REMOTE TEACHING DURING THE SARS-COV-2 PANDEMIC: WHAT DO THE STUDENTS SAY?

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Abstract

Due to the SARS-CoV-2 pandemic, the faculties have been met with the task of modifying the traditional teaching environment to remote teaching. During two semesters of remote teaching, the students of the Department of Psychology from the Faculty of Humanities and Social Sciences of University of Mostar have been assessing their skills of using technologies, their motivation for class attendance and assignment completion, as well as their time management skills; they have evaluated the teaching process, reported on technical difficulties and assessed the general satisfaction with the remote teaching process. The results of this research show that students have shown a greater assessment of skills of using technology during the second semester of the remote teaching process, while no difference was established in the level of motivation for class attendance and assignment completion, and no difference was found in time management skills between the two semesters. As far as the satisfaction with remote teaching is concerned, the students marked the teaching process with an average grade of "very good" in both semesters, although the mark "excellent" was given more frequently in the second semester than expected per case. The average grade of satisfaction with the teaching process offers insight into the efficacy of adaption to remote teaching, and also opens up space for further improvement.

Keywords: *students; remote teaching; emergency remote teaching; e-learning; digital transformation; quality of teaching; COVID-19; SARS-CoV-2 pandemic.*

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Introduction

The end of 2019 was marked by the emergence of a virus infection which spread fast among individuals in close contact. Virus SARS-CoV-2 (*Severe Acute Respiratory Syndrome Coronavirus-2*) which causes the COVID-19 disease was identified for the first time in Wuhan, China. At the start of 2020 it began spreading across all continents and soon became a pandemic (Remuzzi & Remuzzi, 2020). Up until now a couple of million people died as a consequence of being infected with the virus. It can be said that SARS-CoV-2 has caused the biggest health crisis in the last hundred years and has affected change in the economic, social, educational and other areas of human operation (Mishra et al., 2020).

Due to the growth of the pandemic caused by the SARS-CoV-2 virus, educational institutions have been closed in order to contain the spread of the virus. At the same time there was a change in the way of teaching and it was supposed to be transformed from the traditional to remote teaching. The transition to the new model of teaching was the only option, because it was not known how long the pandemic would last, namely how long the educational institutions would be closed (Martinez, 2020). The implementation of remote teaching was backed strongly by UNESCO in order for everybody to have access to education regardless where they are and in what conditions they are in (Suryaman et al., 2020).

It is a firmly established assumption that no pedagogical approach can replace the traditional formal education and professor-student interaction (Mishra et al., 2020). However, due to the SARS-CoV-2 pandemic a shift from the traditional towards more modern approaches of teaching via different online communication platforms needed to be made. The classrooms have been replaced with Zoom and Google Meet applications, the traditional professor-student interaction with a virtual one, and seminars have become webinars (Mishra et al., 2020). Some of the most frequently used online communication platforms that changed the direction of education worldwide during the SARS-CoV-2 pandemic were G Suite, Zoom, CenturyTech, ClassDojo, Edmondo, Edraak, EkStep, Moodle, Nafthma, Schoology and many others (Dhawn, 2020).

Lederman (2020) states that due to the crisis caused by SARS-CoV-2 virus, teachers and students faced a situation in which they were forced to embrace

the remote teaching process. However, in implementing remote teaching, the most significant role was played by the teachers as they are the ones who create and guide the teaching process (Nehme, 2010).

Remote teaching, as all other teaching methods, has its advantages and disadvantages both for students and professors. Besides preventing the spread of infection, other advantages that are important to mention are the availability of teaching material regardless of time and location, reduced costs of the teaching process etc. (Chumley-Jones et al., 2002; Gibbons, 2000; Horton, 2001; Rosenberg, 2001).

The success of remote teaching depends on multiple factors, including suitable teaching methods, the content that is being taught, and the accomplishment assessment methods (Bacek et al., 2021). Research shows that students who were involved in remote education have better accomplishments than during educations that were conducted in a traditional way (El-Seoud et al, 2014).

Remote teaching has its limitations as well. Difficulties with Internet access, poor Internet connection quality, poor skills in using electronic devices or poor skills of using remote teaching technologies are some of the technical difficulties that can have a negative impact on remote learning participation (Adedoyin & Soykan, 2020; Attardi & Rogers, 2015; Bediang et al., 2013; Dhawn, 2020; Dyrbye et al., 2009; Neibuhr et al., 2014; Song et al., 2004). Dahwn (2020) states some other problems connected to remote learning and teaching: issues with downloading software that is being used for instruction, issues with installing programmes or applications, issues with logging in, issues with sound or video, etc. Certain number of students can have issues as they do not have the opportunity to own a personal computer or a high-quality Internet connection because of their socio-economic status (Adedoyin & Soykan, 2020; Fishbane & Tomer, 2020). Class participation can be aggravated by other family members or pets that distract students or physically disrupt them (Manfuso, 2020). Because of time flexibility which is available in remote learning, it may happen that students are not able to "find" the time to study. Time flexibility poses a special problem for students who have difficulties in self-regulation and in self-regulation studying (Bacek et al., 2021). Parkes et al. (2014) state, based on research results, that students have difficulties in balancing their academic, family, social and work functioning when they are subjected to remote learning.

Furthermore, a two-way communication and interaction is sometimes difficult to achieve using remote teaching tools (Nehme, 2010; Song et al., 2004). Content which is taught through remote teaching is mostly theoretical and does not enable students to practise and study efficiently through experience (Song et al., 2004). The application of technology in education (remote teaching) does not guarantee motivated students (Al-Shara, 2015). Concreteness, humour, pauses and storytelling are just some of the techniques which Taran (2005) suggests to teachers. Those techniques can help in attracting and maintain students' attention and consequently they can have a positive effect on a higher level of motivation in students. Although the reasons why students are in the educational process are to learn and successfully pass their exams, still difficulties and failure can occur (Nehme, 2010). Low level of intrinsic motivation is connected to a lower level of class activity, poorer skills of self-regulated studying, shorter time of active studying which can lead to poorer learning outcomes (Kim & Frick, 2011).

IT Centre of the University of Mostar was founded in December 2017 by an act by the Board of Trustees of the University of Mostar with the aim to provide support to the educational and academic community in using information-communication technologies. SUMIT has become recognisable by continued ensuring of stable and qualitive work of the e-infrastructure of the University of Mostar. At the beginning of 2020 the University of Mostar (SUM) was the only one institution in BiH that had an implemented infrastructure for administering electronic identity. Due to the epidemiological situation connected to SARS-CoV-2 in March 2020 *emergency remote teaching* (Schlesselman, 2020) began to be implemented at SUM. Emergency remote teaching represents the traditional study programme transferred into a virtual environment when the programme, due to exceptional circumstances, cannot be carried out in contact in classroom. A temporary change of the current teaching format (in classroom or mixed type) is transferred into an *online* environment using accessible tools. By returning to a "normal" state, the teaching process is returned to the initial format. Communication channels have therefore been established at SUM, technology to carry out remote teaching has been provided and technical support was ensured to all University teachers. The e-learning system was named SUMARUM. Students and teaching staff were given access to the E-learning portal (eucenje.sum.ba) where manuals, instruction and other useful information connected to e-learning and remote

teaching organisation are stored. Workshops have been held continuously for the teaching staff with the aim of introducing the possibilities and advantages of the e-learning system and virtual environment teaching. Organisation of remote teaching presented a challenge as it was necessary to include both teachers and students into that format of teaching in a very short period. The advantages of remote teaching (absence of time and spatial limitation as with traditional teaching, teaching content can be presented in an inciting and interesting way, easier and simpler interaction with students, ability to track students and give feedback) have been used in order to achieve learning outcomes.

After the completion of the semester in which the traditional teaching process was replaced by remote teaching at the University of Mostar, we decided to analyse the students' perception about the new teaching process format. Hence the research goals were to question students about their skills of using online technologies; motivation for attending remote teaching classes; perception of remote teaching quality; technical difficulties during participation in remote teaching classes; and the overall satisfaction with remote teaching. Furthermore, our goal was to question the differences in using online technologies, motivation, quality of teaching, satisfaction and technical difficulties at the end of the Spring semester of the 2019/2020 and the Fall semester of the 2020/2021 academic year.

Materials and methods

Participants

In the academic year 2019/2020, 50 psychology students participated in the research, 36 of which (72%) were undergraduate students, and 28% of which were graduate students. In the academic year 2020/2021, 68 psychology students participated in the research, 50 of which (73.5%) were undergraduate students, and 18 (26.5%) of which were graduate students. Seeing that two academic years and also an altered student structure are in question, the two samples are treated as independent samples.

Variables and measures

A questionnaire comprising of 21 questions grouped in six categories (Graph 1) which referred to different aspects of remote teaching quality during the pandemic caused by SARS-CoV-2 was constructed for the purposes of the research (Table 1). Question categories referred to giving information about the technologies used for class attendance, motivation for class attendance, personal time management, assessment (evaluation) of quality, assessment of satisfaction and technical difficulties. Three types of questions were used: open-ended questions, Likert scale questions with five points and multiple-choice questions (Table 1).

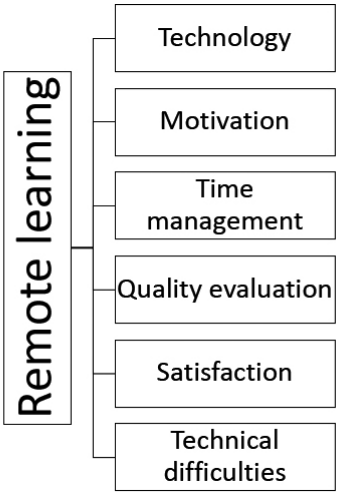
Table 1: Questionnaire about the experiences of class attendance

Question category / Indicators	*Question*
*T1***	*Which technology did you have the opportunity to use for remote learning (SUMARUM, G Suite, Skype, Zoom, YouTube, other).*
*T2***	*Which technology are you pleased with the most (SUMARUM, G Suite, Skype, Zoom, YouTube, other).*
*T4***	*How would you rate your skills of using online technologies (SUMARUM, G Suite, Skype, Zoom, YouTube, other) (very poor…excellent)*
*M1***	*How much are you motivated to attend online classes? (not at all motivated…extremely motivated)*
*M2***	*How much are you motivated to complete your assignments and obligations in remote learning? (not at all motivated…extremely motivated)*
*TM1***	*How would you assess your time management skills for attending classes during this period? (very poor…excellent)*
*QE1***	*Remote learning makes mastering the material more difficult (strongly disagree…strongly agree).*
*QE2****	*In contrast to traditional teaching (face-to-face), remote teaching represents for You (an improvement, a deterioration, other)*
*QE4***	*The quality of remote teaching differs from course to course. (strongly disagree…strongly agree).*

*S1***	*Generally, how much are you satisfied with remote teaching execution? (not at all satisfied…completely satisfied)*
*TD1****	*Have you had technical difficulties in attending online classes so far? (yes, no)*

* Open-ended questions
** Likert scale questions
*** Multiple-choice questions

Graph 1. Model of testing of remote teaching quality



Procedure

Links to online questionnaires have been administered to students of undergraduate and graduate study at the Department of Psychology at the University of Mostar through common email addresses at the end of the Spring semester of the 2019/2020 academic year and through student representatives at the end of the Fall semester of the 2020/2021 academic year. The online questionnaire was created in Google Forms. Measurements have been conducted at the end of the first and the second semester of remote teaching execution. The questionnaire contained a clear instruction about the purpose of the research at the beginning. The instruction explained that the research was anonymous and voluntary and that participants can withdraw at any time and that there were no right or wrong answers. The estimated time to

complete the questionnaire was 10 minutes. It was emphasised that the data would be processed on a group level and that honesty was wanted in giving answers. The last page of the questionnaire contained a thank you note for participation.

Results

Table 2: Data of descriptive statistics on the claims in both measurement points (n1=50; n2=68)

		2019/2020		*2020/2021*	
		N	*%*	*N*	*%*
Do you have the possibility to attend classes online for every course you are enrolled in?	*Yes*	*46*	*12*	*68*	*100*
	No	*4*	*88*	*0*	*0.0*
Which of the following technologies have you had the chance to use in remote learning? (multiple answers possible)	*SUMARUM*	*48*	*96*	*67*	*98.5*
	G Suite	*42*	*84*	*55*	*81.0*
	YouTube	*16*	*32*	*33*	*48.5*
	Zoom	*12*	*24*	*61*	*89.7*
	Other (Viber, Skype)	*2*	*4*	*0*	*0.0*
With which of the previously stated technologies are you satisfied the most?	*SUMARUM*	*15*	*30*	*26*	*38.2*
	G Suite	*28*	*56*	*27*	*39.7*
	YouTube	*5*	*10*	*7*	*10.3*
	Zoom	*1*	*2*	*6*	*8.8*
	Other (equally)	*1*	*2*	*2*	*2.9*
How would you asses your skills of using online technologies?	*Very poor*	*2*	*4*	*2*	*2.9*
	Poor	*3*	*6*	*2*	*2.9*
	Good	*18*	*36*	*11*	*16.2*
	Very good	*19*	*38*	*25*	*36.8*
	Excellent	*8*	*16*	*28*	*41.2*
How much are you motivated to attend online classes?	*Not at all motivated*	*6*	*12*	*11*	*16.2*
	Moderately unmotivated	*6*	*12*	*7*	*10.3*
	Neither motivated nor unmotivated	*9*	*18*	*16*	*23.5*
	Moderately motivated	*17*	*34*	*15*	*22.1*
	Extremely motivated	*12*	*24*	*19*	*27.9*

How much are you motivated to complete your assignments and obligations in remote learning?	*Not at all motivated*	*7*	*14*	*14*	*20.6*
	Moderately unmotivated	*10*	*20*	*8*	*11.8*
	Neither motivated nor unmotivated	*12*	*24*	*7*	*10.3*
	Moderately motivated	*12*	*24*	*23*	*33.8*
	Extremely motivated	*9*	*18*	*16*	*23.5*
How would you assess your time management skills for attending classes during this period?	*Very poor*	*3*	*6*	*10*	*14.7*
	Poor	*10*	*20*	*6*	*8.8*
	Good	*14*	*28*	*16*	*23.5*
	Very good	*13*	*26*	*21*	*30.9*
	Excellent	*10*	*20*	*15*	*22.1*
Remote learning makes mastering the material more difficult.	*Strongly disagree*	*7*	*14*	*17*	*25.0*
	Partially disagree	*13*	*26*	*14*	*20.6*
	Neither agree nor disagree	*12*	*24*	*9*	*13.2*
	Partially agree	*9*	*18*	*14*	*20.6*
	Strongly agree	*9*	*18*	*14*	*20.6*
The quality of remote teaching differs from course to course.	*Strongly disagree*	*5*	*10*	*5*	*7.4*
	Partially disagree	*11*	*22*	*10*	*14.7*
	Neither agree nor disagree	*3*	*6*	*11*	*16.2*
	Partially agree	*13*	*26*	*22*	*32.4*
	Strongly agree	*18*	*36*	*20*	*29.4*
In contrast to traditional teaching, remote teaching represents for You	*An improvement*	*22*	*44*	*30*	*44.1*
	A deterioration	*15*	*30*	*30*	*44.1*
	Other	*13*	*26*	*8*	*11.8*
Generally, how much are you satisfied with remote teaching execution?	*Very poor*	*3*	*6*	*8*	*11.8*
	Poor	*5*	*10*	*5*	*7.4*
	Good	*13*	*26*	*16*	*23.5*
	Very good	*25*	*50*	*22*	*32.4*
	Excellent	*4*	*8*	*17*	*25.0*
Have you had technical difficulties in attending online classes so far?	*No*	*22*	*44*	*21*	*30.9*
	Yes	*28*	*56*	*47*	*69.1*

While being involved in remote learning, students had a chance to use the remote learning system SUMARUM (96% in the first semester, 98.5% in the second semester of remote teaching execution), G Suite (84%, 81%), YouTube (32%, 48.5%), and Zoom (24%, 89.7%).

In both the first and the second semester of remote teaching execution, the highest percentage of students reported that they were pleased the most

with G Suite (56%, 39.7%), while 30% of students in the first semester and 38.2% of students in the second semester were pleased with the remote learning system SUMARUM. 10% of students in both the first and the second semester were pleased with the application Zoom the most.

In order to understand differences between frequencies of certain answers offered, chi-square tests were used on claims which were assessed on a Likert scale with five points, for both measurement points. To the claim "How would you rate your skills of using online technologies?" for the first point of measurement a statistically significant difference between the frequencies of answers offered was found (χ^2=26.2; df=4; p<0.01). There was a higher number of "good" and "very good" and a smaller number of "very poor", "poor" and "excellent" answers than it would be expected per case. For the second point of measurement to the same claim a statistically significant difference between the frequencies of answers offered was found as well (χ^2=45.09; df=4; p<0.01). There was a higher number of answers of "very good" and "excellent" and a smaller number of answers "very poor", "poor" and "good" than it would be expected per case.

To the claim "How much are you motivated to attend online classes?" for the first point of measurement no statistically significant difference between frequencies of answers offered was found (χ^2=8.5; df=4; p=.072) regarding what would be expected per case. For the second point of measurement as well no statistically significant difference between answers offered was found (χ^2=1.8; df=4; p=.772) regarding what would be expected per case.

To the claim "How much are you motivated to complete your assignments and obligations in remote learning?" for the first point of measurement no statistically significant difference between frequencies of answers offered was found (χ^2=6.41; df=4; p=.170) regarding what would be expected per case. For the second point of measurement a statistically significant difference between the frequencies of answers offered was found (χ^2=12.441; df=4; p=.014). There is a higher number of answers "not at all motivated", "moderately motivated" and "extremely motivated" than it would be expected per case.

To the question "How would you assess your time management skills for attending classes during this period?" for the first point of measurement no statistically significant difference between frequencies of answers offered was found (χ^2=7.40; df=4; p=.116) regarding what would be expected per case. For the second point of measurement a statistically significant difference

between the frequencies of answers offered was found (χ^2=9.80; df=4; p<.05). There is a higher number of answers "good", "very good" and "excellent" than it would be expected per case.

To the claim "Remote learning makes mastering the material more difficult" for the first point of measurement no statistically significant difference between frequencies of answers offered was found (χ^2=2.40; df=4; p=.663) regarding what would be expected per case. For the second point of measurement as well no statistically significant difference between answers offered was found (χ^2=1.8; df=4; p=.772) regarding what would be expected per case.

To the claim "The quality of remote teaching differs from course to course" for the first point of measurement a statistically significant difference between the frequencies of answers offered was found (χ^2=14.80; df=4; p=.005). There was a higher number of answers "partially agree" and "strongly agree" than it would be expected per case. For the second point of measurement a statistically significant difference between the frequencies of answers offered was found as well (χ^2=15.09; df=4; p=.005). There was a higher number of answers of "neither agree nor disagree", "partially agree" and "strongly agree" than it would be expected per case.

To the claim "Generally, how much are you satisfied with remote teaching execution?" for the first point of measurement a statistically significant difference between the frequencies of answers offered was found (χ^2=34.4; df=4; p=.000). There were more "good" and "very good" answers and fewer "very poor", "poor" and "excellent" answers than it would be expected per case. For the second point of measurement a statistically significant difference between the frequencies of answers offered was found as well (χ^2=14.206; df=4; p=.007). There were more "good", "very good" and "excellent" answers, and fewer "very poor" and "poor" answers than it would be expected per case. An examination of participants answers about the most common technical difficulties, in both measurement points poor Internet connection was indicated as the main problem (in 80% of the cases), while difficulties like inability to access the remote learning software and inadequate computer equipment were indicated to a lesser extent.

56% of students in the first semester of remote teaching reported that certain technical difficulties were present, like poor Internet connection and a lack of adequate computer equipment, and 69.1% reported the same in the second semester of remote teaching.

In order to measure the differences between the two semesters in the averages of the given answers, measures of central tendencies and measures of dispersion were calculated, and an appropriate test was used to ascertain the differences. As the measured data are on an ordinal measurement scale, as an indicator of a central tendency the median was used and associated dispersion index – semi-interquartile dispersion. To check the differences a Mann-Whitney U test was used.

Table 3: Data of descriptive statistics of tested particles regarding the measurements in the first and second semester of executing remote teaching (n1=50; n2=68)

	2019/2020		*2020/2021*	
How would you rate your skills of using online technologies?	*C (Q)*	*M (SD)*	*C (Q)*	*M (SD)*
	4 (0.5)	*3.56 (0.97)*	*4 (0.5)*	*4.1 (0.98)*
How much are you motivated to attend online classes?	*4 (0.75)*	*3.46 (1.31)*	*3.5 (1.75)*	*3.35 (1.41)*
How much are you motivated to complete your assignments and obligations in remote learning?	*3 (1)*	*3.12 (1.32)*	*4 (1)*	*3.28 (1.48)*
How would you assess your time management skills for attending classes during this period?	*3 (1)*	*3.34 (1.19)*	*4 (0.5)*	*3.37 (1.33)*
Remote learning makes mastering the material more difficult	*3 (1)*	*3.00 (1.33)*	*3 (1.38)*	*2.91 (1.5)*
The quality of remote teaching differs from course to course.	*4 (1.5)*	*3.56 (1.43)*	*4 (1)*	*3.62 (1.26)*
Generally, how much are you satisfied with remote teaching execution?	*4 (0.5)*	*3.44 (0.99)*	*4 (0.86)*	*3.51 (1.28)*

Table 4: Testing of difference significance in the results to the tested claims regarding the measurements in the first and the second semester of distance teaching with Mann-Whitney U test (n1=50; n2=68)

	2019/2020		*2020/2021*			
	Middle rank	*Rank sum*	*Middle rank*	*Rank sum*	*U*	*p*
How would you rate your skills of using online technologies?	*48.23*	*2411.5*	*67.79*	*4609.5*	*1136.5*	*.001*
How much are you motivated to attend online classes?	*48.23*	*2411.5*	*67.79*	*4609.5*	*1638.0*	*.731*
How much are you motivated to complete your assignments and obligations in remote learning?	*56.72*	*2836.0*	*61.54*	*4185.0*	*1561.0*	*.438*
How would you assess your time management skills for attending classes during this period?	*58.27*	*2913.5*	*60.40*	*4107.5*	*1638.5*	*.731*
Remote learning makes mastering the material more difficult.	*60.89*	*3044.5*	*58.48*	*3976.5*	*1630.5*	*.699*
The quality of remote teaching differs from course to course.	*59.68*	*2984.0*	*59.37*	*4037.0*	*1691.0*	*.478*
Generally, how much are you satisfied with remote teaching execution?	*57.01*	*2850.5*	*61.33*	*4170.5*	*1575.5*	*.478*

To the claim "How would you rate your skills of using online technologies" a statistically significant difference was found regarding the measurement point. Students showed a higher average result in the second measurement point, i.e., they assessed their skills of using online technologies as being better.

To the claim "How much are you motivated to attend online classes?" and "How much are you motivated to complete your assignments and obligations in remote learning?" no statistically significant differences were found regarding the measurement point. Students showed both in the first and the second point an equal amount of motivation to attend online classes and to complete their assignments and obligations.

To the claim "How would you assess your time management skills for attending classes during this period?" no statistically significant differences were found regarding the measurement point. Students showed both in the first and the second point equal skills of time management to attend classes.

To the claim "Remote teaching makes mastering the material more difficult" no statistically significant differences were found regarding the measurement point. It was equally assessed in both points that remote teaching makes mastering the material more or less difficult. To the claim "The quality of remote teaching differs from course to course" there also was no statistically significant difference found regarding the measurement point, which would mean that students' assessments of the difference of teaching quality do not differ between those two academic years.

To the claim "Generally, how much are you satisfied with remote teaching execution?" no statistically significant difference was found regarding the measurement point. Students showed in both points an equal amount of satisfaction with remote teaching.

Discussion

The research wanted to question the perception of students about their skills of using online technologies, motivation for attending online classes, remote teaching quality, technical difficulties during online class attendance and the overall satisfaction with remote teaching in the Spring semester of the 2019/2020 academic year and the Fall semester of the 2020/2021 academic year and to establish the differences between these two measurements.

By surveying the available literature it is noticed that numerous tools for remote teaching are available today (Dhawn, 2020) like Zoom, Google Meet, YouTube. According to the results of our research, the study platform SUMARUM and G Suite have shown to be the most commonly used platforms in remote teaching. Apart from these platforms, YouTube and Zoom were used in teaching, while other platforms for communication have been used to a lesser extent or practically not at all. The results which relate to the e-learning platform SUMARUM are not surprising as the platform was launched by SUM, and teachers were constantly being educated and encouraged to use it for remote teaching. Furthermore, frequent usage of G Suite applications is

also not surprising because the teachers had an access to all Google applications even prior to the pandemic so that they were quite familiar with these tools which facilitated their usage in teaching. Unlike our results, research done by Mishra, Gupta & Shree (2020) teachers used WhatsApp/Telegram and Email the most in remote teaching although they had access to other tools. Google Classroom was used by 32% of the teachers, while 45% of them used Zoom/Cisco WebEx/Google Meet/Skype platforms. The differences between that research and our research can be explained by the fact that SUM was preparing to take a step forward in implementing remote teaching even prior to the SARS-CoV-2 pandemic and SUMARUM platform was created some time before the pandemic. In a situation when the demand for emergency remote teaching arose due to extraordinary circumstances, a temporary change of the current forms (classroom teaching or mixed type) into remote teaching, by using available tools, was possible and a very short period was needed for its initialization.

By analysing the answers about the assessment of satisfaction by the remote teaching technologies offered by the teachers, the students were more satisfied with the G Suite package than with SUMARUM in the first semester of remote teaching. Google Apps for Education (GAFE) is a strong cloud-computing solution which students and teachers can use regardless of their location, time or device they are using. GAFE is being used across the world and it has been proved to be an efficient tool both for students and higher education institutions and the primary aim of this tool is to improve learning and education (Awuah, 2015). However, at the end of the second semester of remote teaching students were equally pleased with both SUMARUM and G Suite package. It can be assumed that they were familiar with the G Suite package from earlier because Google tools are commonly used in everyday life so that they have easily adapted to them. As we have stated earlier, it is about a package that is being used for a long time and which has been proved efficient on many universities across the world (Awuah, 2015), while SUMARUM was a new platform to the students and it took them time to adapt to it. Apart from this, it is probable that teachers improved their skills of using SUMARUM over time, which then brought to a greater quality of teaching, and in turn a greater satisfaction of students.

A statistically significant difference was found in the students' assessment of personal skills of using online technologies between the first and second

semester of remote teaching. At the end of the second semester students assessed their skills of using online technologies as being better in relation to the end of the first semester. It can be said that the obtained differences in the assessment of satisfaction are expected and that they are a result of the development of skills by frequent usage of online technologies during the two semesters of remote teaching. A greater familiarization with new technologies, improvements in the SUMARUM platform, continuous education of the teaching staff for its application and everyday usage of available tools have surely brought to a sense of personal competence in relation to the earlier period. El-Seoud et al. (2014) state that the feeling of competence in using online technologies an extremely important component of remote learning – if students do not perceive their competences of using tools as satisfactory, it can limit the participation in the teaching process and result in weaker actual competences and poorer learning outcomes. Apart from that, the feeling of competence in using technologies affects positively the motivation for participating in the teaching process.

At the end of the first semester of remote teaching, students reported an equal amount of motivation for online class attendance and motivation for executing assignments and obligations. At the end of the second semester a statistical difference was found between the frequencies of answers offered so that there was a polarisation, i.e., there were more of "not at all" and "partially agree" and "extremely agree" than it would be expected per case. It is possible that a certain number of students became fatigued and oversaturated with teaching and that it had an impact on their motivation levels. The obtained results are consistent with the findings of Mishra, Gupta & Shree (2020) who found that with a certain number of students there comes a decrease in interest and attention during remote teaching because learning through smartphones and computer is not a method which suits them. We can assume that the decrease in interest and attention also affects motivation to attend classes and execute teaching assignments. Furthermore, no statistically significant differences have been found regarding the period of assessing the motivation for attending classes and executing assignments. At the end of both semesters, students showed an equal amount of motivation for remote teaching and executing assignments and obligations. El-Seoud et al. (2014) state that intrinsic motivation is one of the most important factors of students' success during remote teaching. Teachers need to pay attention to the students' motivation

during remote teaching. A lower level of direct contact between teachers and students can make teachers assess the level of students' motivation more hardly. However, that can be overcome by giving students short questionnaires to assess their motivation after every class. Based on the gathered information through the questionnaires, teachers can identify students who have a lower level of motivation and apply strategies for a more active engagement of students in the teaching process in order to stimulate their motivation. If students are motivated to attend classes, then they will be more active during the teaching process; if they are more engaged in the teaching process and if that engagement is successful, there is a higher chance that the learning outcomes will be satisfactory and that they will master the given educational goals (Kim & Frick, 2011).

Remote learning gives students more free time and more flexibility in schedule organisation. The stated characteristics of this method of teaching can also represent a difficulty for students because it makes their time management more difficult (Parkes et al., 2014). Time and location flexibility of this method of teaching represents the strength of this model of teaching. However, as it was previously stated, a higher level of flexibility can cause difficulties to certain students. Not all students are the same, they differ in learning capabilities but also in levels of confidence and self-evaluation of their skills (Dhawn, 2020). As a result of individual differences, differences in time management to attend classes can arise. According to the results of our research, at the end of both semester students showed an equal amount of time management skills to attend classes. However, at the end of the second semester, a statistically significant difference was found between answers offered. There were more "good", "very good" and "excellent" answers than it would be expected per case. We can assume that even though there was no difference in the self-evaluation of time management skills between the two semesters, still a certain number of students became more successful in their time management. It is probable that it was a result of more experience regarding the duration of this model of teaching. According to some authors (Baczek et al., 2021) maturation of students can affect their self-organisation and self-discipline skills. Students are in a development stage of becoming an adult (Arnett, 2014) for which is known to be a period of change and maturation and that developmental neuropsychological changes which happen during this period

(e.g. maturation of executive functions) could influence better time planning and management skills through time (Fischer & Kennedy, 1997).

Participants in our research have at the end of both semesters equally assessed that remote learning makes or does not make it more difficult to master the material and no statistically significant difference was found given the period in which the research was conducted. By analysing the answers on the scale, it can be noticed that during the second assessment more participants stated that they do not agree with the claim that remote learning makes mastering the material more difficult, which can point to the fact that students adapted to this form of teaching. By analysing the results of other research, it was found that in Baczek et al. (2021) students assessed their remote learning less efficient in contrast to traditional face-to-face education regarding the acquisition level of skills and social competence. In that research students stated that they were less active during remote teaching in contrast to their activity in traditional teaching. Taking into consideration the results of Baczek et al. (2021) research, we can assume that students who participated in our research were probably less active during remote learning which could affect the difficulties in the acquisition of the teaching material.

Neither to the claim to assess the teaching quality on different courses was there a statistically significant difference found given the period in which the assessment made, which would refer to the fact that students' assessment of the quality difference on certain courses do not differ between the two academic years. By analysing the answers to this claim, it can be noticed that more than half of the students assessed that the quality of teaching differs form course to course after the first semester of remote teaching. The same trend of answers was retained after the second semester. Sun et al. (2020) state in their research the experiences of students according to which students believe that teachers should know how to adapt their teaching, i.e. teaching in an online environment, and not just transfer the traditional teaching model into an online environment. Remote teaching includes different elements like different technologies and teaching platforms, contents and users (teachers and students) (Cohn & Nycz, 2006). Oye et al. (2012) state that remote teaching differs from traditional teaching as it does not focus solely on instruction, but the teachers need to adapt to the students. In other words, traditional teaching is more teacher-centred, while remote teacher is more student-centred (Oxe, Salleh & Iahad, 2012). It is possible that some teachers in our research

had difficulties in transitioning from traditional to remote teaching, i.e. that they have transferred a teacher-centred model, which is not an adequate teaching method in remote teaching. Teachers should develop and restructure their methods of teaching in a way that fits remote teaching demands. It is clear that such activities demand more time and increase the workload of teachers. Furthermore, teachers should possess and master all the technical accomplishments and advances that remote teaching offers. In order to keep the quality of teaching, teachers should modify their teaching approaches that are used in traditional teaching; moreover, they should adopt a new educational approach. El-Seoud et al. (2014) state that some teachers still do not accept integration of technology into their teaching process and also unwillingly change their work patterns and teaching style.

To the claim to assess the general satisfaction with remote teaching execution a statistically significant difference was found between the frequencies of answers offered for assessments made after the first semester. There were more "good" and "very good" answers, and less "very poor", "poor" and "excellent" than it would be expected per case. No statistically significant difference was found regarding the period of the assessment. Students showed an equal amount of satisfaction during both measurement points. We can conclude from these results that students were pleased with remote teaching execution. The average grade was "very good" – we believe that such a grade leaves room for improvement, but for this period it can be regarded as satisfactory because it is about a teaching model that was implemented for the first time during the Spring semester of the 2019/2020 academic year. Furthermore, by analysing the answers at the end of the second semester of remote teaching it can be noticed that the grade "excellent" was frequently given, which was not the case in the first semester of remote teaching. This can be interpreted as an improvement of satisfaction with remote teaching after the second semester which can be caused by many different factors like a better adjustment of students and teachers to this model of teaching. The results of our study are in accordance with the research done by Baczek et al. (2021) in which 73% of students stated that they were satisfied with the quality of remote teaching and that the remote teaching model enabled them to acquire new knowledge at a same level as the traditional model of teaching did.

And at the end, technical difficulties were one of the main disadvantages of remote teaching according to the results of research done so far (Baczek et

al., 2021; Favale et al., 2020; Mishra, Gupta & Shree, 2020). The difficulties relate to problems such as system errors, difficulties with installation of programmes and application used in teaching, problems with logging into the system, problem with sound, video, etc. (Parks et al., 2014). These difficulties can slow down the learning and teaching process, i.e. to make the teaching more difficult for teachers and attending classes more difficult for students (Favale et al., 2020). Our research showed as well that students had technical difficulties during both semesters. Around 60% of students reported having technical difficulties during both assessments. Surely, these difficulties relate partly to the difficulties which Parks et al. (2014) talk about, for e.g. like the inability to purchase a personal computer due to financial difficulties, and consequentially attending online classes via smartphones which makes effective class participation difficult. Furthermore, it is possible that students had issues with a stable Internet connection.

Research limitations

For a better understanding and interpretation of the results, it is important to look at the factors which could have affected a lower validity of the collected data. One of the main shortcomings of this research is the independent sampling of students. Statistical power of the collected data is greater when the variables are dependent, i.e. when the participants are the same in both measurement points (Petz, 2012). This research did not sample on the dependant variable because it was not planned to perform remote teaching in the long run and the second measurement was not planned. Furthermore, the structure of the students changed because new students enrolled in the new academic year and senior students finished with their studies. If it was dependant sampling, intra-individual differences could have been observed and conclusions could have been made with a greater precision about the changes in the taught aspects over time.

Students of the first year of the undergraduate study in the 2020/2021 academic year did not have a relevant criterion to make a conclusion on the improvement or deterioration of remote teaching compared to traditional teaching because they did not have a chance to experience traditional teaching

on faculty, which consequentially could have affected their assessment of the quality of teaching.

A question is raised if the results could be generalised on the teaching process of the whole Faculty of Humanities and Social Sciences. Although the sample size is representative for the Department of Psychology, it is not representative for the whole faculty. Faculty of Humanities and Social Sciences of the University of Mostar, as a complex component, has a dozen of study programmes, all of which have different number of students, different ways of teaching and different demands that are made on the teaching process and which are conditioned by the nature of the study programme. The recommendation for future research follows from this limitation.

Recommendation for future research and practical implications

To generalise the results of research on the whole teaching process and all students of the Faculty of Humanities and Social Sciences, all future research should be done on representative sample sizes – in that case proportionate stratified sampling is recommended, where faculty study programmes would represent stratums which would in the sample be represented proportionate to the representation in the population of all students of the Faculty of Humanities and Social Sciences.

The research clearly shows that practising skills leads to higher assessments of competence of performing those skills. Now that teachers are no longer focused on the technical aspect of remote teaching because they have perfected themselves in it, it is time to look at the teaching process from a higher, metacognitive level, and to adapt the teaching process to the virtual environment, so that the process would be less focused on facts and more on students and on simple knowledge acquisition in a virtual environment.

The motivation for attending classes and executing teaching assignments is an extremely important component of successful studying and it is important to pay more attention on boosting students' motivation. When the teaching process adapts to the virtual environment more successfully and when students' acquisition of teaching material is facilitated, there should be a change

in the area of motivation to attend classes and execute assignments in a virtual environment.

Conclusion

In a time when demands were made on educational institution to modify the teaching process form the familiar traditional model, to a new remote teaching model, it was important to ensure the comparability of the quality of teaching. Students, as consumers of the teaching process, have a direct insight into the quality of the teaching process and it was important to check how they assess the new model of teaching. In the two semesters of remote teaching at the Faculty of Humanities and Social Sciences of the University of Mostar, students of the Department of Psychology assessed different aspects of the teaching process and their own inclusion in the teaching process. The results of the research show that an improvement was made in skills of using online technologies in the second semester. Motivation to attend classes and to execute working assignments did not differ between the two semesters, nor did time management skills. The students' satisfaction with remote teaching was assessed with an average grade "very good" and it did not differ between the two semesters of remote teaching. Still, in the second semester of remote teaching, students gave the grade "excellent" more often than it was the case in the first semester. The average satisfaction with the performed teaching says about the quick and efficient adaption to the new conditions, but it also leaves room for improvement in the sense of adapting the teaching materials in order to facilitate the acquisition process in the remote learning conditions.

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KVALITETA NASTAVE NA DALJINU TIJEKOM SARS-COV-2 PANDEMIJE: ŠTO KAŽU STUDENTI?

Sažetak

Uslijed SARS-CoV-2 pandemije, na fakultete su postavljeni zahtjevi za modificiranjem klasične nastave u nastavu na daljinu. U dva semestra izvođenja nastave na daljinu, studenti Studija psihologije Filozofskog fakulteta Sveučilišta u Mostaru procjenjivali su svoje vještine korištenja tehnologija, motivaciju za praćenje nastave i izvršavanje radnih zadataka, kao i vještine organiziranja vremena; evaluirali su nastavni proces, izvijestili o tehničkim poteškoćama i procijenili generalno zadovoljstvo izvođenjem nastave na daljinu. Rezultati ovog istraživanja pokazuju da su studenti u drugom semestru izvođenja nastave na daljinu pokazali više procjene vještina korištenja tehnologija, dok nije utvrđena razlika u razini motivacije za praćenje nastave i izvršavanje radnih zadataka, kao ni u vještini organiziranja vremena između dva semestra. Glede zadovoljstva nastavom na daljinu, studenti u oba semestra izvedenu nastavu ocjenjuju prosječnom ocjenom 'vrlo dobar'. Nije utvrđena statistički značajna razlika u procjeni zadovoljstva nastavom između dva semestra izvođenja nastave, iako su u drugom semestru izvođenja nastave na daljinu češće dane ocjene 'iz-

vrstan' nego što se očekuje po slučaju. Prosječna ocjena zadovoljstva izvedenom nastavom daje uvid u uspješnost prilagodbe na nastavu na daljinu, te ujedno otvara prostor za daljnja poboljšanja.

Ključne riječi: *studenti; nastava na daljinu; hitna online nastava; e-učenje; digitalna transformacija; kvaliteta nastave; COVID-19; SARS-CoV-2 pandemija.*