The Influence of the COVID 19 to the Future of Learning

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Abstract - In the years of COVID 19 pandemic we have changed the education. Though we wanted to change only the way we teach, study and learn we have changed ourselves. May studies have been done about the drawbacks of the distance education, videoconferencing and social interaction. Much less were focused to the benefits of the changed learning environment. In the short time we have learnt how to use tools for remote work. We have become masters of videoconferencing and in the education, teachers produce a lot of learning materials. But what good comes to the students. Do they miss something from COVID 19 pandemic? The research of the educational study programs' students has shown differences between students' groups. Students from the first year of study much more like to communicate with the teachers in person than the those from later years. Though the communication method seems to be different between students of Faculty of Education and Faculty of Arts, statistical analysis has not confirm this. Interestingly we have discovered that students like e-mail communication the most but they are really patient for the reply (up to 4 days). The very good finding is that students do not expect technically related problems in the case of another lockdown.

Keyword – Education, ICT, Covid-19, Benefits

I. INTRODUCTION

Many studies have been performed during and after the COVID 19 lockdown. In general, we can see that the society managed to function well during such events but there are certain drawbacks of the remote work. Many psychologists warned us of long-term effects on younger population which were unable to develop social skills for two years and this would follow them through the education and life. On the other hand, lock down rapidly increased the ICT competences of students and teachers alike. It would be wasteful to forget these acquired competences. Who can assure us that the next lockdown is not just around the corner?

Was it all bad, is the question that resonate in the heads of many previously highly ICT competent teachers? We cannot support these thoughts. One thing is sure, digital communication competences increased and the education system becomes more resilient not just in our country but also in the other EU countries [1] [2] [3]

It is evident that we, as a society, need to change. This change still needs to find the optimal balance between quality of education and sustainability, particularly in the area of green transition [4] [5]. The two years of COVID-19 lock down may not be enough to really master the ICT

in education. We generally did not start as proficient users and the first year was the introduction and learning how to use ICT in education. For those who had used ICT previously this was not a problem and they could start the search for the effective strategies to employ ICT for the best performance. Never the less most of the users (teachers and students) alike were the beginners and they need a lot of time just to master ICT. The second year was the one where these users could start exploit the benefits of ICT. These may be the reasons that in general the lockdown was perceived as the best of the worst options. The teachers who have managed to master ICT started to see the full potential of its use in education [6] and they prepare the list of the needs for the efficient use of ICT in education [7]

Most of the problems was detected in the area of primary education. But we have signs that even in less developed countries the benefits of extensive use of ICT in education is shown [8]. Rapid development of the tools that support the online learning and videoconferencing was evident during COVID-19 lockdown. In our country teachers could use Zoom or MS Teams. Most of teachers opted for Zoom because it did not demand a lot of learning. Those who were more skilled opted for MS Teams which later give them complete solution [9]. In the higher levels of education, the MS Teams was adopted and exploited in full [10]. On the other hand, we could not exploit the hybrid education due to the lack of suitable equipment in our classrooms and insufficient skills to overcome the emerging onsite technical glitches. [11]. The significant changes between education institutions were detected in the different use of learning materials [12] and the students did differentiate according to their learning preferences (visual, reading and auditory kinaesthetic learning styles; have statistically significant influence on grades on some study subjects in high school students) [13]

II. THE RESEARCH

After the COVID-19 our colleagues have agree that lockdown is not a big deal despite they like to be in the classroom much more. We have seen the changes in the student population. They demand more from teachers and they often express they would like to have recording of the lecture. This may be trivial if lectures are performed in the controlled environment (cabinet or home cabinet) but much more demanding in the classroom. Hybrid education just does not work yet. There are many reasons for that but in general only two can emerge as paramount: lack of equipment and personal (mainly negative) attitude toward

two distinctive different group of students that require rapid switching from strategies that work in the classroom and the different for the remote students.

The teachers that have recording of their lectures from the lockdown times find themself in the awkward position. They can give access to the students of these recordings but this means less students in the classroom, therefore the reluctance. Some teachers do not want the recordings because there are things that needs to be said but do not want them to be recorded. Therefore, there are many reasons in favour and against hybrid work.

Described reasons were the foundation of this research. What is the real implication of COVID-19 lockdown on our students from a longer perspective? We have educational study programs students and they will need ICT competences in their work. We could focus to the extensive research but we decide to focus only on three most obvious topics: communication, remote work; and personal opinion. As previously noted, the communication skills increased. Students are much more competent in the communication and they provide better content in the communication. In the remote work we wanted to find out which type of learning materials would they prefer and what was the benefits of the remote work. Many companies have decided that remote work is their future; hence students need to sustain these competences. The last topic is the focused to detect the reluctance to the distance work and what would be the most problematic issue for them.

The questionnaire was sent to the students of Faculty of Arts and Faculty of Education and as expected we have limited success in the acquisition of the data. Nevertheless, we acquire enough data to get sufficiently valid statistical results. From the classification data we could made statistical analysis from groups that were large enough to conduct suitable statistical tests.

The most important learning materials for our students is still the textual learning materials. Video learning materials are little below average and interactive learning materials are in the last place. These feedbacks are not entirely expected but could be guessed. The text can be read fast, skipped and searched; video learning materials on the other hand, are more time consuming. If not properly edited into small segments and indexes, they just take too much time for our students. Video clips that are viral are few seconds long and this is all what students are willing to sacrifice of their precious time.

III. RESEARCH OBJECTIVES

The main research objective was to gain insight into how the students who went through the pandemic developed attitudes toward electronic communication and online study. Further, the aim was to test the differences in the primary objective between students in the 1st year of study and older students from the Faculty of Education and Faculty of Arts. The focus of the research was set on:

- The attitude toward email communication
- Behaviour during the email communication
- Preferred types of communication

- The opinion about eventual return to "online" study

A. Methodology & data collection

The online survey was used to collect data and comprehend questions about the attitude toward email communication and behaviour during the communication and popularity of various types of electronic communication. The survey participants were students in the academic year 2022/23 from the Faculty of Education and Faculty of Arts in Maribor, Slovenia. The balanced sample includes 110 students, about 45 from each institution. Only valid responses were analysed due to some incompletely answered or skipped questions. Data were processed using SPSS statistical software. The statistical methods of descriptive statistics, chi-square test, and chosen non-parametric tests were used to analyse the rating scales.

IV. RESULTS

B. Preferred forms of communication with the teachers by the year of study

TABLE I: FORM OF COMMUNICATION PREFERENCES

Which form of communication with the teachers do you prefer?	Year of study	
	1st	2nd to 5th
personal	21 (48,8%)	12 (28,6%)
electronic	1 (2,3%)	9 (21,4%)
personal and electronic equally	21 (48,8%)	21 (50,0%)
$\chi^2 = 8,844$, df = 4, $p < 0,05$. Numbers in parentheses indicate column percentages		

Personal communication is preferred by first-year students more than by older and more experienced students (TABLE I). The difference in opinions between both groups of students is statistically significant. Concerning the many years of our teaching experience, we assume that the reason regarding younger students is inexperience or insecurity while they electronically communicate with yet fewer known teachers. Or even the fear of making mistakes and possible consequences. Compared to the personal communication type, both the younger and more experienced students prefer the combination of personal and electronic communication equally. The results are somewhat unexpected because the general opinion about millennials is that they master and prefer electronic communication more than personal communication. On the other hand, some researchers are showing that the most preferred way of communication is still close personal contact (Bratina, 2019). Therefore, we expect that electronic communication will never become primary but will coexist with the personal form.

C. Preferred forms of communication with the teachers by the faculty

TABLE II: FORMS OF COMMUNICATION WITH TEACHER

Which form of communication with the teachers do you prefer?	Year of study	
	Faculty of Education	Faculty of Arts
personal	19 (47,5%)	11 (33,3%)
electronic	3 (7,5%)	2 (6,1%)
personal and electronic equally	18 (45,0%)	20 (60,6%)
$\chi^2 = 1,794$, df =4, $p > 0,05$. Numbers in parentheses indicate column percentages		

The Faculty of Education and the Faculty of Arts differ in the content of their study programs. The first educates future teachers, while the latter educates experts in various social science disciplines. From this point of view, we expected a different perception of each form of communication. The results show no statistically significant differences between students of both faculties (TABLE II). Despite this result, slightly less than half of the students, future teachers, prefer personal communication, against about a third of the students from the Faculty of Arts. We believe future teachers understand the importance of personal communication better than others. The indication of the mentioned fact is more significant share (60,6 %) of students from the Faculty of Arts prefer a combination of personal and electronic communication. The result is interesting, as we expected a much more similar attitude from all students.

D. The expected time for the recipient to reply to the message

TABLE III: TIME TO REPLY

How fast do you expect the reply to the message	f	f%
Immediately or in a few hours	9	10,5
One day	27	31,4
Two to three days	21	24,4
Four days	27	31,4
One week	2	2,3
Total *	86	100
*valid cases only		

Students are willing to wait between one and four days for a response to the message (TABLE III). About 10 % students are very impatient, which we think depends on the importance of the matter. There is a very small percentage of students who are willing to wait a week for a response. In today's very dynamic time, a message is outdated after a week or more. Additional analyse show no differences between younger and older students in expected time for reply. But there is a statically significant ($p < 0,05$) difference between students in the two faculties in their willingness to wait for the reply to the message. Almost half of the students (45 %) of the Faculty of Education are willing to wait for one day, while 18,2 % of the students of the Faculty of Arts have the same opinion. About 27,5 % of Faculty of Education students and 18,2 % of Faculty of Arts students are willing to wait between two to three days. However, only a quarter of the Faculty of Education students and about 40 % of the others would wait four days for the reply. We believe that the expected time is shorter for students in the Faculty of Education because future teachers know how important quick feedback is for pupils. Moreover, timely responses to questions about the learning content and other phenomena or complications are crucial in the learning process.

E. Types of communication close to the students

Among the listed types of communication presented to the students, email is the most often chosen type (61,9 %). Followed by Chat (19 %) and phone calls (11,9 %). Even though widely used apps like WhatsApp and Viber allow quality video calls, it was selected by only 3,6 % of students. The result is unexpected and hard to explain. Our first thought is that the reason may be a fear of the expensive data volume consumed, which is inaccurate due to the technical processing of compression. It is likely the kind of behaviour preferring textual messaging instead of visual [14]

TABLE IV: COMMUNICATION PREFERENCE

Which type of communication is closer to you?	Year of study		Faculty	
	1st	2nd to 5th	Faculty of Education	Faculty of Arts
Phone call	7 (16,3%)	3 (7,3%)	6 (15,0%)	4 (12,1%)
Email	24 (55,8%)	28 (68,3%)	24 (60,0%)	20 (60,6%)
Chat	9 (20,9%)	7 (17,1%)	7 (17,5%)	6 (18,2%)
Video call	2 (4,7%)	1 (2,4%)	3 (7,5%)	0 (0,0%)
$\chi^2 = 2,836$, df = 4, p > 0,05.			$\chi^2 = 8,489$, df = 4, p > 0,05.	
Numbers in parentheses indicate column percentages				

Email, as the type of communication closest to students, predominates regardless of the year of study or faculty (TABLE IV). The percentage ranges from 55 % to 61 % in both criteria groups. Chat is the second closest type of communication to the students, but it does not get past a share of just over 20 %. Video call appears to be the least used type of communication, though it is slightly more popular among younger students and future teachers.

F. Going back to "online" study

We asked students to rate their agreement with the statement that eventual returning to online study would disappoint them. They rated on a 5-point scale from "*Does not apply to me at all (1)*" to "*Applies to me completely (5)*" Only valid cases are included in the analysis.

TABLE V: BACK TO ONLINE DISAPPOINTMENT

Going back to "online" study would disappoint me	Institution	N	$\bar{R}$	U
	Faculty of Education	39	36,59	523,000
	Faculty of Arts	30	32,93	
*p < 0.05. Valid cases only				
Going back to "online" study would disappoint me	Year of study	N	$\bar{R}$	U
	1st	41	43,66	629,000
	2nd to 5th	38	36,05	
*p < 0.05. Valid cases only				

The majority of students are undecided (neither/nor; M = 3.15) regarding a possible return to online study. The differences between students of the two faculties nor between younger and older students are statistically not significant (TABLE V). About 39.3 % of students completely agree with the statement, while about 35.5 % completely disagree. Based on our experience working with students, we think the results are surprising. Students often tell teachers that they would rather work online than attend lectures.

G. Expecting technical difficulties if back to "online" study

We also asked students to rate their agreement with the statement that they will deal with the technical difficulties in case of returning to the "online study". They rated on a 5-point scale from "*Does not apply to me at all (1)*" to "*Applies to me completely (5)*" Only valid cases are included in the analysis.

TABLE VI: Back to online technical problems

Going back to "online" study would disappoint me	Institution	N	$\bar{R}$	U
	Faculty of Education	39	38,27	475,500
	Faculty of Arts	30	30,75	

*p < 0.05. Valid cases only

Going back to "online" study would disappoint me	Year of study	N	$\bar{R}$	U
	1st	41	45,70	545,500*
	2nd to 5th	38	33,86	

*p < 0.05. Valid cases only

Students generally believe they will not have technical problems when they eventually return to online study (M = 2,15) (TABLE VI). The results show that younger students are more likely to anticipate problems than older students. We suspect that younger students were better supported by their parents during the pandemic. Therefore, it would be more difficult for them to deal with eventual technical problems now. However, we find no differences in the assessment of expected problems between students from both faculties.

V. Conclusion

The research has shown that we could transit to the possible future lockdown with the ease. Students use different types of the communication; even different for interpersonal and communication with teachers. The later – formal communication is mostly done with the e-mails. But in reality, they mostly chat by typing (on the phone). The feedback from the younger students have shown that we have missed one type of the communication in our research – voice messages. This just shown the generation gap is all present. Video calls are almost non-existent option in the communication with the teacher and among students.

The interesting discovery is that students are very patient regarding the response from the teachers (up to four (4) days). But there is statistically significant difference between students. Students of Faculty of Education is little more impatient than students from the Faculty of Arts. The feedback in the education is of paramount importance and in the lower levels of the education needs to be faster. This could explain the perceived differences between two students' groups.

The good thing is that student acquired enough technical skills to overcome the possible technical difficulties in the case of new lockdown or remote work. On the other hand, students are equally divided between being disappointed or not being disappointed in case of lockdown or online work.

To our disappointment we could not extract any relevant information what the students would like to retain from the COVID-19 lockdown. As expected, the most valued thing was the time allocation, followed by home environment, and learning material in text format. Others are less important. Even video lectures are below average important. It is interesting that the good old text is still "the king" in the tertiary education. From the comments about what should be used, that have been learned in the lockdown period, in the contemporary education, we could not see any dominant feature. In a conclusion we could just

state that education system is resilient and highly adaptable if needed.

Nevertheless, it would be very interesting to expand this research to more study programs and educational institutions worldwide.

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