

Ad-hoc e-learning measures during COVID-19 lockdown in Republic of Srpska HE institutions: student insights

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Abstract

The present study investigated the influence of ad-hoc transfer from classic classes to fully on-line during COVID-19 lockdown in spring 2020, on a student's satisfaction with e-learning. It is significant for all stakeholders, especially policy makers in Republic of Srpska and Bosnia and Herzegovina to learn about importance of thorough planning and development of e-learning. Also e-learning ad-hoc classes have risen awareness about necessity for continued research on e-learning and its implications on higher education classes. COVID-19 lockdown drew attention of the whole world to the importance of e-learning as a powerful tool for academia. One-hundred and ninety-six students participated in online survey with 21 questions divided into 4 divisions.

Results show that while majority of students (almost 93%) didn't have feelings of studying for real and preferred face-to-face teaching as well as contact with their colleagues, participants (almost 85%) were partially or fully satisfied with e-learning classes during lockdown. Most of the participants had active high-speed Internet connection and used PC or laptop for e-learning classes. Significant number (38.8%) of students used mobile phone for e-learning classes which is fact important to be emphasized for future development purposes.

If results are put in right perspective of transferring from face-to-face lectures to fully on line classes in a matter of days in lockdown they represent solid base for future e-learning development. E-learning will never replace classic education system especially in practical classes such as laboratory exercises or internships in the real sector, however, results indicate that this methods has a future place in HE education, if possible not as fully online classes but more as a blended system.

1. Introduction

Already adopted strategies for development of e-learning for schools (Dai and Xia, 2020) and HE institutions made countries such as China well-adopted through COVID-19 crisis. Immediately after lockdown, China government launched an emergency policy initiative called "Suspending Classes without Stopping Learning" (Zhang et al., 2020).

Some other countries like South Africa "were caught off guard" (Czerniewicz, 2020) simply because they weren't developing e-learning before the pandemic.

As a quick response to the COVID-19 pandemic, several institutions on the Global level issued a significant number of document in order to help overcome educational crisis. World Bank issued a document "Remote Learning and COVID-19" (World Bank, 2020) as draft on March 16, 2020 and updated version on April 07, 2020 as "Guidance note: Remote Learning and COVID-19" (World Bank, 2020) which gives review of all dominant e-learning channels. The guidance listed broadcasting media, printed materials, LMS as channels and content ready made for use on mobile devices as well. "*Higher Education. The predominant remote learning mode for tertiary students is almost entirely online. Typically, this is facilitated through a Learning Management Systems and synchronous video conferencing systems.*" (World Bank, 2020).

UNESCO on the other hand, launched a "UNESCO COVID-19 Education issue notes" as a part of their website with emphasize on educational needs called "Five steps to support education for all in the time of COVID-19" (UNESCO, 2020).

Smart Learning Institute of Beijing Normal University in cooperation with UNESCO International Research and Training Centre for Rural Education issued a "Handbook on Facilitating Flexible Learning During Educational Disruption: The Chinese Experience in Maintaining Undisrupted Learning in COVID-19 Outbreak" (Huang et. al., 2020).

As one can see there are many examples of fighting COVID-19 educational crisis on global, national, regional and even personal level.

Similar to the South Africa case, mentioned above, the Republic of Srpska (one of the two entities in Bosnia and Herzegovina having autonomous Ministry of Education and Culture) was one of the countries caught "off guard". Before the pandemic, Republic of Srpska wasn't institutionally developing e-learning education. Only few of the HE institutions working on their LMS which was more introduction of technology novelties than a development off e-learning as educational system. No e-learning educational system existed on large scale. In a matter of days' complete educational system has been transferred from classrooms to the ad-hoc fully on-line solutions. Elementary schools adopted to television broadcasting classes, secondary schools and HE institutions reached for Internet and educational services offered there.

1.1. A COVID-19 context

After spreading from China to Italy and Austria a COVID-19 threat become more obvious to the citizens of Republic of Srpska and Bosnia and Herzegovina as a whole. Numbers in Italy and Austria were exploding hourly. Later, by the end of March, Lombardy in Italy and ski resorts in Austria were overwhelmed with thousands of new cases of COVID-19. Hospital intensive care units were full and the death rate was accelerating.

With huge diaspora population, working in EU countries and travelling to Republic of Srpska a fear of Italian and Austrian scenario increased. At the beginning of March 2020 all schools and HE institutions were closed. Almost immediately after this, other businesses except food stores and

pharmacies were also closed combined with the introduction of curfew from 8 pm until 5 am. Senior citizens were in 24-hour curfew and international borders were closed with obligatory quarantine for all travelers entering Republic of Srpska. The society as a whole came to stand still.

1.2. Literature review

During preparation for this study, it was difficult to find significant literature that could match circumstances even close to those that occurred during global lockdown during 2020 COVID-19 pandemic. Most of disasters, no matter of their local significance, were too small comparing to the COVID-19 lockdown. Even events like Fukushima nuclear power plant disaster, Hong Kong student protests, South-East Asian tsunami disaster from 2004, New Zealand earthquake or forest fires in Australia, Greece and USA in latest years, did not stop all social and work activities in one country or region. It is therefore necessary to explore the effects the 2020 lockdown due to the pandemic had on the higher education and some papers are starting to emerge on this subject. Present paper was motivated by the latest studies like those from Fiji (Wahab, 2020), Philippines (Alipio, 2020), Saudi Arabia and Jordan study (Almaiah, 2020) as well as China studies (Zang, 2020) dealing with e-learning in COVID-19.

Apart from the literature already mentioned in Introduction (UNESCO, World Bank or Smart Learning Institute of Beijing Normal University) several studies and research papers dealing with student's satisfaction and technology used in e-learning process were retrieved from Vietnam, Australia, Pakistan, Malaysia as well as China case studies.

Google Scholar was used as search tool, mostly within years range 2016 and 2020.

In summary, the available studies and research papers from the recent years before COVID-19 pandemic were used in order to confront conclusions drawn from conducted survey.

1.3. Aim of the study

This study intent to examine how the HE institutions helped students to continue education process during COVID-19 lockdown by ad-hoc e-learning measures, in a small region of around 1.4 million population, the Republic of Srpska (in Bosnia and Herzegovina).

Research question which was guidance for this study was formed as: How ad-hoc e-learning measures in Republic of Srpska HE institutions influenced students learning satisfaction?

1.4. Significance of the study

Study and its findings are intended to be useful to different stakeholders in the field of e-learning in Republic of Srpska, Bosnia and Herzegovina and abroad. Insufficiency of e-learning educational system brings lack of researchers and different studies in the field of e-learning. Furthermore, at this time globally we are fighting pandemic and there is shortage of knowledge in term of what was happening in different part of the World and what e-learning solutions were helping fighting educational barriers caused by pandemic.

Study will also contribute to students and teachers in order to help them understand best ways of learning and teaching using e-learning channels. Next, HE institution management will be able use results of the study in terms of understanding which benefits can be of the e-learning systems usage. Finally, it is expected that policy makers, with emphasize on educational authorities, will be able to understand and further raise awareness in this matter, so that the application of ICT in education and e-learning in the future becomes something that contributes to educational system rather than to be the educational system's "unwanted child".

2. Research Methods

For the purpose of present study, an on-line survey with 21 question was developed applying Google Forms. Survey was distributed among students of various HE institutions of Republic of Srpska from May 27, until June 11, 2020. Questions were divided into 4 divisions. First division consist of demographic questions, second was about personal Internet infrastructure and devices used for online classes, third about e-learning and technology used by HE institutions and fourth division held questions about student's satisfaction of e-learning process during lockdown.

Survey is listed in Appendix A and was analyzed by descriptive statistics.

3. Results (R) And Analysis

3.1. State of e-learning in Republic of Srpska before at the beginning of COVID-19 pandemic

New Law on higher education (HE) of Republic of Srpska from 2020 as well as previous version of Law on higher education did not regulate the field of e-learning properly but left its introduction and development at will to higher education institutions. However, in most cases, development of e-learning methodology wasn't a priority to the managements of HE institutions. Just a few of faculties or universities has LMS build up more as a technological novelty than like a powerful educational system.

3.2. Lockdown

When pandemic struck and lockdown was pronounced nobody was ready for online classes or fully online e-learning. Teachers at all levels were overwhelmed with the question "How to do the teaching now?" and "How to response to this new situation?"

Educational authorities respond quickly by continuing teaching over national broadcasting network for elementary schools. High schools and HE institutions were ordered to organize teaching through on-line channels. National universities applied Google Classroom and Google Meet, and rest of HE institutions combined different Internet tools. Websites, social networks, Viber, WhatsApp, e-mails, teacher personal websites, Zoom App. or similar applications, audio and video clips were used.

3.3. Participants demographic

There were 196 participants of an on-line survey. More than 97% were from state owned universities and colleges in Republic of Srpska. Remaining students were from the privately owned Independent University of Banja Luka. Overall, majority of the students were from University of Banja Luka (87.2%) which is the largest national university in Republic of Srpska.

Most of the participants were female or 75% and while there were 25% male's students. Most of the participants were under 26 years of age (94.6%).

3.4. Technology used and student Internet infrastructure

Majority of participants or more than 95% has active Internet connection at home which was a good predisposition for organizing e-learning especially in ad-hoc manner. Those students who didn't has Internet connection, had a possibility to apply for free Internet package which was paid by Ministry of Scientific and Technological Development, Higher Education and Information Society of Republic of Srpska (hereinafter Ministry). At this time exact number of students that exercise this possibility is still unknown.

In terms of devices used to access e-learning content majority of participants were using laptop (51.3%) and desktop computer (7.1%). It was a surprising fact that even 38.8% students used mobile or smart phones in order to access e-learning content. It was expected that in time of lockdown when everybody is at their homes, most of the devices used will be laptops and desktop computers but more than third of the students proved that it does not have to be case. This is a strong signal for future research and development of e-learning systems. Mobile devices, especially smart phones represent the future of technological side of e-learning and should be taken seriously into consideration.

4. E-learning And Technology Used By Students He Institutions

4.1. On-line classes

93.4% of students participated in survey had on-line organized classes. This is unexpected because Ministry ordered that all HE institutions should organize online classes for their students. In order to control execution of its order, Ministry also demand that all HE institutions submit monthly reports on progress of online courses. So, it is showing that some of HE institutions or teachers disregarded Ministry order? Of course, there is a possibility that some of the participants had an impression that their HE institution didn't organize online classes because of the channel or tool used.

In terms of technologies used in ad-hoc e-learning process in Republic of Srpska, a Google Classroom application was used as main e-learning channel or in 77.2% cases. This was not a surprise if considering that majority of the survey participants are coming from University of Banja Luka which institutionally decided to use this application. E-mail was used by 8.5% and Zoom or similar channels were used as main channels in the case of 4.5% of survey participants.

4.2. Auxiliary channels

As auxiliary channels participant could choose several ones. First choice was e-mail with 61.2% of the answers, followed by Google Classroom with 29.6%, teachers video clips 24.5% and Zoom and other similar tools with 20.4% of the answers. Google Meet was used in 13.8% cases which brings all video channels combined with 15.8% of audio clips by far most used channels of all. This probably means that students prefer to see or hear teacher more than to communicate with them in other manner.

4.3. Online classes' problems

"Did you have any problems with online classes?" "No problem" with 37.8% and "minor problems" with 54.1% were majority of answers forming almost 92% of answers. Only 1.5% of participants couldn't access online classes at all. In technology terms, this was expected because Internet applications and tools which were used were already proven to be reliable.

Search engines were used by 75.5% of participants as help during online learning.

5. Satisfaction

Last division or battery of question was dedicated to the student's satisfaction by ad-hoc e-learning process during COVID-19 lockdown in Republic of Srpska.

"Are you satisfied with the online teaching at your faculty?" "Partially" with 45.9% and "Yes" with 38.8% constitute majority of participant's answers. Combined, these two percentages indicate that considering circumstances that led to ad-hoc measures in organizing online classes and shortage of time for organization majority of participants are satisfied with whole process. Dissatisfaction or "No" has been chosen by 15.3% participants which could be caused by poor organization of online studies by HE institutions as well as student's ability to adapt to new situation in matter of days. One must not forget that society has been transformed from normal life to a total stand still in a matter of days.

"Do you feel that you have learned more through online teaching than through classic teaching?" "No" was answered by 66.8% of participants and "In part" 24% which only can mean that students don't like learning using fully online e-learning concept. This question can serve to policymakers as a future reference in terms of deciding which e-learning model to choose. Potentially, a blended e-learning model could be more suitable for the mentality of students? EDUCASE Center for Analysis and Research (ECAR) study (Gierdowski, 2019) state that *"About half of respondents (56%) said they prefer some form of blended learning"*. As we can see mentality of students doesn't have a lot with student preferences regarding type of e-learning system. It is in human nature which prefers some type of social interaction rather than isolation.

5.1. On-line or traditional teaching?

"Is online teaching better than traditional classroom teaching?" "No" was in 62.2% of the answers and "In part" was in 21.4%. Apparently, students put "face to face" human interaction in front of online communication channels.

Study didn't investigate reasons for student's dissatisfaction but as some authors (Krishnan, 2016) point out that student's satisfaction depends on various factor such as student ICT literate level, learning discipline, interaction and isolation level. Others (Martin and Bolliger, 2018) stands out student engagement as crucial for rising level of satisfaction in e-learning environment. Furthermore, a study (Venkatesh, 2019) from Australia state that *"Social interaction is an important component in ensuring perceived satisfaction with BIL (blended integrated learning)."*

"What is your biggest complaint about online teaching?" "I don't have feeling that I am studying for real." was in 37.1% answers and "Teacher is missing." was in 32.7% cases marked as second biggest downside of online classes. "Colleagues students and class feeling is missing" was answer for 22.4% participants. This is understandable because COVID-19 lockdown forced students to confinement at their homes and transfer to online classes which happened fast so, students needed more time to adopt new model of learning and start collaborating with fellow students and teachers. Of course this is ad-hoc conclusion so it was important for present study to analyze available literature from past years which deals with student satisfaction. Present conclusion was supported in, for example, pre-mentioned Malaysian study (Krishnan, 2016) where more than 80% of participants preferred face-to-face interaction with teacher. Similarly, the Vietnamese (Pham et al., 2019) study points out significance between student satisfaction and lecturer proficiency. Australian (Mestan, 2019) study, additionally, states that students don't prefer online e-learning elements which don't include social contact.

Authors apostrophe social support factor or *"engaging and meaningful learning communities as a means of supporting students' social relations and their learning experience"* (Nortvig et al., 2018).

5.2. Teacher or Technology

"Who or what is more important for successful online study?" "Teacher." was in 76.9% of the answers and "Technology." was in 23.1% participant's answers.

Technology and its unprecedented influence on human lives never in history happened so fast like in past 20 years. This influence brings something like dark cloud on human judgment so, when we don't analyze enough this matter than we can easily forget that in education having a teacher is an empowering starting predisposition. Transfer of knowledge, support to the students and guidance to, is all about pedagogy and teacher and not about technology. Although, undeniably, technology is like in other human activities necessary for storing or retrieving more data, to deliver faster and more extensive results, yet, technology doesn't know what human think or feel and can't guide a living student individually through the education process.

6. Discussion

6.1. Limitations

Limitations of this study are reflected in fact that data are collected mostly in one national university. Fact is that this is the biggest university in term of number of students, however it would be helpful if students from other universities were included. This is the plan for future study after the stabilization and normalization, when more direct contact will be possible with other universities and their staff in order to obtain reliable data on the wider scale.

Furthermore, present study represents a first insight on what influence on student's lives had a COVID-19 pandemic. Hopefully researchers will have more time in future to deal with the limitations observed. However, study should be a starting point at least for stakeholders in Republic of Srpska, and culturally and economically similar regions, on how to explore ways of developing and implementing e-learning in educational system.

6.2. Practical implications

Ad-hoc e-learning measures in Republic of Srpska HE institutions contribute to continuity of educational process but students weren't satisfied with it. More than 83% of students answered negatively to a question "Is online teaching better than traditional classroom teaching?" On first this can mean that maybe students didn't have much time to adopt to new circumstances but when confronted with results of studies from non-COVID time's survey results match. As well as in non-COVID times students need some social contact in order to feel like studying for real? Just as reminder "I don't have feeling that I am studying for real." was in 37.1% answers and "Teacher is missing." was in 32.7% cases marked as second biggest downside of online classes. "Colleagues students and class feeling is missing" was answer for 22.4% participants.

Along with the results of other survey questions, conclusion for this study is that students need social contact, need collaboration with other students and among all need teacher in face-to-face manner.

7. Conclusion

Despite aforementioned limitation, this study represent attempt to comprehensively investigate implications of COVID-19 lockdown on student's satisfaction on e-learning ad-hoc measures in HE institutions of Republic of Srpska, Bosnia and Herzegovina.

As research question stated at begging of the study, aim of the study was to investigate "How ad-hoc e-learning measures in Republic of Srpska HE institutions influenced students learning satisfaction? "

Exposure to ad-hoc transfer from classical education to fully on-line classes without any time to adopt brought student's satisfaction on e-learning classes to a considerably low level.

Therefore, conclusion is that introducing of e-learning into HE classes need thorough preparation and that time factor shouldn't be neglected. Not just students and teachers but all stakeholders such as policy makers and HE managements should participate on their levels in process of introducing e-learning to HE classes.

Declarations

Availability of data and materials

The dataset is available from the authors upon request.

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Ethics declarations

Ethics approval and consent to participate

Informed consent was obtained from all study participants prior to data collection. Participants were able to decline participation or withdraw at any point of the study.

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- [Appendix.docx](#)