The impact of digital education from a teacher's perspective

Judit Módné Takács
Alba Regia Technical Faculty
Obuda University
Szekesfehervar, Hungary
modne.t.judit@amk.uni-obuda.hu

Monika Pogatsnik
Alba Regia Technical Faculty
Obuda University
Szekesfehervar, Hungary
pogatsnik.monika@amk.uni-obuda.hu

***Abstract*— In our study, we present a survey we conducted on the experiences of the transition from traditional education to digital teaching from the perspective of teachers.**

We examined the availability of the necessary tools for digital teaching (computer, web camera, microphone) and internet access for teachers and students. Several issues have been assessed: the time required for daily preparation and teaching, the need for uniform program use within a given educational institution. The experiences on the pros and cons of digital education have been gathered. We mapped the motivational tools used to maintain attention in online education. We collected teachers' suggestions for missing teaching materials.

Keywords—digital education, teaching, motivation, maintain attention.

I. INTRODUCTION

As a result of the epidemic situation, there is an explosive methodological renewal in the Hungarian education. The transition to distance learning has necessarily been rapid, with most educational institutions successfully tackling the challenge. In order to implement the sudden transition effectively, the official bodies in Hungary made several recommendations and collected useful materials for schools and teachers, yet extremely diverse methodological solutions were used in the months following the introduction of the digital curriculum in the spring term of 2020, exploiting the potential of distance education at different levels and qualities [1]. The traditional Prussian frontal classroom teaching, where the teacher is the sole custodian of knowledge and the learner is responsible for sitting in a disciplined position and memorize the lesson - has suddenly entered the 21st century information society, where the emphasis is on knowledge creation technology, information acquisition, processing and sharing [2].

The potential for innovation in distance education is the most important impetus for the renewal of education and training systems than ever before [3]. According to a trend summary analysis by Sharpe [4], during the epidemic period, there was a significant increase in innovative activity in dealing with problems. Teleworking did not mean that work performance deteriorated, creative solutions and new communication techniques were invented, and they even helped to strengthen social relations.

Digital education is one of the most influential factor in both teaching and learning, depending on the digital tools available, the level of digital competence of the teacher and the learner. The efficiency of educational work depends on whether the scheduled, content-based and time-limited curriculum is handed over and mastered. Can the teacher, as a "transmitter", use the available tools, apply them in effective, efficient teaching, and can the learner / student as a "receiver" master the digital content [5].

The teaching community has shown unprecedented cooperation [6], [7]. Over just one weekend, thousands of Facebook groups were formed. The sharing of knowledge and curriculum has evolved to a tremendous extent in a few days. The specialization of the groups took place in a short time, a very close collaboration has developed to maintain education, and as a result, the transition to digital distance learning has been possible in a few days. Based on the economic situation of the country's regions, the necessary tools for the implementation of digital education were not available everywhere. Financial opportunities and daily livelihood difficulties limited the receptive base [5].

In our research, we assessed teachers in different educational institutions about the solutions they use, what tools they have access to, how they try to maintain education, and motivate students.

II. METHOD

A. Procedure and instruments

A survey was organized among the partner schools of the University of Óbuda regarding the feasibility of online education within the EFOP-3.4.4-16-2017-00019- STEM "Strategic Developments of the University of Óbuda" project. The survey tool was an anonymous, online questionnaire with a pre-recorded set of questions. Regarding the types of questions, there were open-ended questions, where the respondent could also express their own opinion, and closed-ended questions, among which there were mainly selective question types with several choices.

The aim of the research is how well the teachers of the schools participating in the survey felt organizational, technically, personally for this task, and what kind of experience they gained and what attitude they had towards digital education.

B. Participants

The 214 participating teachers from different educational institutions, also from various regions within the country (mostly from Fejér county and Borsod-Abaúj-Zemplén county) took part in the survey. In terms of distribution, the majority of responses, 61%, came from secondary education institutions.

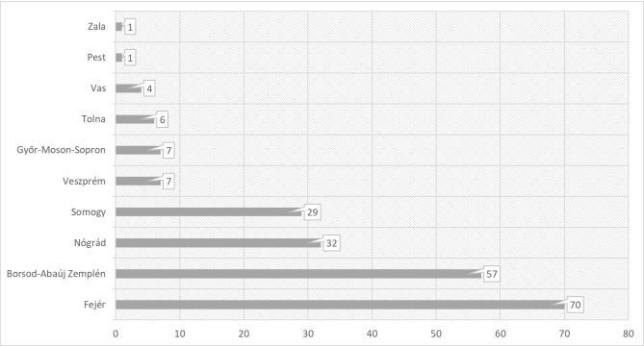

Fig. 1. Sample of responses by counties

The distribution of participants in the questionnaire by profession showed that nearly 45% of the respondents teach in the human field, 35% in STEM (Science, Technology, Engineering, Math) and 20% in primary school as a general teacher.

It follows that the research was mainly assisted by educators who are not directly related to the field of informatics, which made their work much more difficult in the transition to online education, as they only have the IT knowledge necessary for everyday life.

They had to learn to use digital tools and applications in a short time, such as video editor, image editor, online test manager, more accurate knowledge of various cloud services, and more familiar with the platform supporting more education in the initial period.

III. RESULTS

A. *Experience with the availability of IT supplies for online education*

The transition to online education has created an adequately new life situation. Educators also had to adapt to a new way of teaching. However, this also required the strengthening of different competencies.

Examining the availability of essential IT tools for online education at the start of the new form of education, 95% of respondents had the necessary digital tools that could be suitable for implementing online education (laptop, personal computer, smartphone, tablet). 36% of the respondents were provided with the necessary IT equipment by the educational institution, while the rest had to carry out this transition from their resources.

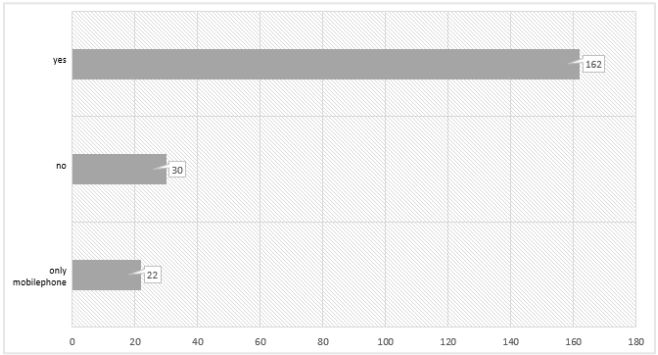

Fig. 2. Sample response with the availability of the appropriate IT tool

In traditional education, the use of digital tools, especially by humanities teachers, cannot be said to be too typical, while in this new life situation it has become essential and has mostly required the use of digital competencies.

Another interesting fact is that a fully online education, which requires the use of audio-visual devices, ¾ respondents had only the means to transmit/display visual and audio data, as the rest could only fill these gaps by using their smartphones.

B. *Teachers' workload experiences over time*

Traditional education takes place at a fixed time, while online education has been a full-time activity in many cases. This situation made it necessary for everyone involved (teacher, parent, student) to have a new kind of time management.

Traditional, fixed-time, 45-minute lessons have been replaced by more freely organized, more flexible education, but this has strongly required teacher-parent collaboration, especially in the younger age group, and increased teacher-student collaboration in the older age group.

Mutual responsibility came into focus, as ordinarily, education has been mostly the responsibility of the teacher, with the parent only providing a supportive, helpful function. In the new situation, the teacher and the parent shared the teaching practice.

In many cases, this task was problematic to achieve with the parents' modified work schedule and way of working.

In terms of their workload, the new form of education also meant additional tasks for teachers. 68% of the respondents worked more than 5 hours, while 22% of these teachers more than 10 hours a day.

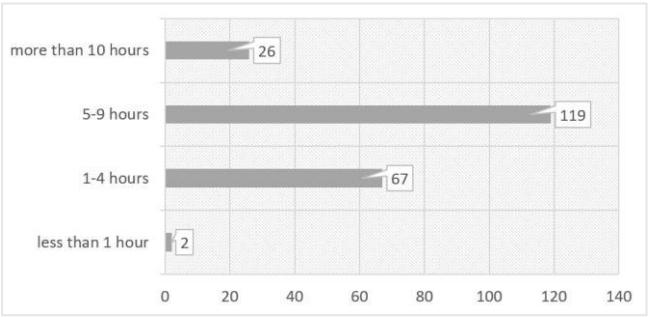

Fig. 3. Time spent per day preparing and presenting digital lessons

Experience has shown that in the traditional work schedule, the family life of teachers is separated from education, while in this situation, education and family life are present at the same time.

As a result, other burdens also appeared in the lives of teachers, especially in families with small children, where they also had to take part in the education of their children.

C. *Examining the existence and possible lack of online educational materials*

The curricula, textbooks and lesson plans required for traditional classroom education were already available to experienced educators who had been teaching for several years. However, in the online world, new methods and new types of educational materials would have been needed, which were limited.

Existing online learning materials either did not or only partially fit into the required framework curricula, training system or were not available in the required language.

Teachers formed online groups on different platforms, which tried to fill these gaps and help each other by supporting each other. Nevertheless, the research found that 93% of respondents would find it useful to create and publish an online knowledge base.

The majority of survey participants, more than 4/5, highlighted the lack of instructional videos available in their native language. Teachers would find it extremely useful in their work to have a collection of these instructional videos gathered, organized on a variety of topics, accessible to all.

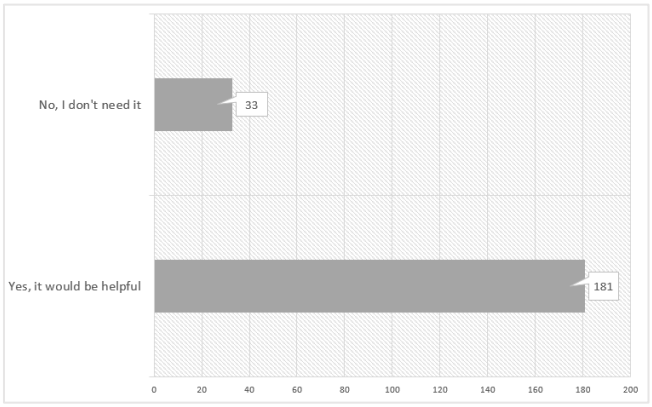

Fig. 4. The usefulness of an online course supporting digital education

Also, nearly 80% of participants would find online training in support of digital education useful. Even educators teaching in the field of informatics want to strengthen their competencies for online education, both professionally and methodologically.

D. *Experience the benefits of digital education.*

At the end of the last school year, a completely unusual situation arose due to the Covid-19 virus. In essence, schools, parents, children had to switch from traditional education to online education overnight.

Below we present the positive experiences of the educators involved in what areas of this transition were affected in practice.

One of the substantial benefits of digital education was that educators were able to learn and try new methods. This new interface required a kind of change of attitude the individuals involved went through huge digital developments and were able to try out innovative ideas.

On the one hand, online education forced the instructors to use digital tools, get to know the online teaching materials and try out and use new programs and applications for them. On the other hand, methodological diversity characterizes this period.

In traditional education, students are present in person, so discipline is strongly present, teachers can easily follow metacommunication cues. The presence of students in online education depended on the availability of the IT tools available to them and their proficiency in the digital world. Discipline was less common in education, and classroom aggression had no place in this form. This side of teacher work also became much smoother, as there was no need to discipline, it resulted in less conflict.

According to some respondents, more modest students were more easily influenced in this medium because they were not necessarily heard by others, thus putting less pressure on them.

Educators reported about weaker students to perform several times better in online education than in school, where they tend to “pass the opportunity” to active, better-able students. Everyone can work at their own pace. Children will become independent, they will be more informed, and they will utilize and expand their IT knowledge. Metacommunication cues also remained traceable with appropriate program selection and use.

Several reported that using online, chat lessons made it feel like they had moved in with their families. They were able to gain insight into students ’learning environments. Educators were able to experience how and in what way parents support and help their children. With younger children, parents can spend more time with their children, pay more attention to them and develop their digital competencies, while encouraging older children to work independently, be creative, seek individual solutions while their digital competencies develop much faster.

Some have also reported motivation-enhancing effects as a result of a more playful method of curriculum delivery closer to students. At the same time, it is easier to spot inactive and active performance students, and you can give individual feedback more than once.

The great advantage of online teaching is that it gets used to regularity and accuracy, as it requires concise wording, and educators have highlighted that the new online space teaches stakeholders about cultured digital communication.

E. *Negative experiences of digital education*

In the following, we present the negative experiences of educators involved in online education and the areas affected by this transition in practice.

There are sharper opinions and differences about the disadvantages. These differences are likely to be influenced by problems arising from regions with different economic characteristics, or a humanities teacher may face different problem types than a real education teacher in digital education. Besides, negative feelings and experiences can be strengthened by age specifics.

There was a great deal of agreement among teachers regarding the problems with the examinations. The distribution and control of dissertations caused quite a headache in the form of online education. The instructors could not be sure about the students, the proportion of their answers, or the independence of their knowledge. In addition

to correcting, storing, and preparing online tests is much more complicated and time-consuming than using a printed, available worksheet produced in previous years. Evaluation is problematic, looking from a few perspectives - as almost only online tests are available, and it does not differentiate enough. There is no way and enough time to listen to individual reports.

Another problem area is the lack of community and its positive effects. It was impossible or difficult to contact more students at all. One reason for this may have been students who did not have the IT tools needed for digital learning or had to share these tools within the family, so they had limited access to it. It was more effortful to motivate them to work together, and it became necessary for a person within the family to monitor their work and the student's presence in class. It was problematic to establish the necessary contact with disadvantaged children and to aid the learning process at a distance.

Overall, all parties lacked a personal presence, with many educators also listing the lack of physical presence of students, the importance of eye contact, and the lack of body language as natural causes of traditional education as reasons for personal motivation.

F. Motivational tools used to maintain attention during online education

The last area we wanted to explore is what motivational tools the pedagogical society uses in this online space to keep children's attention and for successful teacher-student collaboration.

Opinions on the success of maintaining motivation were divided, with some respondents reporting that they had not been able to find the right tools and felt left alone without help in an impossible life situation. That is probably why many people would take part in training in support of digital education. Not only because of the possible lack of digital competencies but also because of the methodological shortcomings that would help teachers in this situation.

Educators who had positive experiences with student motivation reported the following.

Educators can easily keep children's attention with playful tasks, joyful learning experiences, positive feedback, humour, and empathy. Many have highlighted the importance of personal, possibly individual, conversations through various online channels. The importance of parental support in this unconventional process is significant.

Overall, punishment, bad grades, and inconsistency have led to results in almost no one in this process, as creating a stress-relieving atmosphere, encouragement, and positive motivation are the only weapons for teachers in this situation as well.

IV. SUMMARY AND FURTHER RESEARCH

The research examined several issues related to the introduction of emergency online education. Only 35% of the teachers involved in the research were provided by their school with an IT tool to implement their education, which is a very low rate. Of the 214 participants, 22 could communicate with students in real time via their mobile phones, and no other image capture device was available for them.

There is a lack of motivational tools in digital education, and even IT teachers expressed their need for further training because they have a low knowledge of methods.

Further elements of our research examine the operation of digital education from other perspectives, and the results of surveys conducted among parents and students will be published later.

A further area of research would examine the impact of the semester spent in digital education on the normal education system. What are the elements that are incorporated into classroom education based on the experience of digital education? Based on feedback from students, parents, and co-workers, which methods were considered good, what is worth to keep, and what they would change.

REFERENCES

[1] Czirfusz, D., Misley, H., Horváth, L. (2020): A digitális munkarend tapasztalatai a magyar közoktatásban. Opus et Educatio, Vol 7, No 3. http://opuseteducatio.hu/index.php/opusHU/article/view/394/685

[2] Castells, M. (2005): A hálózati társadalom kialakulása. Az információ kora I. Gazdaság, társadalom, kultúra. Budapest: Gondolat - Infónia.

[3] Benedek, A. (2020): Távoktatás másként!!! – A digitális kor pedagógiai kihívásaihoz. Opus et Educatio, Vol 7, No 3. http://opuseteducatio.hu/index.php/opusHU/article/view/387

[4] Sharpe, R. (2020): Leading and learning through uncertainty. Universitiy World News, 2020.07.11. https://www.universityworldnews.com/post.php?story=20200708171028609

[5] Proháczik, Á. (2020): A tantermi és az on-line oktatás (tanítás és tanulás) összehasonlító elemzése. Opus et Educatio, Vol 7, No 3. http://opuseteducatio.hu/index.php/opusHU/article/view/390

[6] Széll Károly, Manhertz Gábor (2016): Development of a web-based training module in robotics In: Korondi, Péter (szerk.) 2016 International Symposium on Small-scale Intelligent Manufacturing Systems (SIMS) Piscataway (NJ), Amerikai Egyesült Államok : IEEE, (2016) pp. 1-6. , 6 p.

[7] András Czmerk, Károly Széll, Péter Korondi (2013): Development of a servo-pneumatic system in distant learning In: Korondi, Péter (szerk.) Proceedings of CERiS'13 - Workshop on Cognitive and Eto-Robotics in iSpace, Budapest, Magyarország : BUTE Department of Mechatronics, Optics and Mechanical Engineering Informatics, (2013) pp. 50-54. , 5 p.

.