

Efficiency of digital tuition in University education

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Abstract: The past, nearly one and a half year has brought a significant change to the daily lives of humanity. Due to the coronavirus epidemic, many areas of our lives have been overwritten with radical changes that previously seemed unthinkable. In March 2020, traditional tuition had to move and evolve into online education practically overnight. This situation posed a challenge to everyone, teachers, students and university executives alike. The aim of the authors was to explore and formulate the lessons learned of this recent period, so that the benefits and drawbacks of online education can be utilized and used to its highest potential in the upcoming years. Exploration of the topic was carried out with the help of qualitative and quantitative methodology within the framework of the primary research. The quantitative research was executed with the help of a standardized survey. The opinions and experiences of university students were revealed using snowball method on the basis of a non-representative sample. The three main questions of the dissertation are whether it is more difficult to motivate students to learn in the form of digital education, how the efficiency of learning has changed over the last year in the digital form, and finally, did teaching and learning become more difficult overall for both teachers and students? The results were presented using statistical indicators and conclusions were drawn based on the results. The research ended with a proposal for future semesters and a summary.

Keywords: Pandemic, Corona virus, Digital education, University, Online

1 Introduction

Due to the coronavirus epidemic, unlike previously, switching to digital education in a very short time was no longer an opportunity, but a must for all. Teachers, students, institutions and parents alike had to adapt to a very much unknown system. The past one and a half year showcased us the best, that Digital education has many advantages over traditional classroom lessons, but unfortunately it fell by far from the expectations in some of its areas.

During the research, the relevant secondary data collection was followed by the primary research, in which we used both quantitative and qualitative methodologies.

We conducted individual interviews with university lecturers and also surveyed students' opinions using a standardized questionnaire. The data were analyzed and

interpreted using statistical methods, and in the end, based on the results, conclusions were drawn. Our studies were based on primarily on young adults, such as high school and university students.

At the start of the research based on our own experiences and the knowledge from the secondary literature, we created three hypothesis. We suggested that Students are more emotionally burdened by the lack of social connections during online education than through personal lessons. Learning is less effective in digital form than in person, and accountability is more difficult as well.

2 Literature

2.1 Learning environment

The learning environment has always played a big role in our lives, in many ways has also been interpreted over time. Proven to have a specific learning environment its implementation was influenced by a number of factors, such as the era culture, social habits, educational goals, etc. Various influencing the effectiveness and efficiency of learning environmental components are collectively referred to as the learning environment. Always is a central principle of pedagogy, the design and operation of which depends on several factors depends. It is widely accepted that learning is not a complete system of knowledge but in the course of interaction with the environment (Komenczi, 2009). The learning environment is a complex system that is broader sense, in addition to the school learning environment, also the home learning environment includes. Part of the school learning environment is the school as a learning “tool” (spaces, ergonomic design, etc.) and the learning environment itself. What is given a prominent role in defining a modern school have a school environment that motivates students adequately. Its most important conditions can be defined as follows (Papp-Danka, 2014):

- flexible, mobile school equipment
- public spaces
- inspiring building and environment
- accessibility, inclusiveness, school community and special needs

for students alike (beyond school hours)

- innovative solutions: energy use, natural light, sustainable materials

2.2 Blended learning

Blended learning, as an educational technology, is largely based on e-learning they can be interpreted together, they are closely related to each other, they cannot be

chosen separately. We live in a digital world where it is an essential part of our daily lives form ICT9 tools, the widespread use of which is essential condition for increasing the efficiency of education. Directly and indirectly has an impact on teaching-learning processes, teacher-student on going and for active communication. Knowledge is typical for the learner through Internet channels by providing the technological background. E-learning has a key role to play in today's education system. The education should be based on independent learning and creativity, for which it is innovative toolkit is provided by e-learning (Nagy, 2016).

In the education of the near future, as in the present, there will also be a need for direct human intervention cannot be completely ruled out, so the in reality, in most cases we cannot talk purely about e-learning, but we are talking about blended learning, so-called blended learning. This the method connects the traditional with modern forms of teaching and learning, essentially the integration of online and offline education. This combination is one can result in a very effective type of education (Nagy, 2016).It can be most effectively applied in trainings where it is theoretical together with knowledge, practical knowledge should also be transferred, such as in secondary schools, in higher education, adult education and many other areas of education. A blended learning educational technology for the effective application of two essential conditions must be met. The first and most important aspect is the learning process all participants have the necessary innovative technological tools and as unlimited as possible, with a sufficiently fast internet connection. This digital device can be computer, laptop, tablet or smartphone. Another an essential condition applies to ICT competencies as the method consciously builds on the confident use of digital devices. They give together the solid foundations. Blended learning is an innovative electronic environment form of learning, either independently or in collaboration (Forgó, 2015).

At the end of the 19th century, a new period began in the history of pedagogy. Representatives of reform pedagogies appeared, who with a new approach and educational principles were intended to replace previous traditional teaching methods. Of this the result of the process was the appearance and development of the project method. (Veszelszki, 2017) The foundations were laid by American philosopher John Dewey, an educator, emphasizing the importance of gaining experience for the individual, individual goals achievement, self-fulfillment and responsibility. William Kilpatrick attended the in the development and pedagogical application of the method, considering it important to 12 personality-shaping role, the importance of usable knowledge and school wide application (Honfi-Komlódi, 2010). From the beginning of the 1990s, the experiential process began to spread in Hungary learning-based methods that provide knowledge that can be used in practice. The project method gradually began to integrate into everyday pedagogy methodology. In contrast to frontal education, this is one that is effective a form of work of which action is an important part. "In a general

sense, we mean a complex task in a project that one-time, unrepeatable, resource-intensive, brings novelty, great carries a risk, has a specific risk of time and cost, and thus requires the involvement of a large amount of expertise to be the most optimal in the form of (Verők-Vincze, 2011)

In teacher-centered education, students are passive participants, whereas during the preparation of the project work they become active participants, communicate, they design, they work together. Emphasis is placed on co-operation, the adaptation, debate and consensus building. A characteristic of project pedagogy is that students acquire new knowledge already they build on previously acquired knowledge, they are acquired in a combined way (Honfi-Komlódi, 2010).

3 Quantitative primary research

3.1 Aim of the research

The aim of the research was to assess the advantages and disadvantages of online education based on the experiences of both students and teachers. The information gathering process was performed via an online, standardized questionnaire. The questionnaire included closed and open questions as well to ensure free association. The form began with a filter question about whether the respondent had an online class in the last one year. Those who answered “no”, could not continue the completion of the questions. This was necessary because we examined the feelings and experiences developed in connection of the digital education during the last 1 year, due to the spread of the coronavirus. The questionnaire ended with questions on demographic data. Sampling was done by a snowball procedure. The questionnaire was completed by a total of 590 people. The sample is not representative.

3.2 Results of the research

Based on the information received from students, one of the greatest advantages of e-learning from a students' perspective is flexibility, which includes independence in time and space. Thus, students can continue their studies at their own pace, regardless of geographical location and time. But the biggest question was, will the student continue their studies without the close supervision from the teachers, by themselves?

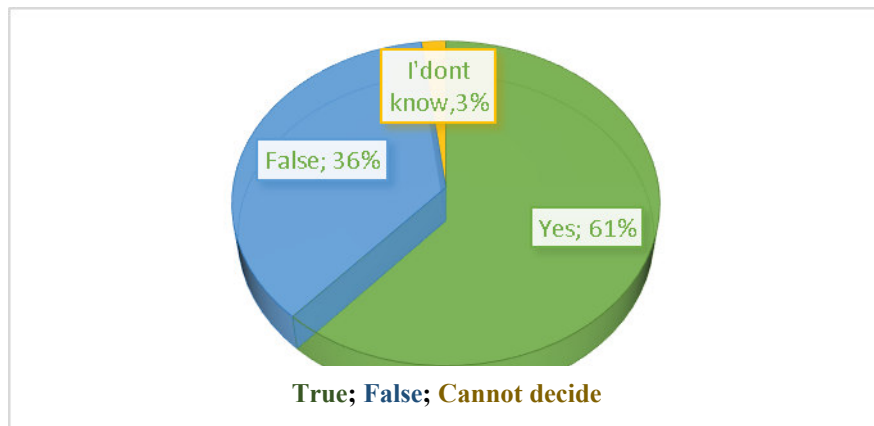
The biggest disadvantages of online education may be the lack of motivation, and the damage to the social interactions. Teachers cannot supervise students, during classes it is very easy to hide and to not pay attention. Also Teachers cannot see as well, if students do not understand something.

Students had to write words in association to online education and their most relevant experiences. It was clear that there are many benefits to online education, students wrote words like, comfortable, home, flexibility, but in large numbers,

negative responses appeared as well, like, boring, loneliness, stress, less-efficient. It was conspicuous, that these students had to spend the last year in total isolation and that, how burdensome the lack of human relationships is for most people.

3.2.1 Motivating the students

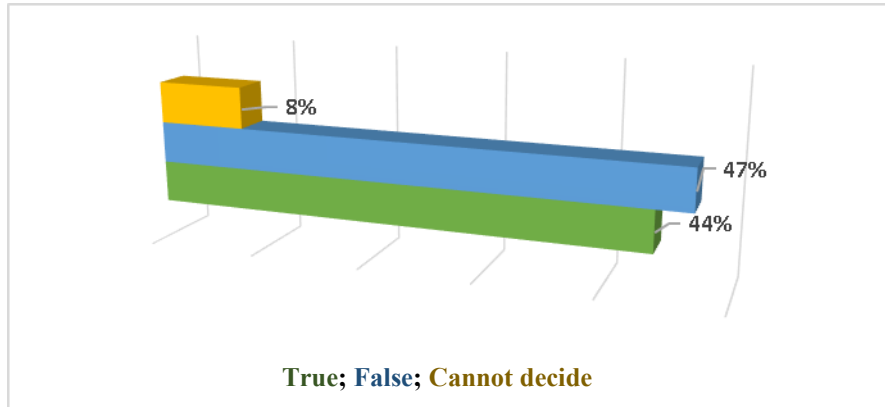
Based on the answers again, 75% of respondents felt that lack of personal connections was the biggest disadvantage of digital education. The second major disadvantage of online education is the more difficult acquisition of knowledge. There can be several aspects to this. Students can be harder to motivate, teachers cannot supervise their progress closely, and students tend to do other side activities during classes and this all leads to lack of knowledge, loss of attention and a bigger and bigger gap in progress which is already hard to regain.



1. Figure: Digital education was less exciting than its classical form

Source: Own editing, Own research, N = 590

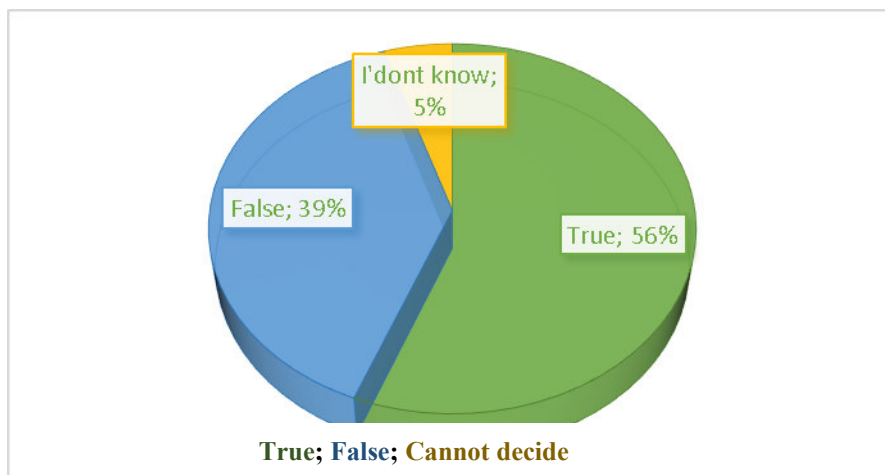
61% of the respondents said that digital education was less interesting than a personal contact lesson. 36% disagreed with this statement and 3% could not decide. Based on this result it is clear how hard it was for teachers to hold entertaining online lectures and to keep the contact with the students.



2. Figure: Digital education was more boring than its classical form

Source: Own editing, Own research, N = 590

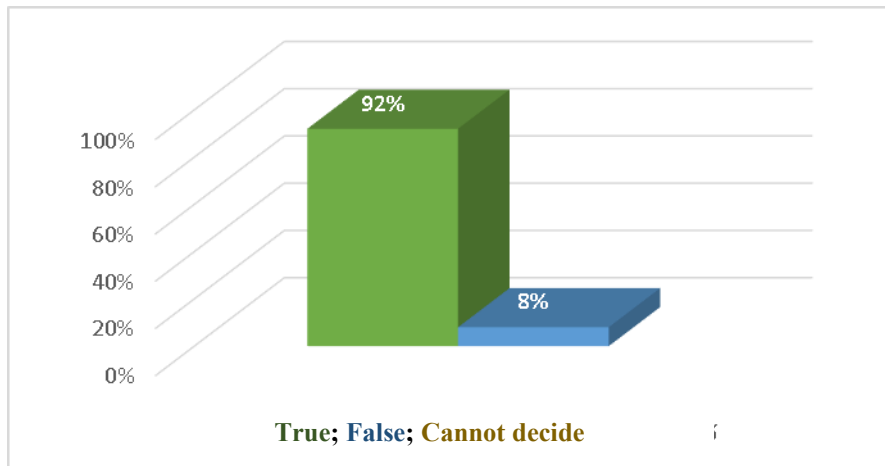
44% of the respondents said, most online classes were boring. 47% disagreed with this statement and 8% could not decide. This shows, that in summary it was possible to keep the students entertained, but it was by far a harder task then in normal cases. Students were surrounded with their own comfortable environment where they could easily perform other, secondary tasks during lessons. It was very easy for students to not pay attention. The temptation was very high to multitask during classes but in reality students cannot pay attention to the lecture in the same way.



3. Figure: Importance of activity during online classes

Source: Own editing, Own research, N = 590

56% of the respondents said, it was not as important to be active during online classes as it was during personal education. It is clear that teachers had a very hard time supervising their students during the pandemic. It is much easier to hide and to not take active participation in online classes.



4. Figure: Not paying attention on online classes

Source: Own editing, Own research, N = 590

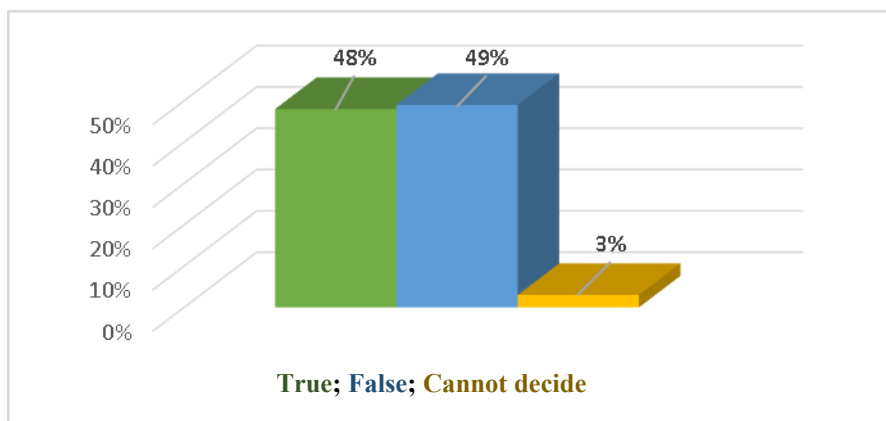
92% of the respondents said, that at least 1 time during digital education, they just logged into the class but did not pay attention. 46% of the respondents said that at least 1 time they went back to sleep while they were logged into the online class. 90% of students answered, that they participated in online classes where the teachers asked questions from them, but no one raised their hands or answered. 76% of the students were in a situation that they were sure about the correct answer but still did not reply. Based on their answers, this often led to embarrassing silence which gave the lessons a negative tone and a bad feeling between the students and the teacher. Teachers in this case usually assumed that no one is listening to them.

3.2.2 Online exams

Considering the positive aspects of online education, It is undoubtable that the biggest benefit of it, is convenience. The second biggest advantage is the time saving factor. Students and teachers could save hundreds of hours just by not having to spend their time with travelling. It is important as well to take a look at the third aspect, which is the easier accomplishment. Due to the pandemic and the online learning, it was much easier for students to cheat and to use other sources of materials to pass exams and to move forward.

Just like expected, 87 percent of those who completed the questionnaire said it was easier to pass exams online and 64% of students agreed that It was easier to prepare for the online Moodle tests. 73% of the students answered that they spent significantly less time learning during the pandemic than in normal times.

The primary goal of education and participation in universities and schools is to develop knowledge and encourage diligence. If this is lost in digital education, we really do have a lot to improve on. In addition to being a waste of resources, the knowledge loss has a detrimental effect on future generations and our society as a whole.



5. Figure: Preparing less for online education

Source: Own editing, Own research, N = 590

48% of the respondents had less need to prepare for the online, Moodle exams. Based on the students' answers, it was much easier for them to cheat on these exams. They could easily use other sources of materials, and most of the time they did not have to give their own answers, they could choose from pre-given ones in these tests.

In summary, based on the research, most of the answers supported the hypotheses given at the beginning of the research. It was more difficult to motivate students to learn in the form of digital education.

Concluding the research, Digital education has many benefits, being more convenient, time-saving, and less stressful than a form of education that requires personal presence. It was clear however that during digital education, it is easier for students to hide, to avoid active attention in class and testing the students' honest knowledge online was a difficult task. There is great potential in introducing semi-online tuition, but there are a lot to improve on.

Suggestions

Based on the quantitative results of the research, we came to the following results.

Digital education has many benefits, being more convenient, time-saving, and healthier than a form of education that requires a personal presence. However, there are still lots of drawbacks that will need special attention in the future.

The questionnaire research highlighted that online lessons are more boring and less serious for students to learn from in common. It is advisable to develop some pre-built method and to use different tools of teaching, so that the instructors can maintain the interest and the students can see the importance of learning regardless of the form of education. Teachers did not have time at the beginning of the pandemic to convert their educational methods into online forms, but the future may bring the opportunity to create quality teaching materials for students that are available for them online.

During digital education, it is easier for students to hide and to avoid active attention in class. The larger the number of online classes, the easier it is for students to not take part in the activity. Teachers can hardly see if a student is paying attention or having difficulties with understanding the material. One possible solution is to maximize the number of students in a given online class. However, this alone is not enough to keep students alert.

In the online space it is even more easier to lose the attention of the students. It would be important that the instructor provides meaningful information, does so with dynamic momentum and does not give the opportunity for students to divide their attention. This generation already gets a lot of pulses per second. Obviously, instructors cannot be expected to provide this degree of intensity and excitement, but newer generations are increasingly intolerant of boring, at least 90 minutes lectures. In an environment where they can simply do anything else without any consequence, they cannot be nailed to the computer, only out of respect or duty. Beyond their fault the temptation is too high to not to use the given time for multitasking. Irrelevant, unanimous, and inadequately informative presentations will be ignored. This is an issue because students will take away even less information from online classes than in regular cases.

It is necessary to adapt to these new needs. Hold shorter classes with impactful information, involve students in classes and suggest turning on their cameras. Human values must not be lost through the online space. It is very important for both the teacher and student to acknowledge each other's presence and well-being. By turning on cameras, emotions would become much more visible even through online classes. It is also recommended for the instructor to ask 3 cardinal questions about the last lecture at the beginning of the next class. With this, students are already involved in the class and they may be even more active later on.

Students would be encouraged to follow a daily routine and dress up in the same way as they should be physically present at the classroom. Also, it would be

highly suggested to have a separate work surface, a desk, from where they are able to join the lectures and create notes.

Measuring the students' knowledge was a very difficult task. Students could easily not pay attention during classes and cheating on exams was not a challenge for most. A well-structured accountability through the semester could be the solution to encourage learning. Students should actively spend time with their subjects from week to week. They could be encouraged by practical tasks which they have to hand in to time to time, so they have to acquire the necessary knowledge and use it as well. However, this should not mean that students would have to learn hours outside of classes in order to prepare their weekly tasks. Spending at least half an hour with one lecture weekly would already be a great achievement. This could mean reading through the study material, watching a recommended video or reading an article. In the case of online education it has to be accepted that students have a much larger power in deciding whether they want to learn or not. Forcing students to learn and to prepare for exams is very difficult. That is why accountability in online education has to move forward from these classical methods in the future. The principle of fairness and consistency is as important here as it is in any accountability.

More and more practical education may be the goal of e-learning. Teachers may want to take a role-playing game to practice situations, or reward the class with small achievements. Keeping the students involved is key. Of course, students should be treated in a non-degrading way, but looseness to some level could dissolve the tense mood and make it easier for students to be involved in the lesson. It is possible to understand the students mindset and to use it as an advantage in classes. Teachers do not have to think about big things, just small goals and the fulfillment of which will delight the student.

If the student is sufficiently motivated and happy to perform, a healthy competitive situation within the group will develop and the lessons can be closed with a win-win situation. Students feel good because they have took part in the class actively and been rewarded, while the instructor feels good because they have managed to put knowledge into their students heads within the framework of an exciting lesson. Undoubtedly, this requires effort from educators and students as well, but after a few occasions, it can also become a routine.

There is great potential in introducing semi-online, semi-classroom education. After all, students who do not attend exclusive classroom lessons could also attend the class online. Online materials could help students to keep in touch with the lecture and to catch up to the material if necessary.

With the help of a well-tuned camera that would capture the instructor's podium and board, a cloth-mounted mini microphone for the instructor, even classical classes could be easily recorded and shared with the students. Of course, it also requires a stable internet connection. With this solution, the university would also

provide a high degree of freedom for the students, as they can enter the class from home if they have to, but it is also possible to participate in person.

Conclusion

Currently one of the biggest questions of online education which is still unsolved is the testing of the students' acquired knowledge. A well-structured semester long accountability kept the students up to date in most cases. But the question to how to avoid cheating and using other sources of materials is still unsolved.

We hope that the epidemic will soon pass and, in the future, in addition to personal classroom lessons, institutions will be able to benefit from the experience gained in the current state of emergency on the field of digital education.

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