

Satisfaction with distance education at the time of the outbreak of the Covid-19 virus epidemic among pupils and students

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Abstract. *The outbreak of the Covid-19 virus epidemic forced educational institutions to transfer their educational activities to the online environment. Distance education brings some positive benefits: such as (1) the ability to independently organize learning, (2) individual learning methods, and (2) work in a home environment. Many disadvantages were also noted: (1) lack of explanation and misunderstanding of the subject matter; (2) lack of conversation and communication; and (3) various technical problems. The workload of students has increased, and learners are now busier and spend more time studying. As a result, most learners want to go back to school.*

Keywords. satisfaction, distance education, (IT) information technology, web services, education.

1 Introduction

We live in a time of evolving modern technology that unconsciously affects the course of life of each of us. There are also constant changes in the field of education. Distance education involves the use of several electronic devices, through which the educational process can proceed smoothly, considering the appropriate conditions. The educational process was thus moved from educational institutions to the private sphere of the individual. It enables the individual to allocate his/her time for learning at his/her discretion, save time and reduce costs, and become more easily accessible, while strengthening knowledge of information and communication technology. However, distance education requires more individual work and responsibility from the learner and consequently more time. Moreover, the way of teaching also changes, which can be a problem for many teachers. Both students and teachers lack social contact in such work, which enables spontaneous communication, real-time problem solving, and facilitates the learning process itself.

2 Distance education

There are many different definitions of distance education, but in general is distance education a form of independent study (Wedemeyer, 1971) an educational process where students and teachers are spatially separated (Bregar, Zagamajster, & Radovan, 2010). The learner or other participant in the pedagogical process, which takes place at a distance, is not in physical contact with the teacher. The key difference between distance education and traditional (classical) education is that learning does not take place in designated areas, such as schools, colleges, universities ... The task of an educational institution in distance education is to plan and create adapted learning materials. It is also important for assisting learners. The teacher imparts knowledge through various media – computer programs, materials, and presentations (Bregar, Zagamajster, & Radovan, 2010). Distance learning is becoming more and more popular over the years (Berge, 2019). Distance education potentially enables higher education of the population and thus the development of society itself (Krajnc, 2008).

At the time of the outbreak of the epidemic, in Slovenia as well as abroad, the learning process was transferred to the online environment, which was supported by most teachers (Dragoshi, Kapllanaj, & Zeneli, 2020).

There are many advantages of distance education which have already been researched in Latvia (Katane, Kristovska, & Katans, 2015). The researchers in Slovenia have come to similar results (Hrenko Podergajs & Osrtman Renault, 2010). Despite some concerns about the equivalence of learning outcomes between the two teaching methods and the satisfaction with distance learning, several studies have shown that learners are satisfied with distance learning (Allen, Otori, Cole, & Burrell, 2019). They also found that there are no differences in successfulness between learners, depending on whether they are distance

learning or not (Hrenko Podergajs & Osrtman Renault, 2010). As a result, the number of learners who use this way of learning has been increasing recently (Drobnjak & Jereb, 2007) and that is why many colleges and universities are interested in how to best deliver course content for online learners (Dumford & Miller, 2018). The learner can plan his/her learning schedule and thus reduce costs (transport to school, food ...). Well-prepared learning materials encourage the learner to think, be creative, and look for sources of information more broadly. This way of learning is also more interesting for learners compared to traditional learning, which additionally encourages and motivates the individual (Anderlič, Antlejš, & Duraković, 2008).

Motivation in education is a very important factor that affects an individual's success. It has an impact on his thinking and behaviour. Distance education requires the teacher an even deeper understanding of the learner's motivation, which helps to form and develop the individual's positive learning experiences (Hartnett, 2019).

Some children feel more relaxed in the home environment, which allows them to be more effective in learning (Učenje Na Daljavo: Prednosti In Slabosti, Ocene. Študija Študentov Priložnosti Za Učenje Na Daljavo, b. d.). Distance education can be a challenge for both learners and teachers (Anderlič, Antlejš, & Duraković, 2008). By prior arrangement with the lecturer and participants, the lesson can also be recorded during teleworking to allow those who were not present to make up for the missed subject matter with an appropriate explanation. The web provides access to many learning materials and is a widely available source of information that can be obtained in an easy and fast way (Učenje Na Daljavo: Prednosti In Slabosti, Ocene. Študija Študentov Priložnosti Za Učenje Na Daljavo, b. d.). At the time of the outbreak of the epidemic, RTV Slovenia also came to the aid with informative and educational content. They broadcast programs, for example, Izodrom (Izodrom, 2020), How to write an official/unofficial apology/invitation/message? (Kako se napiše uradno/neuradno opravičilo/vabilo/sporočilo?, 2020) and Young to young (Priprave na maturo in učenje ter študij na daljavo, 2020), which helped learners facilitate the acquisition of the subject matter and the course of the learning process. Besides, most of the participants prefer to attend the online lessons regularly because of availability concerns, traveling, and comfort of their home (Saltan, 2016).

The disadvantages of distance education are most often reflected in the lack of control over the individual, so self-discipline is important (Anderlič, Antlejš, & Duraković, 2008). With a lack of self-discipline, distance education can be ineffective and unsuccessful. This is particularly noticeable in younger students who need more encouragement and help from adults to stay focused on the subject matter (Učenje Na Daljavo: Prednosti In Slabosti, Ocene. Študija Študentov Priložnosti Za Učenje Na Daljavo, b. d.).

Another problem is the lack of social contact, which is very important for everyone because humans are social beings and we need it. One-way communication predominates between the student and the teacher in distance education, where the teacher explains the subject matter and the learner is a passive listener. Not all participants in the pedagogical process have the same opportunities to access the technology needed to carry out the learning process. The reasons for this are diverse (number of users, the financial situation of the family). A survey conducted by PISA found that more than 90 % of learners in Europe have access to relevant technology, while in other parts of the world less than 50 % (PISA, 2020).

The implementation of examination and assessment of knowledge is also more demanding, as course providers find it more difficult to control the correctness of assessment, and for learners, this represents additional stress and burden (Anderlič, Antlejš, & Duraković, 2008).

It is necessary to adjust the assessment method during the epidemic. All the learners need to be familiar with new assessment methods and criteria, and teachers need to find parallels between classical assessment and distance assessment. A smaller amount of learning material is recommended. It is essential that the student can improve the product or evidence of what has been assessed based on feedback (Zavod Republike Slovenije za šolstvo, 2020).

Considering technical capabilities and contacting all learners is also important and we need to pay special attention to students with special needs (Kinash, Birt, & Judd, 2019). Also, the ethical aspect of distance learning is important. Both teachers and students must strive for a positive, respectful attitude and nurture positive values (Thompson, 2019).

The inability to access libraries also caused a problem during distance education at the time of the outbreak of the epidemic. It should be emphasized that libraries support distance learning, but they also face some challenges, as they want to ensure the widest possible access to materials for all learners which is not always possible (Fabbro & Rempel, 2019).

At the time of the outbreak of the epidemic, many teachers were forced to face distance education and one such teacher is a teacher from the primary school in Zagorje, who also shared her experience with the public (Učenje na daljavo, 2020). She stressed that students lack physical contact with teachers and feedback on their knowledge. Especially with younger students, parents are actively involved in the learning process, as they need more help and support, which can be very burdensome for parents (Šašek & Volčič, 2020). The experience of other schools with distance education was also reported on the RTV Slovenia program. Among other things, the teachers at the Elementary School Bojan Ilich in Maribor introduced themselves, pointing out the problems they face when working from a distance and how they deal with problems (Učenje na daljavo, 2020).

3 Research

3.1 Method and sample

One of the positive features of the web is a new way of collecting data. The online survey could replace the traditional way of collecting data soon, as it offers researchers many positive effects. It offers us systems that are affordable and verifiable. If we research in that way it is easier to get feedback (Kaye & Johnson, 1999).

The acquired survey data was analysed using descriptive and inferential statistics where were used only test differences between groups of respondents. The decision to use χ^2 test was strait forward and in accordance with methodology (Kožuh, 2010).

A quantitative research method was used to analyse the current situation and satisfaction with distance education during the epidemic between pupils, high school students, and students in universities studying in Slovenian educational institutions. We used a measuring instrument – a questionnaire consisting of 9 closed and combined questions. There were several possible answers to some questions. Questions ranged from general questions about distance education to more specific questions about the satisfaction of distance education. The questionnaire was published and distributed via the web portal for the survey questionnaires (www.lka.si). The weblink to the survey questionnaire was viewed by 5448 respondents and completed by 2633 respondents from Slovenia (- 833 primary school students, 1004 secondary school students, and 796 university students). The sample was selected randomly. Data were collected in the period between 8 to 22 May 2020. Based on results we used descriptive statistics (percentage, average mean) and inferential statistics (chi-square).

Table 1: Sample by gender and age

Gender	Age			Total
	Less than 10 yr	10 – 20 yr	20 – 30 yr	
Male	83	454	145	682
Female	130	1308	521	1959
Total	213	1762	666	2641

Table 2: Sample by gender and education

Gender	status			Total
	Primary school	Secondary school	Tertiary education	
Male	308	195	179	682
Female	530	811	618	1959
Total	838	1006	797	2641

The survey involved 74 % of female respondents and 26 % of male respondents.

3.2 Results

Based on the survey it was found that about 90 % of respondents had not yet been familiar with distance education before the outbreak of the epidemic. The student population had the most experience with distance education. Of the 10 % of respondents who were already acquainted with distance education, most of them became acquainted with it as part of education, while other respondents became acquainted with it through various media, through personal experience or abroad.

Table 3: Students experience with distance education before the Corona pandemic

Level of education	Prior experience with distance education		Total
	Yes	No	
Primary education	67 8 %	771 92%	838
Secondary education	88 8.7 %	918 91.3 %	1006
Tertiary education	99 12.4 %	698 87.6 %	797

The χ^2 statistic has shown that there is a significant difference between groups in the question of prior experience ($\chi^2=10.62$; $p=0.005$). At the tertiary level of education there was more experience with distance education but no more than 12.4 % according to the sample.

In our research, we wanted to know in what ways the students used different services for distance education. The selectable options were e-mail, e-courses (in LMS), and videoconferences. Not surprisingly tertiary education was significantly different than the rest of the education population in any given type of distance education.

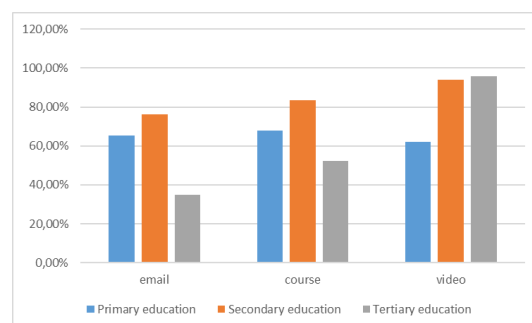


Figure 1: Use of different types of web services for distance education

The χ^2 statistic has shown that there is a significant difference between groups in the question of using e-mail ($\chi^2=326.57$; $p=0.000$); e-course ($\chi^2=203.48$; $p=0.000$) and videoconferences ($\chi^2=464.29$; $p=0.000$).

The most common way of distance education during the epidemic was via videoconferencing, but it was not possible to identify the predominant way of learning in primary school children. The pedagogical process took place via e-mail, online classrooms, and

videoconferencing. For secondary school students, classes were mostly via videoconferencing and online classrooms, and little less via e-mail. However, the use of videoconferencing was very common among the tertiary student population (more than 95%). Respondents stated that in addition to the aforementioned methods, they also used several web portals (Arnes, E-assistant, Google Drive, Google Classroom, Lopolis), e-textbooks (lilibi.si), websites of educational institutions, social networks and telephones.

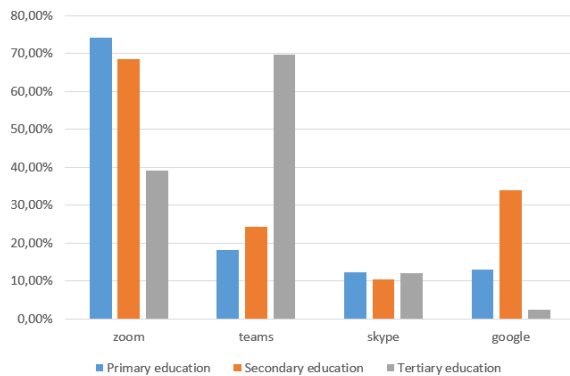


Figure 2: Use of the videoconferencing system in education

The χ^2 statistic has shown that there is a significant difference between groups in the question of using videoconferences services in Zoom ($\chi^2=210.69$; $p=0.000$); MS Teams ($\chi^2=486.02$; $p=0.000$); Google meeting ($\chi^2=291.80$; $p=0.000$); but not in the use of Skype ($\chi^2=1.98$; $p=0.372$).

Nearly half of the respondents used the Zoom application, which was prevalent among primary and secondary school students, to conduct video conferencing. Almost 70 % of the tertiary students who completed the questionnaire used Microsoft Teams in addition to the Zoom application. Respondents also mentioned other apps like Cisco WebEx, Jitsi.org, Gotomeeting, Google hangouts, Viber, Discord, Google Classroom, Google Drive, Moodle, BigBlueButton, WhatsApp, Outlook, Quizlet, E-assistant, iCloud, Messenger, Wiziq, CCC Confer, Instagram, and Facebook. Respondents most often mentioned the independent organization of learning time as the advantage of distance education (50 %), followed by work in the home environment (34 %). Some also liked the independent choice of learning method (9 %), but also pointed out the cost-effectiveness and accessibility of distance learning, improving their knowledge of information and communications technology, adjusted schedule, and assessment.

Table 4: The advantages of distance education.

Level of education	Time control	Learning style	Home environment	other
Primary education	404 48 %	107 13 %	264 32 %	63 7 %
Secondary education	619 62 %	76 8 %	252 25 %	59 5 %
Tertiary education	301 39 %	42 5 %	394 50 %	60 6 %

As expected, there are significant differences between groups ($\chi^2=162.07$; $p=0.000$).

Distance education brings some disadvantages, which were also mentioned by the respondents. Their biggest problem was the lack of explanation and misunderstanding of the subject matter (43 %), as well as the lack of conversation and communication between teachers and learners (33 %). Respondents also listed poor organization and the lack of information and adjusted schedule of the pedagogical process and assessment, a change in the learning environment, and technical difficulties as disadvantages.

Table 5: The disadvantages of distance education.

Level of education	Communi-cation	Feed-back	Explanation (misunder-standing)	Other
Primary education	297 35.4 %	68 8.1 %	391 46.7 %	82 9.8 %
Secondary education	264 26.2 %	136 13.5 %	517 51.4 %	89 8.8 %
Tertiary education	300 37.6 %	137 17.2 %	236 29.6 %	124 15.6 %

There are significant differences between groups ($\chi^2=119.18$; $p=0.000$). The data shows interesting things on this topic of research. Secondary education students do not particularly miss communication, but they do need explanation. In primary schools, students almost do not miss the feedback, but they do need communication and explanation. Tertiary students miss communication at a higher percentage than any other type of nuisance of distance education.

More than 60 % of all respondents stated that they needed more time for learning while distance learning than during the learning process in educational institutions. The same percentage of respondents also commented on the workload, namely that they felt more burdened by distance education. It turned out that half of the respondents are still satisfied with the implementation of the distance education process because of all the advantages that this way of working brings. The slightest satisfaction with distance education was by the students. Nevertheless, more than 60 % of respondents still wanted to be able to continue with the classical way of learning within educational institutions.

Table 6: Time needed for learning (no significant differences between groups ($\chi^2=59.59$; $p=0.000$).

Level of education	Do you need less time for studying while distancing education?		
	Yes	No	Total
Primary education	397 47.4 %	441 52.6 %	838 100 %
Secondary education	369 36.7 %	637 63.3 %	1006 100 %
Tertiary education	231 29 %	566 71 %	797 100 %

Despite most of the respondents agreeing they have more workload in distance learning, there are significant differences between groups. Primary schools' students were fairly equally subjected to the workload as in schools whereas this is not true for the other two groups.

Table 7: Workload due to school obligations ($\chi^2=35.08$; $p=0.000$).

Level of education	Do you perceive more workload?		
	Yes	No	Total
Primary education	435 51.9 %	403 48.1 %	838 100 %
Secondary education	648 64.4 %	358 35.6 %	1006 100 %
Tertiary education	506 63.5 %	291 36.5 %	797 100 %

During the corona lockdown weeks, we could hear many experts saying that students were getting bored with distance learning. The data shows that students were generally pleased with distance education. There are significant differences between groups where we could see that secondary school students were less satisfied with distance education than the other two groups.

Table 8: Satisfaction with distance education ($\chi^2=11.45$; $p=0.003$).

Level of education	Are you generally pleased with distance education?		
	Yes	No	Total
Primary education	500 59.7 %	338 40.3 %	838 100 %
Secondary education	522 51.9 %	484 48.1 %	1006 100 %
Tertiary education	450 56.5 %	347 43.5 %	797 100 %

Table 9: Wishes about continuing distance education in the future - no differences between groups ($\chi^2=1.62$; $p=0.432$).

Level of education	Would you like to continue with distance education?		
	Yes	No	Total
Primary education	337 40.2 %	501 59.8 %	838 100 %
Secondary education	375 37.3 %	631 62.7 %	1006 100 %
Tertiary education	306 38.4 %	491 61.6 %	797 100 %
Total	1018	1623	2641

Conclusion

At the time of the outbreak of the Covid-19 virus epidemic, teachers and learners, were forced to change the way of schoolwork and adapt it to the current situation. We encountered many advantages of distance education, but also disadvantages. In the research we conducted, we found that very few learners encountered distance education before the epidemic. Later, the learning process was quickly transferred to the online environment with teachers using various ways to conduct lessons (videoconferencing, online classrooms, email, web portals, e-textbooks, social networks). The most popular video conferencing applications were Zoom and Microsoft Teams. Based on their experience, the learners cited as an advantage of the possibility of independently organizing time and work in the home environment, as well as the accessibility and cost-effectiveness of education. Disadvantages included a lack of conversation, communication, and explanation of the subject matter, as well as technical complications and a lack of feedback on independent work. Learners spent more time learning during the time of distance education and therefore felt more burdened. In general, they were satisfied with the distance education process, but they wanted to return to school.

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srednjega strokovnega, srednjega poklicnega
in nižjega poklicnega izobraževanja.*
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