was performed with multi-stage sampling (we addressed the pedagogues of the identified institutions of the selected counties as a result of the method developed by the Measurement Evaluation Working Group of the Eszterházy Károly University (MÉM). We have reached a bounce rate of 10.7%. The questionnaire, which was also reviewed by the Digital Pedagogical Methodology Center and the Educational Authority, was completed online by 751 people. The questionnaire is available at https://tinyurl.com/digitalisatallas2020

Research results

The average age of the teachers completing the questionnaire was 48.78 years. Composition of the sample by gender: 86% female and 14% male. All but 26 of the respondents teach in primary school.

In the first part of the research, we were interested in how much experience did the institution prepare for the use of digital pedagogical methodologies during its higher education studies. The 659 respondents had to rate their preparation based on school grades. More than half of the respondents rated it as unsatisfactory, while the average rating was 1.95, (D-), meaning it was sufficient.

H1. The teaching experience has a positive effect on the amount of use of info-communication tools.

There is a significant correlation between two tools and one methodology in the correlation study. However, this teaching experience has a positive effect on the number of info-communication tools used, resulting in the rejection of the hypothesis, as the correlation is negative! Those who spend less time on the field are more likely to use the following tools.

- Mobile applications (r=-0,102; p=0,22; n=506)
- Robots (r=-0,136; p=0,02; n=500)
- Online testing (r=-0,144; p=0,01; n=517)

No correlation can be found for the other tools and methodologies.

H2. Teachers involved in digital in-service training are significantly more open to developing their own content.

The hypothesis was proved only in the case of two methodologies:
• preparation of worksheets and tests (e.g., Redmenta, Kahoot)
(Chi-square = 13.053, p = 0.11), and
• presentation of mathematical and physical relationships (e.g., GeoMatech, LabView)
(Chi-square = 11.754, p = 0.019)

In these two cases, the results of the Chi-square test show that the values in the table are significant, 86.4% and 83% of the educators themselves produce such content, but in the case of those who participated in digital in-service training, the willingness to produce content than among those who do not take a digital course.

In other cases, the responses were more evenly distributed among the response categories, and significance analyzes did not yield detectable results. Among the results, we would like to highlight that, surprisingly, 16% of educators do not consider it necessary to create their own presentation, and 28% stated that they do not have the knowledge to create a presentation (71.6% of these educators have already taken participate in digital training).

H3. The type of settlement of the institution does not affect the openness to the application of info-communication methods.

The Chi-square test used to test the null hypothesis does not show a significant relationship, so it cannot be discarded, so the original statement was proved that the two variables are not related. The hypothesis was confirmed by statistical indicators (Chi-square = 2.174, p = 0.537.)

H4. Completing digital training has a positive effect on application of digital pedagogy in their teaching practice.

The hypothesis was confirmed by statistical indicators (Chi-square = 2.174, p = 0.537). Three times as many educators participating in in-service teacher training have already used digital methods, while teachers who have not attended in-service training on digital topics, we can see a half-way distribution.

H5. The type of settlement of the institution and the participation in in-service teacher training impact the openness to the application of info-communication methods.

The hypothesis was confirmed by statistical indicators (Chi-square = 2.174, p = 0.537). The type of settlement of the institution and the participation in in-service teacher training do not affect the openness to the application of infocommunication methods.

Summary. Developing the theoretical framework of digital pedagogy

The conscious and planned use of digital pedagogy methods supports students' creativity while promoting a wide range of orientation and exploratory research. Creativity can reveal when there is a balance between having the data stored in the learner's long-term memory and remembering the paths of the information available in the digital repositories. In this case, the cognitive capacity is properly distributed, and the learners successfully supplement their knowledge with the information found on the network, and they effectively synthesize new knowledge with the help of their ideas. Curiosity is a prerequisite for exploratory research. Info communication tools also support discovery to a large extent in everyday use, so their use under controlled conditions can enable students to be individually involved in public education. The networked, hypertextual environment allows for faster acquisition of knowledge independent of space and time, which is standard in the typographic world but provides little support for the selection of authentic sources and selection routines in the face of the information flow. Hyper-links allow students to "race through" information, designate individual learning paths according to their curiosity, and learn from textbooks. The ever-increasing amount of multimedia-based curriculum on the network, which is immediately accessible regardless of physical space and linked, no longer limits learners' knowledge acquisition. Browsing multimedia content, spending time in augmented and virtual reality improves visual orientation, impacting the successful search for information.

If the classroom is augmented, there will be a more effective collaboration between students in a networked environment that can complement the classroom. This type of cooperation builds on interaction through online communication channels and supports the self-organizing cooperation of the peers who make up the network. The group's work is characterized by effective peer-to-peer collaboration supported by open web 2.0 platforms and cloud-based systems. In this environment, if the technical conditions are present, and the experiential nature occurs, students who passively participate in the traditional classroom work can also be activated.

The pedagogical challenges of digital pedagogy culminate in the group of students with low digital competencies, as they are the ones who use technology instinctively, uncontrollably, and unconsciously, and not according to the pedagogical goal. Disadvantages can be eliminated through conscious use, a properly chosen teaching method, time, and duration. Digital dementia occurs when the ratio of information stored in the human brain to that stored in digital memory is inadequate. In the absence of stored knowledge, students are unable to combine them, and their creativity does not develop. Attention sharing also hinders the learning process. After the convergence that took place in the 1980s, standard IT tools have already replaced and the classic training and simulation machines and simulators. Due to the use in everyday communication processes, accessing and editing media content is based on info-communication tools used in both the world of work and leisure. Fun content distracts learners, so teachers need to ensure that students pay attention to the learning process in the classroom or its augmentation in the virtual environment by clearly instructing them and assigning tasks that take into account the functions of the tools. One of the challenges is that multitasking usually makes it difficult to find focus, so it should only be used in the teaching and learning process when justified. Among the teaching methods, evaluation, and feedback play an important role in the traditional and augmented classroom space, the dynamics of teacher feedback lag far behind the usual feedback

standards in social media. Likes, comments, shares, chat messages, and emails; notifications from the smartphones form an uninterrupted and unprocessed stream of feedback. In education, teachers need to make students aware that the classroom is not characterized by this dynamic, and that immediate and even constant reward of reward does not make learning more effective but, on the contrary, distracts and makes it difficult to immerse oneself.

Classroom augmentation

The guiding principles of the unified theoretical framework of digital pedagogy are the conscious, planned, and controlled use of digital devices and applications in the teaching and learning process. Use by the pedagogical purpose characterizes awareness, so the teacher's main task is to select the most appropriate one from the tools of digital pedagogy, on the one hand, and to provide methodological help to the students, on the other hand. The venue for education remains the classroom, augmenting but not replaced by online communication technologies and digital media platforms.

The application of the methodology of digital pedagogy must already take into account the cognitive habits of the information society. This process is effective if:

☐ motivates students to interact and highlights them from the role of the passive recipient,

☐ a familiarity with everyday online activities is related to it,

☐ exploration curiosity appears in the students,

☐ provides an opportunity to experiment while receiving feedback from the teacher in the event of an error that does not discourage students from making further attempts,

☐ enables pupils to be simultaneous recipients and creators of content in a free-to-write online environment - prosumers,

☐ teachers use digital solutions that also develop competencies, are not subject-specific and will benefit students in the labor market

☐ teachers make minimal use of social media platforms in education, so they separate learning from leisure time and exclude a significant amount of overflowing information that can cause attention spoofing

☐ multitasking activity is minimized, and only the creation-source search is paired

☐ collaboration strengthens group cohesion, and group members act as equal peers

☐ during the use of devices, the use of devices, computers, and cameras developed for content creation is dominant, while in the case of devices developed primarily for content consumption, smartphones, and tablets, students use functions that support creation and creativity

☐ manages to move from an artificial learning environment to a natural one, where students learn instinctively by learning the routines of conscious use of tools

Methodological knowledge specifically related to distance learning practice

From 16 March 2020, education in Hungarian schools was organized in an extracurricular, digital work schedule, which meant the introduction of online, digital distance learning, which is not the same as digital pedagogy. In the forced transit, online communication technologies and digital media platforms did not expand but replaced the traditional classroom. Based on the fragmented experience so far, it can be said that the use of the methodology of digital pedagogy in distance learning without was compelling.

- the given the technological conditions should be accounted
- the timetable and the lesson boundaries remain as a strong organizing principle,
- one learning management system is used where possible, so the institution gains an adequate amount of experience,
- asynchronous methods dominate learning, while teacher instruction takes place on synchronous platforms, while chat, video conferencing, where everything is archived, made available online regardless of space and time,
- students receive clear, concise and unambiguous instructions,
- continuous, archived and retrievable communication with students,
- the amount of curriculum is reduced along with the teaching objectives

It is essential to check the reliability of the technology used in distance learning to get to know the possibilities, abilities, and limitations in practice. It is not possible to include an entire class in a video conference; students must be divided into smaller groups. For as long as non-verbal communication in the classroom allows for effective teaching, these communication components are not present in the environment of secondary oral and written language. It should be noted that if a technology does not work correctly, the stress factor will be high. If there is no personal interaction with the teacher who can handle this situation, there is a risk that errors that occur while using the technology will create so much noise that the learner will not be able to participate in the learning process. Similar noise occurs when education is not conducted on a single platform, and instructions are not clear. The platform chosen should serve pedagogical purposes and be based on a logic-based platform familiar to both the teacher and the learner.

While the curriculum in the classroom and in its extension consists of well-defined knowledge, the teacher is inevitably forced to select during distance learning. The curriculum must therefore be structured, and self-checkpoints must be included in the knowledge transfer system. The advantage of distance learning is that it builds on interactivity and multimedia in a networked environment, but the length of videos shared with learners must adapt to the context. Among the frontal forms of work during distance learning, well-composed video presentations should remain within the 15-20 minute scope and cover several topics. The online context is conducive to group work and collaboration, so it is possible to organize a more significant number of group project work for students on cloud-based platforms. Students need to be aware of media awareness, as a lot of false news and false information is available online.

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