IMPACT OF THE COVID-19 PANDEMIC OUTBREAK ON THE ONLINE LEARNING PROCESS

Nguyen, Thuan
Huynh, Nhi

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Author	Thuan Nguyen & Nhi Huynh	Year	2020
Supervisor	Tuomo Lindholm		
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The novel COVID-19 pandemic happened in late 2019 and the beginning of 2020 has shifted the whole education system around the world from traditional teaching methods to online learning systems. This thesis investigated the most common problems and challenges that learners and educators are coping with before and during the transition. And by acknowledging and understanding the problems, the thesis pointed out some practical solutions that could handle the situation and might open the full potential opportunities of online learning.

The study conducted a survey to investigate if the transition in the teaching system would affect the learning progress of individuals. The survey contained 25 questions asking about the perceived teaching quality, the mental state of individuals and some technical factors that may affect their progress.

This survey research also showed that among various possible factors, human-related factors were the main cause to create huge negative impacts on the learners' progress. The findings illustrated that the improvement of learners' attitude was correlated to their self-motivation and self-discipline as well as the perceived teaching method from their instructor.

Key words   online learning, e-learning, COVID-19, human factors, technological factors.

CONTENTS

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1 INTRODUCTION

Due to the Coronavirus (COVID-19) pandemic outbreak at the beginning of 2020, many nations have decided to close schools, universities, and colleges. With the Coronavirus spreading rapidly through Asia, Europe, the Middle East and the US, governments have acted swiftly and decisively to prevent the full-blown pandemic. Over the last month, many announcements have been made about suspending school and university enrollment. Teaching is online, untested, and unparalleled. Student tests are also going online, with many challenges, mistakes and difficulties for everyone and numerous tests cancelled. Importantly, such interruptions will not only be a short-term problem, but may also have long-term consequences to the populations impacted and may increase inequality (Simon 2020).

Online learning is characterized as an innovative studying method that utilizes technological devices consisting of tablet, computer, laptop, interactive television, audio, video and Internet connection, satellite broadcast and so forth to deliver to the lessons content (Kaplan-Leiserson, 2000). There are a wide range of terms interchangeably used to define e-learning such as "distance education", "electronic learning", "internet learning", "e-learning", "online courses" or "learning portal". Among these so-called online learning terminologies, the name of "E-learning" is most well-known and extensively adopted. E-learning is a digital platform, according to the Technology Standard Committee, using web browsers as an interface method to communicate with learners and other programs. Ferdousi (2009) describes e-learning as an interactive forum that connects teachers and learners. E-learning has become a central part of university education since it has become a popular style in the globe to provide educational materials as it seeks to enhance performance, build skills, promote access, reduce costs and inspire a lot of learners and educators (Ali & Magalhaes, 2008).

This research project encompasses two main objectives. The first goal is to investigate the impact of the online learning platform on the individual learning processes as compared to the traditional campus schooling. Since the emergence of the novel Coronavirus in the early 2020, more and more educational institutions have turned their teaching system into a virtual platform.

For some people who are used to traditional campus education, it was not a simple solution at first. However, they must adapt to the situation and improve the teaching and quality control in the new environment. The second goal of the research is to investigate all the possible challenges that learners and educators might face during the transition and to suggest solutions to ease the situation. Since a wide range of organizations have embraced an online learning method, a research survey aimed at learners around Europe is adopted in order to explore deeper in many aspects of the situation. Hence, the results help instructors, learners, and curriculum designers to proactively enhance more educational insights so as to develop better teaching and learning solutions.

The research framework of this study will be based on the six-factor model from Ozkan and Koseler (2009) which includes system quality, content quality, service quality, instructors' attitude, learners' perspective, and supportive issues. These six factors can be divided into 2 categories: human factors and technological factors. The final outcome of this study can be a useful reference for instructors and educators to implement an appropriate e-learning platform by considering the analysis of these critical factors.

2 LITERATURE REVIEW

2.1 Overview of E-learning

In today's technological age of IT revolution, information exchange and transformation, the traditional classroom education does not fulfil the needs of modern continuing learning environment. Learning is switching from instructor-oriented to student-oriented and can be carried out at any time and any spaces from schools to homes and workplaces, which is so-called e-learning method. As stated by Koohang and Harman (2005, 77), e-learning is described as the provision of education in which all education-related activities such as teaching, learning, training and so forth will be delivered via a wide range of different electronic devices and web-based media. The mobiles devices can be e-books, video/audio tapes, CD ROM, television, tablet, computer, intranets/extranets etc. that have the access to Internet. They are based on various methods (e-mail, web sites, forums, learning platforms, etc) that help to facilitate the teaching-learning process.

E-learning can offer many advantages for colleges and students alike (Bhuasiri, Xaymoungkhoun, Zo, Rho, & Ciganek 2012, 852). For education institutions, e-learning, firstly, allows universities to save substantial costs of investing in the physical infrastructure of teaching and learning (Arbaugh 2005, 137). Secondly, Taylor (2007, 73) emphasizes that e-learning enables universities to become more digital in order to create a modern and intelligent society in which knowledge sharing and the learning process can be conducted in a simple and fast way at any time by using Internet-enabled technologies. Thirdly, e-learning brings universities to better incorporate into global education (Lee 2010, 280), which means that teaching can take place across national borders and reach to the global collaboration with foriegn universities. For learners, in comparison to traditional classroom education, online learning gives them additional options of learning style (Hollenbeck, Zinkhan & French 2006, 50). With e-learning, students can control the pace and schedule of their own studies as they are not required to attend campus physical classes (Bhuasiri, Xaymoungkhoun, Zo, Rho, & Ciganek 2012, 845).

Since e-learning becomes extensively benificial to all eductional participants, variety of universities have adopted e-learning as a part of student-centred strategies. In another sense, students are now treated as customers of the schools and the schools have reponsibity to measures the effectiveness of e-learning immplementation so as to retain learners' satisfaction and loyalty (Martinez-Arguelles & Batalla-Busquets 2016, 265).

2.2   Evaluation of E-learning Effectiveness

Effectiveness evaluation methods in e-learning programs are a crucial problem in practice and science. According to Agrawal, Agrawal, and Agarwal (2016, 411), the effectiveness of e-learning approach can be evaluated by the six factors from Ozkan and Koseler (2008) framework consisting of instructor's performances, learners' attitudes, supportive issues, system quality, service quality and content quality. As stated in a study of Sun, Tsai, Finger, Chen, and Yeh, 2008, these six factors reveal positive impact on e-learning process. Many previous studies measure the success of e-learning by different aspects. Liaw, Huang and Chen (2006, 1072) assessed e-learning performance by examining attitudes of students. Ozkan and Koseler (2008, 1289), on the other hand, assessed the e-learning effectiveness by learners' satisfaction.

2.3   Human Factors

E-learning always requires information to be communicated. As the definition of knowledge is associated with understanding the learner's problem or task, the student's psychology should be taken into consideration. Hence, to understand e-learning, learner's psychological needs should be identified. In other words, the best methods of teaching allow the student to be interested in solving the problem. Due to this reason, the role of the teacher in e-learning is also developing. (Cohen & Nycz 2006, 25)

2.3.1 Learners' Perspectives

Stodnick and Rogers (2008, 118) claim that student-centred approach which generates substantial public interests is an evolving strategy to improve the service quality in many higher educational institutions. The key concept of this approach is to perceive students as customers and the universities aspire to provide the best education facilities for students. Thus, learners' satisfaction will increase, and students will be more loyal to the schools (Martinez-Arguelles & Batalla-Busquets 2016, 270). Due to this emerging student-caring strategy, many researches have been conducted in order to evaluate students' satisfaction toward e-learning implementation.

According to Ozkan and Koseler (2008), the attitude of students can be considered as a major impact on the e-learning process in which learners are highly encouraged to self-study, self-discover, and self-organize their own learning procedure. Additionally, learners' attitudes are evaluated by the aspects of self-productivity, pleasant experience, communication with teachers and classmates and learning manner. Passerini and Granger (2000, 52) point out in their research that learner characteristics, such as attitudes, enthusiasm, confidence, and trust, must be recognized first. However, though the online courses may be well designed, rich in the content and materials, the information system could be fully equipped, if the perspective of the students is not appropriate, the e-learning will fail to succeed.

2.3.2 Educators' Attitudes

Teachers are not only an essential part of learners' participating progress, but also a dominant representative in an instruction. Lessons are at the best when students are encouraged to become active learners. Kim, Trimi, Park and Rhee (2012) declared that teacher is the most significant e-learning effectiveness driver who plays a crucial role in enhancing learner's satisfaction and inspiring students to participate in different potential learning circumstances. Thus, instructors who are highly active with e-learning can positively increase student satisfaction by providing in-time response, motivation support, dispensing suggestions and giving favorable assessment.

According to the Informing Science framework (ISF) of Cohen (1999, 2003, 2004), the instructors are those who produces, sequences and provides learning opportunities to learners. In other words, besides the role of generating new knowledge, teachers are also responsible for creating the environments for information and intelligence transmission. In addition, the ISF address that conveying knowledge is more than just a presentation of information. It should combine all the competences, ideas, concepts and practices that are necessary for students' unique needs. And the teacher is the only best possible person for this combination of learning resources and opportunities.

2.3.3 Supportive Issues

Besides the factors of learners' perspective and instructors' attitude, the supportive factors like the collaboration with school e-library and faculties is also a vital element in promoting quality of e-teaching, e-learning and scientific study. Lawal and Akintunde (2014, 620) highlight that university libraries act as a facilitator in teaching and learning by offering one-to-one instruction to help students familiarize with library resources and facilities. Moreover, the effective association with the library, faculty and school management will help to advance the learning process at the university itself. As Kilic-Cakmak (2010, 195) emphasized, e-learning help to ease the interactions between students and lecturers by designing and delivering courses under the utilization of ICT tools (Sharifabadi 2006, 392). Therefore, the cooperation between library and faculties is required to incorporate library resources into the pedagogical process and provide access to digital resources (Kvale & Buset 2007).

2.4 Technological Factors

The development of new ICTs has provided many potential opportunities for teaching and learning to many individuals. Teachers are more accessible to diversity of resources and creative in courses design. Learners are allowed build their own pace and enhance self-development in e-learning process as same as the principles applied in traditional classroom, yet much more advanced and efficient. Therefore, there are a wide range of technological models are examined

to identify the effective usages of technologies in educational fields, particularly in e-learning process.

2.4.1 System Quality

System quality is perceived as the quality of information transmission from the web-based knowledge resources to remote learners (Delone & McLean 2003, 17). A particular example of information system is cloud systems, including "Microsoft" and "Google," offer free tools to educational organizations, including e-mail, contact lists, schedules, database stockpiling, document creation and sharing and website creation (Sclater 2009). Besides the essential contributions of human factors, service quality and content quality, Fleming, Becker and Newton (2017, 80) indicate that low complexity, reliability and technological support have been found to be potential predictors for users' purposes and satisfaction. In the meantime, Kim, Trimi, Park and Rhee (2012) analysed the Course Management System using information system success model of the DeLone and McClean for the study of effective e-learning performance. The consistency of the program, the knowledge resources quality and instructional quality have a positive impact on users' experiences, thus maximize the advantages of e-learning approach. In that standpoint, the e-learning program itself is one of the most critical components that improve students' engagement and should be invested in the highest standard in terms of ease of use, ease of access, and versatility.

2.4.2 Service Quality

According to Wahab, Mohd and Al-Momani (2010), service quality is characterized as an evaluation of a service which contributes to customer satisfaction by perceiving the quality and convenience of the services. Once the service quality is assured, users would not be replied on the physical products. Hence, DeLone and McClean (2003, 25) stress that the users' experience in the access and interaction with the services is significantly important in identifying the level of quality. Service quality have been studied to have explicit impact on users' satisfaction in various aspects of information system. At the same time, Riaz and Hussain (2011) point out that service quality also has a direct influence on users'

experience in e-learning concept. A good service quality provides users with simple navigation, ease of search engine for needed information and available technical support. Additionally, the high quality of the e-learning platforms could increase the interactivity of the students so that they can become more eager to explore content.

2.4.3 Content Quality

Content quality is defined as the final output created by the system, or it is also called as information quality. As described by Bailey and Pearson (1983, 518) and Seddon (1997, 249), The typical information quality features include accuracy, relevance, timeliness, adequacy, reliability, comprehensiveness, format and accessibility. Regarding to e-learning, Roca, Chiu and Martinez (2006, 685) assessed the quality of information in respect to applicable, timely, sufficient, accurate and format indicators; as a result, the study showed that the quality of information directly relate to the satisfaction of the learner and is indirectly relevant to the perceived utility. Likewise, Harrandi (2015, 425) and Uukkivi (2015) found that the well-structured content of the courses has a positive impact on student's e-learning motivation. In consequence, the content of the course should be comprehensively planned by the instructor to ensure that students are motivated to pursue the best material for their e-learning process as the students' self-exploration of the content is one of the main goals for an efficient e-learning process.

3   RESEARCH QUESTIONS AND METHODOLOGY

3.1   Research Questions

This research work will mainly focus on studying the impact of the new Coronavirus plague on the learning process of individual learners and how they evaluate the perceived instructors' attitude. A set of questionnaires will be conducted in this thesis to study the influences of the new study environment – virtual platform – on each individual learning progress. The overall picture of this scenario is to find out what has been good, bad and what can be improved in this new approach to the students. The final outcome will include graphical analysis of the answers and a report which compiles practical solutions on improving the overall quality. The thesis work aspires to achieve better understanding and knowledge toward how data-driven benefits higher educational institutions.

The main objective is to study the impact of e-learning to the students during the situation when most learners around the world have to suddenly move to a whole new way of learning. The thesis also centered on exploring the use of technology by education systems to optimize learning and desires of students. This topic would provide valuable information for any educational institution to cope with the adverse situation of the outbreak, to leverage their key values, to optimize a more precise decision-making process and to improve the quality of new teaching approaches for learners.

In order to achieve the expected goals, this study explores following research questions in particular:
- How does e-learning systems affect the students as well as the educational institutions throughout the global pandemic outbreak?
- What are the factors that affect the effectiveness of the e-learning process?
- What are the challenges students and educators facing during the shift?
- What kind of support the universities provide to help students overcome the unpredictable situation?

- What are the potential solutions to improve the online learning process and educational performance?

3.2 Methodology

The study is based on the analysis of the current state of individual's learning progress in the transition from face-to-face learning to e-learning, which will focus on how learners' perspective about this and how they perceived the teaching quality from their instructors. Thus, this research work requires the authors to deal with human behaviours. Consequently, quantitative analysis methods are selected for the study.

Quantitative research is a method that uses a numerical system to quantify variables and analyze those measurements by using a variety of statistical models, and to create reports and correlations among the studied variables. Numerical and graphical collected data can identify quantitative research and often requires multiple participants. In quantitative research, there are several methods to gather the data and the most used and most efficient method is through survey research (Gurbuz 2017). Survey as the method of research is to conduct research by asking different questions to the interviewees and using the various types of questions. The primary purpose of the survey is to obtain accurate and relevant data in a standardized manner, which is easy to interpret and report. The findings of the survey research can provide realistic and accurate numerical information about the interviewees.

Based on the current situation and results collected from the survey (practical base), the study also incorporates facts and advice in articles, books and paper sources (theory base) to provide the right approaches for the outcome. These solutions must be useful for both theoretical and practical purposes.

3.3 Steps in the Research Procedure

The research work will be broken down into four main phases including Planning, Execution, Consolidation and Completion. The first phase of the process is planning, where authors will brainstorm and identify the main ideas as well as the goal of the research within the consultation and approval of thesis supervisor. In

order to keep the thesis flow consistent with the main ideas of the thesis, authors will list out a set of core research questions to avoid out-of-topic discussions. In addition, research methodology will also be agreed by authors and supervisor during the planning stage.

Once the topic and general work plan are identified, authors will move to the next step of execution in which authors start to recognize the main problems, to collect data to support the research study and to analyse the collected data for better understandings of the thesis topic. A survey questionnaire will be created and released to public in order to gather practical opinions from volunteer participants for the problem analysis raised in the thesis topic and research questions. After closing the survey questionnaire, the results will be visualized on graphical charts for authors to analyse according to the identified problems and key points. Insights' explanation in detail will also be included throughout the survey's results analysis to reflect the real problem situation as well as to suggest the potential opportunities for the improvement. All the advices and suggestions from supervisor during this executing phase will be taken into consideration for comprehensive navigation and outcome.

In the consolidation phase, the completed thesis will be reviewed by supervisor to check if the main ideas are precisely identified and analysed. In addition, the structure of the whole thesis work will be also checked in terms of consistency and logic. The language instructor will also be included in this phase for language evaluation such as grammar structure, organization of the body text and citation. By the time the research work is approved by both supervisor and language instructor, the thesis research work is ready to be submitted for the final assessment.

3.4   Google Forms as a Survey Tool

Google Forms is a cost free survey tool which includes other resources such as slides, papers, documents which are also integrated in Google Docs. Google Forms allows the user to collect information and interpret it through assessments and surveys. The user will create surveys and quizzes with a relatively simple

online form with Google Apps (Love 2014). The user can then share his questionnaire or show the file or form via a direct link, social networks or e-mail. Google Forms includes the development of a Google Account and requires first, last name, username and password. Then Google can verify the personal information of the user by sending a text message to their telephone number. A survey can be created using Google Forms after developing a Google Account.

4   FORMING THE SURVEY AND RESULTS

4.1   Problems Definitions

This is the first time since the Second World War that most countries around the world have to lock down their educational institutions at the same time and for the same reason. More than a billion students worldwide can not go to school or university because of COVID-19 controls. COVID-19 has changed the way students are educated worldwide in several weeks. Those improvements give an idea of how studying will, in the long term, improve for the best or probably worse. The majority of schools in mentioned areas need stop-gap approaches to continue education, but the standard of learning depends heavily on the level and quality of digital access.

In both practice and research aspects, techniques of measuring the efficacy of e-learning programs are important. According to Agrawal and Agarwal (2016), the efficiency of online learning systems can be assessed using the six-factor model from Ozkan and Koseler (2009) that includes system quality, content quality, service quality, instructor attitudes, learner perspective and supportive issues. In order to foster success in teaching and researching through the provision of education, the collaboration between library (e-library) and faculties has always played a vital role through the delivery of instruction, including the one-on-one use of manuals and resources to make students acquainted with e-library services and facilities (Osman, Wahid & Zakaria 2018). Therefore, supportive issues will assess the relationship between e-library systems and faculties. These factors will be used as reference to form the research survey questions.

The goal of this research is to determine both human and technical variables that could greatly affect the productivity of e-learning and to identify new mediators in cooperation between the library and faculty.
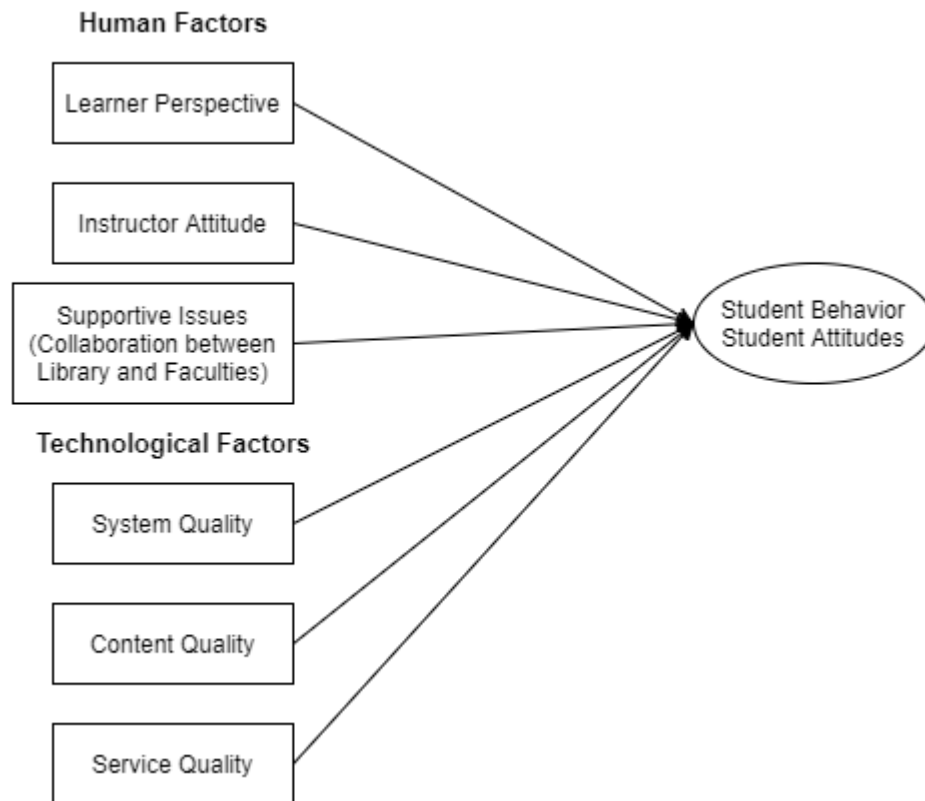
Figure 1. Research Framework

4.2 Implementation of the Survey

The survey was performed in late April 2020 and was carried out between 30 April and 4 May 2020. The survey was implemented using Google Forms and then the URL link of the survey was shared on Facebook for the authors' fellow students that are mainly around Europe and Vietnam after the questionnaire creation. A combined number of students counted around 1000. The survey was also sent to Lapland UAS students who are studying Business Information Technology via a joint Facebook group.

The survey questionnaire was structured to be entirely anonymous such that no names or personal details from participants were needed and was carried out in a manner that allowed students to answer questions easily. The survey was formed in a way that the participant's answering process was not lengthy, and it was easy to respond.

4.3   The Processing of the Results

E-learning is a dynamic method of learning that involves the utilization of ICT infrastructure, instructors' performance and learners's attitudes. In addition, Lawal and Akintunde (2014, 619) also suggest that library and faculty association may also improve e-learning performance. Therefore, the authors desire to evaluate the effectiveness of individual e-learning processes during the shift from classroom teaching method to online platform due to the pandemic outbreak of COVID-19, and based on the six factors framework of Ozkan and Koseler (2008, 1286).

In order to get precise and reliable samples, authors mainly released the survey questionnaire to groups of students who are adopting online learning methods under the siege from Coronavirus in different countries around the world and study in various majors. Five days after the survey was published, 146 anonymous respondents were collected and no further response is approved. The received responses for 25 questions in the survey were split roughly into six groups: system quality, content quality, service quality, instructor attitudes, learner perspective and supportive issues for analysing the impact of online learning on particular students.
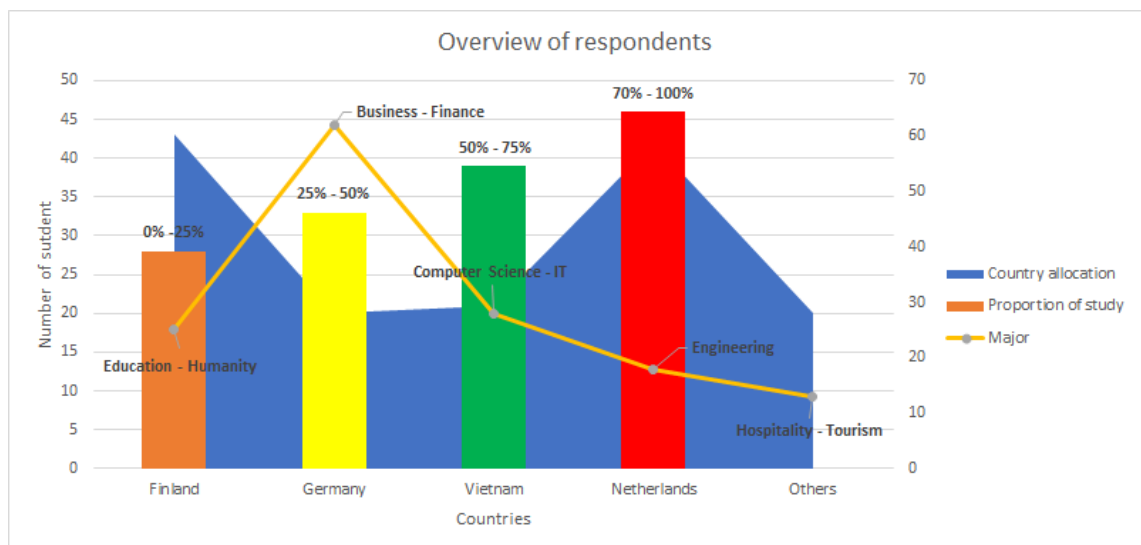

Figure 2. Overview of Respondents

The combined chart demonstrates the overview allocation of respondents regarding the country, study fields and the proportion of their study process. In general, the majority of respondents come from Finland (43 students) and Netherlands (42 students), the rest number of respondents distributed equally in Germany, Vietnam and other countries such as France, Australia, England, America etc., with the proportion of 14 percent per each. In the total number of 146 respondents shown in the line chart, there are 62 students studying Business and Finance (43%), 28 respondents are Computer Science and Information Technology students (19%), 25 of them study Humanities and Education (17%) followed by Engineering (12%) and Hospitality (9%) students with the number of 18 students and 13 students respectively. Moreover, as shown in the column chart, approximately one third of the students have been completing 50% - 70% of the studying process, 39 students are in their second year, 33 of them are in the third semester and the rest of 28 students are freshmen.

Overall, the data analysis significantly based on the opinion of a major proportion of students who are studying Business Administration and Computer Science in between their third and sixth semester and mainly from Finland, Netherlands, and Germany.

5   THE RESULTS

5.1   Human Factors

Human factor primarily emphasizes the competences and satisfaction of both learners and educators in the engagement with e-learning approach. In the survey questionnaire, multiple questions have been asked for realistic opinions of how students are being influenced within the change of learning environment in a short notice of time, which followed by how important of the teachers' attitudes to the e-learning process. The result of the survey question in respect to human factors will be firstly analyzed as following order: learner's perspectives, instructors' attitudes, and supportive issue.

5.1.1   Learner's Perspective

In order to examine how students have currently been satisfied with the shift to an online learning environment in the state of emergency, several questions were asked in the survey questionnaire in terms of students' motivation and psychological aspect.

4. How is your motivation for remote studies in comparison to the situation before the state of emergency?
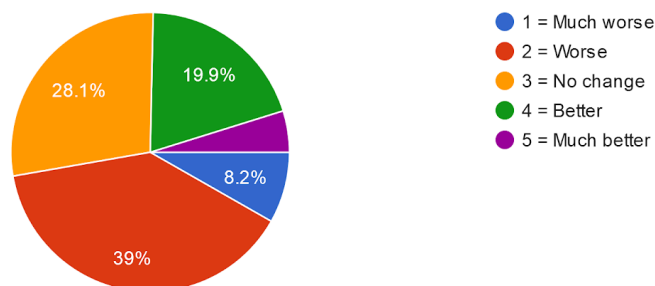146 responses

Figure 3. Motivation of Learners in the Transition

6. How does the state emergency change your psychological feeling?
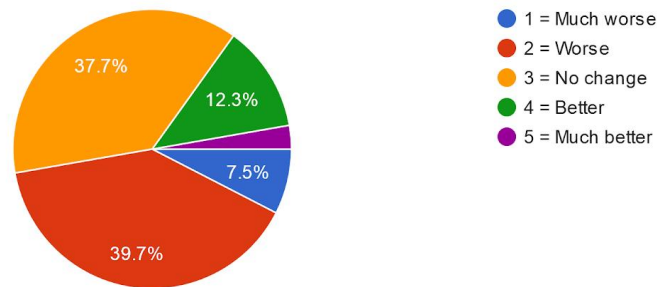146 responses

Figure 4. Psychological Feeling of Learners in the Transition

The first two pie charts above illustrate the proportion of how learners' motivation and psychology are being affected when changing to remote study because of the Coronavirus plague. According to the results, more than 39 percent combined with 7.5 percent of learners are negatively influenced in both psychological and learning motivation as a result of the explosion of COVID-19.

As stated in 64 answers for question number five which asks the students about their specific factors directly affecting their motivation, the main reasons that lead to this unfavorable impact include the lack of face-to-face communication with teachers and friends, distractions from the surrounding environment, inefficient time management and decrease in self-motivation. For Computer Science and Engineering students, some technical issues such as poor connection to school servers, the shortage of devices and closure of laboratories have become a huge barrier for their e-learning effectiveness as it causes extra cost for experimenting equipment and materials. Additionally, the remote teaching skills of the instructors and the inadequate resources of materials are also a part of the downside. The last challenge for this dissatisfaction of students with the e-learning program is that unexpected and insufficient adjustment in examination methods has discouraged learners to try their best for the exams either.

Besides approximately one third of the respondents are struggling with the inevitable situation, there is a considerable proportion of students, who are still able to retain their motivation (28%) and psychological feeling (37.7%) as same

as before the restriction occurred. Meanwhile, more than 25 percent of learners feel much more motivated with the digital studying approach.

Most students who are willing to participate in online courses stated that they feel more flexible in their learning schedule and not too dependent on teachers and school timetables. Since e-learning does not have any limitation in time and location, it allows learners to learn at any time and any places through electronic devices that can be accessed to universities' online learning portal (Bhuasiri, Xaymoungkhoun, Zo, Rho, & Ciganek, 2012; Kilburn, Kilburn, & Cates, 2014). Wisloski (2011) also states that this online learning approach is much more advantageous for learners who are studying and having a job simultaneously. Within the recorded lectures and ready materials on the school's learning portal, students can proactively monitor their study pace and rhythm as they are no longer dependent on the fixed timetable of traditional classroom method (Bhuasiri, Xaymoungkhoun, Zo, Rho, & Ciganek 2012, 847).

Another benefit of e-learning according to the respondents' opinion is timesaving. Studying at home enables learners who live far away from campus to save time traveling from home to school as well as to save transportation cost. The amount of time saved from traveling to school, students can learn new skills to enrich their knowledge and enhance self-improvement. As Donnell and Sharp (2012) observed that students with a willingness to pursue material freely had a stronger dedication to learning, thus increasing their own mastery of the topic content.

8. Do you feel like remote learning has caused you more stress than face-to-face learning?
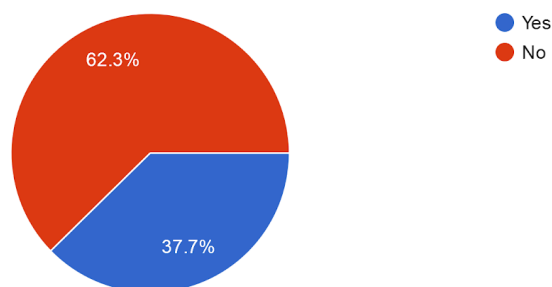146 responses

Figure 5. The Impact of E-learning to the Learners

Webster and Hackley (1997) propose that the perspectives of learners en route to the combination of high tech and incorporated learning have vital impacts to the success of e-learning operation. Regarded to the collected 146 responses about the comparison between distanced learning and face-to-face learning in terms of stress in the pie chart above (figure 5), more than 62 percent of students agree that e-learning is not more stressful than face-to-face learning, and 37.7 percent think that e-learning brings them much more stress than the traditional in-class learning method. When being asked for particular causes to their in-question number 9, a total number of 42 answers has been categorized as following main reasons:

- Increasing in workload is the result of no time limit like in a normal physical classroom, thus, more assignments are given out and a density of deadlines leads to out-of-control learning schedules.
- Lacking human interaction has made it difficult for students to discuss answers or solutions for their homework with their professors. Moreover, improper online learning manners of some students results in the deficient group work.
- Spending more time on computers and mobile devices causes distraction, which decreases productivity and learning efficiency.
- Having unstable Internet connection reduces the quality of online conferences, therefore, learners may misunderstand main points of the lessons.
- Surrounding environment negatively affects students as they have no privacy at home or neighbors are too noisy which makes learners more stressful and unable to concentrate on the lectures.

Although a majority of students state that it is not more stressful to study online as compared to the classroom environment, there is still a considerable percentage of students (61%) who find it is discouraged to interact with instructors and other students on online platforms. Meanwhile, only 39 percent of students have enjoyable experiences when taking part in online classes (figure 10). As stated by Palloff and Pratt (1999), the interactions between students themselves

and the interactions of instructors with students are golden keys to the effectiveness of the learning process. While the interaction has generally been considered as one of the vital contributions to the success of e-learning, there is very little scientific evidence reflecting how students perceive the importance of online communication.

10. Do you feel motivated to interact with teachers or other students while attending the platform?
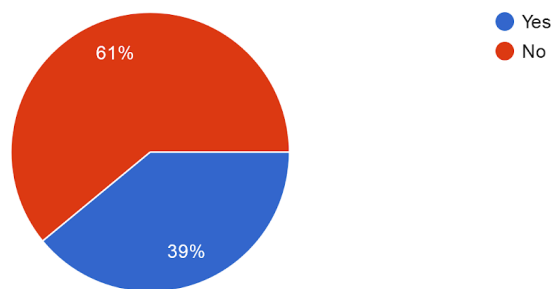146 responses

Figure 6. Motivation to Interact with Teachers or other Students

According to 33 responses for the question number 11 asking for the factors that make learners feel daunted when interacting with teachers and friends on learning portal, most of students have listed out some common causes as below:

- Students easily get bored and distracted via audio lessons. Because of the absence of teachers' observance, they can do other things during the lecture.
- Classmates do not actively contribute to the lessons and group activities since they are not able to communicate in person, which is emotionless and unreal for students to talk via virtual platforms.
- Technical problems such as lower audio quality, incapable peripheral devices and poor internet connection restrain students from participating progress. Sometimes students miss important information about the lessons due to unstable connections.
- Lack of in-time responses from teachers. Some students explain that not only writing an email takes more effort than talking face-to-face, but they also do not get precise and in-time answers from lecturers.

- Students find themselves diminishing in encouragement and engagement.

Overall, the learner's attitudes toward the inflection to online learning environment have been undoubtedly impacted by Coronavirus outbreak. Even though there is a huge proportion of 62.3 percent of learners admit that e-learning does not cause more stress than the classroom teaching method, approximately 50 percent of students have found it very desperate to attend online courses and their psychological feeling is also negatively affected due to the self-isolation regulation. In addition, more than 60 percent of respondents have a tendency to withdraw in the online interaction with teachers and other friends.

From the result, the authors can conclude that the explosion of COVID-19 has a negatively momentous impact on learners' perspectives. Since the restriction of school and public areas, students are not allowed to face-to-face interact with each other as well as with educators. Furthermore, some other causes such as the lack of physical infrastructure like libraries, laboratories etc.; a great increment in workload and deadlines; distractions caused by surrounding spaces; inefficient communication with teachers and poor connection to learning portal; altogether, have made learners struggling to adapt to e-learning method in a short time frame. Peter (2017) argues that isolation can lead people at any stage of their lives away from learning. Therefore, some possible opportunities will be discussed later to avoid the disadvantages of the current e-learning process and improve students' satisfaction.

5.1.2 Instructors' Attitudes

To evaluate how students perceive their instructors' attitudes due to the change in learning method, question number 12 was asked for the opinion about teachers' performance with respect to five fundamental elements: inspiration supporting, providing reliable suggestions, interaction with students, teaching method and fair feedback/evaluation.

12. How do you feel about your teacher's performance after switching to an online platform?
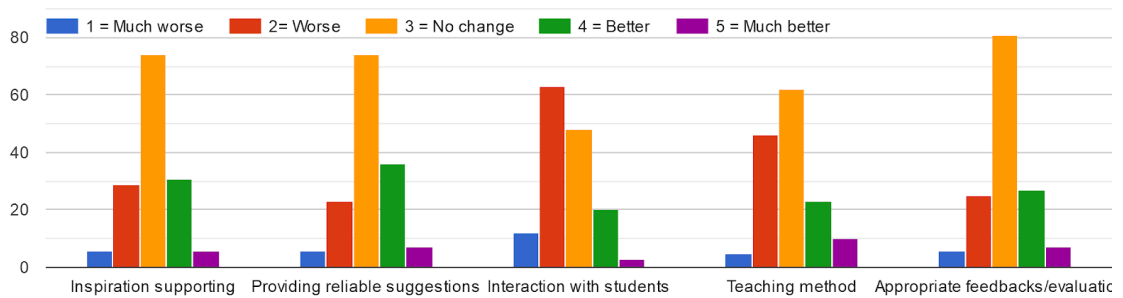

Figure 7. Teachers' Performance in the Transition

As illustrated in the combined bar graph, there are three elements characterizing instructors' performance including motivation support, reliable suggestions provision, and appropriate assessment tend to remain stable during the inflection to e-learning method with the number of "no change" votes of 74 students, 74 students and 81 students respectively. Other than that, the percentage of negative and positive experiences in the inspiration support and evaluation factors seem to be equal with approximately 24 percent, when the providing suggestions element has a slight increase of 5 percent for the positive votes as compared to the other two.

Nevertheless, a noticeable number of 75 students believe that the interaction with their lecturers has negatively decreased and even worse after switching to online platforms, while 48 students stated no change occurs in online communication with teachers, which followed by the rest of 23 students that agree the interaction is better in an online environment. Teaching method, on the other hand, diversifies in the responses. A large proportion of respondents (42.5%) think the teaching method is unchangeable after the emergency of pandemic, whilst almost 35 percent of students oppose the stability of instructors' teaching approach. There are 22.5 percent of total respondents supporting a better teaching method via online learning. In general, both online interaction with instructors and e-teaching methods tend to encounter adverse influences due to Coronavirus plague. To dive deeply into the downward tendency of teaching

measures and teachers' interaction, question 21 and 22 were included in the questionnaire for more specific viewpoints from students.

21. How important is the teaching method to the e-learning process?
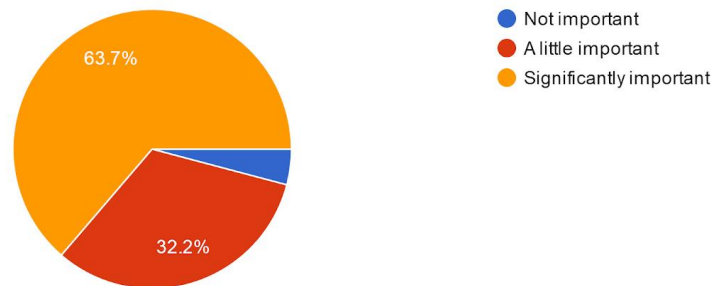146 responses

Figure 8. Importance of the Teaching Method to the E-learning System

Among those five components used to evaluate teachers' performance. Teaching method is known as the most crucial importance to the success of e-learning, which is also acknowledged by 93 students come along with 47 out of them think the teaching method is still important, but slightly impactful, whereas a very small number of 6 students disagree with the importance of teaching ways to e-learning processes (figure 8). The teaching method used in the e-learning is equally important according to Mayerova and Rosicka (2015) since the teaching method is directly related to the course outcomes. Without consideration of e-teaching schemes, the total quality of schooling will possibly not be improved. The method of teaching in the e-learning process varied considerably from the conventional approach. However, the ways that instructors deliver their content could increase user participation and thus increase e-learning effectiveness.

22. Do you think online course can take place WITHOUT teachers?
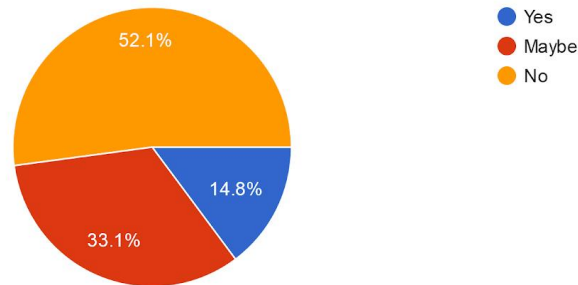
142 responses

Figure 9. Role of Teachers in Online Courses

The research by Donnel and Sharp (2012) also showed that while technology has become as extensively essential in facilitating the educational process, a lecturer never be doubted. There is still a need for teachers for the learning process. According to the result for question 22, more than 50 percent of students say "NO" to the replacement of teachers by technology, relatively 33.1 percent think it possible to study online without a teacher and 14.8 percent totally agree that teacher is not necessary in the e-learning process. It is understandable that IT students who are already familiar with distance studying and flexible timetables, would prefer to self-explore than being with teachers in every single lecture. However, Business, Engineering and Society students would expect more real-working life experiences sharing from their instructors as well as the ways teachers convey their lesson matter a lot to the comprehensive learning process of individuals. Hamid et. al (2015) also stressed the importance of interactions for learning achievement in e-learning since students experience better when collaborating with other students and lecturers. Furthermore, students also improve their own comprehension of course content compared to the course not using social technologies, students also improve their own mastery of course content compared to the course not using social technologies. Hence, motivation is obviously one of the main factors, and teachers are the right people to inspire them. It is clear that teachers can never be eliminated from the learning process under certain circumstances.

5.1.3 Supportive Issues

17. Does your school e-library system provide reliable resources and material for your schooling work?
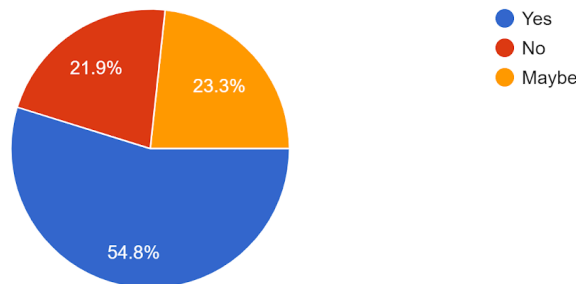
146 responses

Figure 10. Quality of E-library System for Schooling Work

In order to review how influential a school library is to the individual learning process during this tough time of the lockdown, question 17 was asked in the questionnaire. The figure above shows the quality of the e-library system in higher education and if it provides reliable resources and material for schooling work of students. As Kilic-Cakmak (2010, 205) points out, e-learning facilitates research between students and lecturers through the use of ICT materials. Lawal and Akintunde (2014, 608) form an important link between faculty and library cooperation and the efficacy of e-learning as it helps to recognize knowledge literacy gaps among students. Therefore, a need for collaboration between library and faculties would be helpful to assess the human and technical factors influencing e-learning effectiveness. More than half (54.8%) of surveyed respondents answered "Yes", which indicates that e-library partnership with faculties has been positive for the students. The majority of learners are having enough reliable resources and material for their schooling assignments. However, over one fifth number of students (21.9%) are not having enough resources and material for their study. According to question 5, which is an optional question asking about what is affecting learners' motivation, some have answered that they prefer going to the physical library than using online library since the physical library contains more resources for their particular major.

5.2   Technological Factors

In addition to human factors, technological factors play a certain role in the conduct and attitude of students towards e-learning. In order to see how much it affects the learning progress of individuals, the survey has included several questions on common technical problems such as the system quality, content quality and service quality.

5.2.1   Service Quality

13. Do you feel that you have got enough support from school before and during your remote studies?
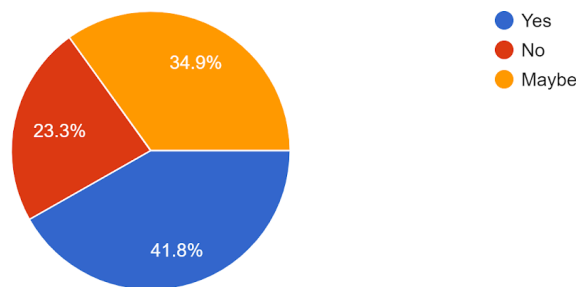146 responses

Figure 11. Respondents Who Have Got Enough Support from School during the Transition

As figure above, roughly 42% respondents are getting enough support from the school before and during their remote study, which means numerous schools are taking initiative in adopting a new teaching environment and perform well in increasing support and encouragement for students. However, with more than half the responses choosing "Maybe" and "No", the work of spreading the news and supporting guidance from many schools is still considered to be unfulfilled. And in this case, it belongs to the service quality of educational institutions which have been figured out to have a strong effect on user satisfaction. In today's e-learning world, it is partially the duty of schools and higher education institutions

to help students ensure that their schooling is continuous and to ensure that their students receive all updates on time and in time.

18. Does your faculty/ your learning coordinators provide available support in time?
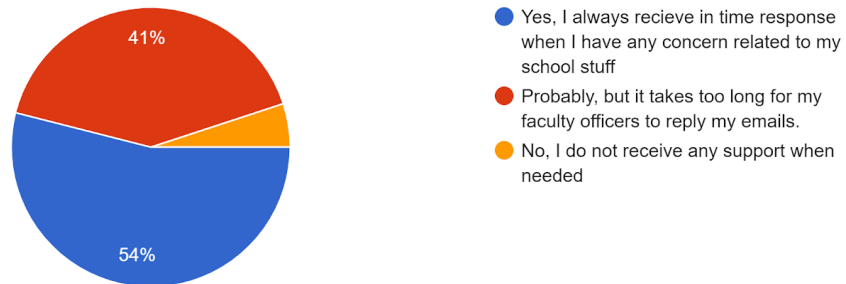139 responses

Figure 12. Respondents Who Have Received Available Support in Time

Following the support from the school management, guidance and updates from responsible teachers and faculties will be considered also as service quality. More than half responses are positive which means teachers and faculties in most universities are doing well in helping students get to know the situation and new implementation. Yet, the number of students who do not receive any support or wait for a long time to get support is too large (46%). This is also partly a reason causing more stress and less motivation for students who are participating on e-learning platforms. Simple navigation, simple information to search and available assisting information are essential aspects of service quality in fostering the habits of learners (Ozkan and Koseler, 2009). The consistency of the e-learning services could increase the interactivity of students, thereby boosting their ability to explore the content. The ability to learn and communicate inside the e-program may have a big effect on student success. One way to keep students motivated and focused on learning is to let them always know that the school is there constantly with them and keep them up to date with the latest curriculum and news.

5.2.2 System Quality

14. How would you rate your school's online teaching tool (Zoom / Adobe Connect / ...)
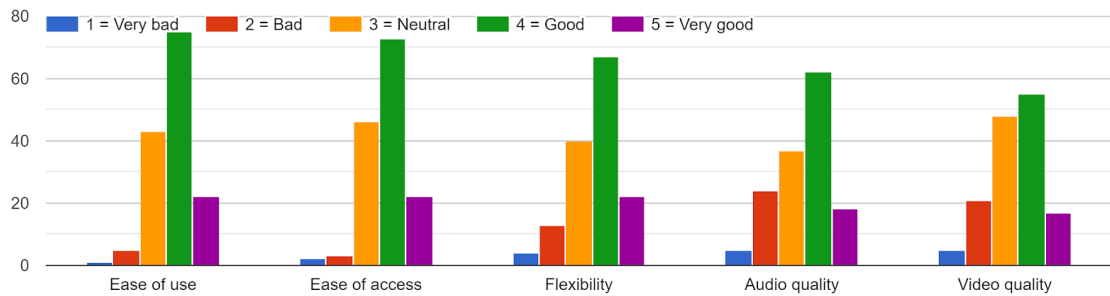

Figure 13. Quality of the Tools Which Are Used for E-learning

The figure above represents the system quality which, in this case, is the quality from many aspects of the platform used for remote learning. As Gable (2008) states, service quality is a technological and design assessment of an information system. Hence, what students perceive from the tool can be defined as students' evaluation of the system from a technical and design perspective. The information system success model notes that the quality of the system is a critical success factor in performance that affects students' satisfaction and the willingness to keep making progress of study (DeLone and McLean, 2003). As shown above, the system quality will be split into 5 small categories in order to assess the overall performance of the tool: Ease Of Use, Ease Of Access, Flexibility, Audio Quality and Video Quality.

According to question 16, which is asking about the tool used during this time, the majority of respondents are Zoom, Microsoft Teams and Adobe Connect. In general, the ease of use and access and the flexibility of these tools are noticeably good with more than half positive answers and very few negative answers, which means that these applications are doing very well in the designing perspective. But when it comes to the audio and video quality, there is a decrease in good responses and more bad answers show up. Audio quality seems to be a bigger problem with almost 30 people who had bad and very bad experiences, it could be caused by many common problems such as wind noise, background noise or badly synced audio. And the one way to mitigate bad experience in audio

is to wear an external headphone or any specific recording device.

5.2.3 Content Quality

15. How would you rate your online course's content learning as the following factors?
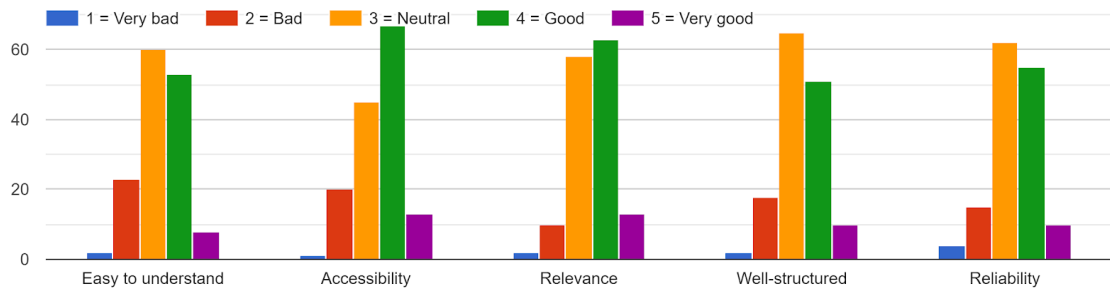

Figure 14. Quality of the Contents Which Are Used in E-learning

Figure above shows five characteristics which are used for measuring the quality of the content used in e-learning: Understandability, Accessibility, Relevance, Structure and Reliability. Content quality here is also called information quality or material quality. Peltier, Schibrowsky, and Drago (2007) found that course content is the most important factor in assessing the quality of perceived online experience. And the perceived overall quality of the course is not directly related to the quality of teacher-student and student-student interactions. Harrandi (2015) indicated that the meticulously planned layout of the course has a significant effect on student enthusiasm for e-learning.

According to the figure, the overall experience from learners towards the learning content is very good with dominant positive responses. However, with more than 20 "bad" and "very bad" votes, the learning content tends to be difficult to understand with some people. A report from Andersson (2008) points out that a large number of students in some specific subjects and majors are more satisfied with the lab session than the remote learning content. Accessibility comes second in collecting negative answers from learners, which means that some students are still having troubles in accessing the learning content. Andersson (2008) also shows that connectivity is usually the limiting factor to prevent students from

doing assignments and assessing the learning content. Above from these minor challenges, an overall experience of students with the learning content are very good.

23. How has technology been working for your remote learning? (E.g. devices, internet connection, and applications.)
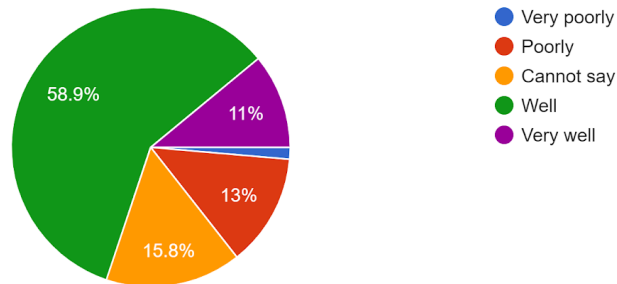
146 responses

Figure 15. Overall Experience with Technological Factors

According to the figure above, more than two third number of respondents have chosen "Well" and "Very well" (58.9% and 11% respectively). The number proves that until now, all the mentioned technological factors have been working well for learners, which means that schools and universities have prepared proper, on-time and practical approaches for all students before and during the pandemic outbreak.

24. How would you rate your experience with this new remote learning system so far?
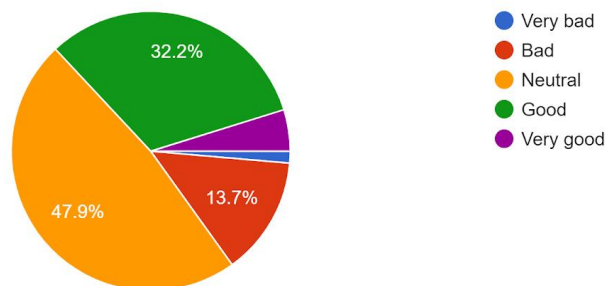
146 responses

Figure 16. Overall Experience with the Remote Learning System

As shown in the figure, neutral responses accounted for almost half of the pie chart. Due to the analysis above, it can be easily seen that human factors have made a bigger impact on learner's overall experience with the new learning remote system as the human factors are having dominant negative respondents. It might also be a reason causing such a big number of neutral responses as people cannot decide between "good" and "bad".

6   CHALLENGES AND SOLUTIONS

6.1   Challenges

Any changes happen in a short notice time frame cannot avoid challenges. In this case, due to the novel Coronavirus pandemic, an unforeseen shift from physical classroom education to e-learning approach has caused various challenges in the individual learning process. After processing data collected from the survey questionnaire, authors have recognized some spectacular difficulties occur in the e-learning processes throughout this chaotic period of time.

First of all, regarding learners' perspectives and question 20, which asks about what affects them the most on their e-learning progress, most students who have negative experience with e-learning in the state of emergency claim that the self-isolation significantly affects their psychological aspect. This means that students find it less motivated to attend online courses as working on computer or mobile devices for many hours a day leads to a great distraction and decrease in productivity. They cannot focus on the online lectures when teachers keep reading the presentation without any physical interaction like in the classroom method. Plus, learners who prefer face-to-face interaction argue that talking to a computer or merely listening to the audio seem to be emotionless and boring to them, which also reduces proactivity and learning engagement of individuals.

Another considerable barrier for students who have low time management skills hardly adapt to online learning is that the overloaded amount of assignments and deadlines. Todorov (2017) emphasizes that online learning allows you to spend some time researching and practicing on your own. This requires discipline and

a genuine understanding of how to use your time wisely all day long. As it is now impossible for students to come to a specific place at a fixed time slot, students are struggling to arrange their own timetable for different online courses; as a result, most of them feel stressful with monitoring their own time. Consequently, as shown in the figure 17 below, almost the half number of respondents (45.2%) have experienced a "Slightly negative" change in regard to their study progress, and another 16.4 percent chose "Extremely negative". This means all challenges mentioned above are becoming serious problems for educators who are trying to access the full potential opportunities of remote learning.

19. How do you think the pandemic is affecting your progress in your studies?
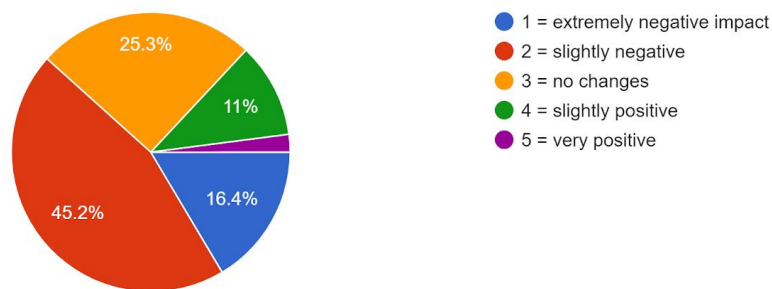146 responses

Figure 17. How the pandemic affects learners' study progress

Secondly, some challenges in relations with instructors' performance also strongly impact on the e-learning process. Many students are dissatisfied with the ineffective interaction with teachers after moving to an online platform. They stated that the lack of communication in person prevents them to fully express their ideas as well as cause misunderstandings of the lectures. Furthermore, the unstable availability of professors discourages learners to contribute to schooling work as they could not receive the consultancy on time, and when teachers respond it takes more time to review what they wanted to discuss. The last difficulty that both teachers and students are facing is teaching methods. It is getting unmanageable for instructors to familiarize with e-teaching techniques in a short duration and keep the courses going simultaneously in the first stage of the shift to an online environment. Consequently, incomplete teaching methods

unintentionally reduce learners' participation and encouragement; thus e-learning processes are not effective.

6.2   Solutions for Improvements

Since the challenges in online learning are raising, improvements must be adopted and adapted in order to open the full potential and opportunities of e-learning. In regard to the learners, being stuck indoors, concerned about the unknown future and worried for friends and family are the feelings all students are facing in the COVID-19 pandemic. Numerous evidences have shown that certain activities and structured routine in everyday life can protect psychological state and foster positive mental health (Whitley 2020). The fundamental activities for a healthy and positive mental state includes exercises, good-night sleeps, structured eating habits and social activities. Social activities have always been connected to positive mental health. There are many forms of mediated activities that are available online such as online book clubs, podcast radio or online language exchange programs where students can practice another language for free. One important note to keep the list above not to be exhaustive is to tailor learners' activities to their own interests. Learners should also avoid using social media in the meantime because news and fake news about the pandemic are all over and, consequently, it would cause more concern and stress to the readers.

Lastly, students should learn how to manage their time effectively. According to Todorov (2017), the basic principles of time management are easy to understand, but hard to apply in your life consistently. In order to build up time management skills, individuals must be persistent to their time usage by pushing themselves to use the time that they have planned and avoid getting back to the old habits. A strong commitment to practice time management approaches would always help to keep self-motivation up by accomplishments and achievements in online courses. A better time management skill would help learners balance life and learning, which make e-learning processes more effective and comprehensive.

Regarding the higher educational institutions, depending on various challenges above, it requires a different approach for each challenge and the one way to

solve it is to mix and match the approaches. Instead of focusing on theoretical e-learning for the transition, universities should blend online learning, class environments, reading and even activities and networking so that the learning content would be much more interesting and captivating for students (Talerngsri 2019). In addition to blended learning, personalized learning is another excellent approach for overcoming the issues with online learning and helping students deal with negative feelings. Personalized learning is an educational approaching plan that aims to adapt learning to the strengths, abilities, and interests of each student. It also involves a student development program, which responds to a student's specific interests and can include creative teaching, teacher-led training, school study, flexible hours, and online learning (Asfa-Wossen 2020). The personalized learning plan could make the transition to online learning smoother and the students would need less support from the teachers and faculties.

In addition, teachers should take initiative in facilitating an online learning community so that students can have an on-time and in-time support. Krejns (2004) states that social interaction between the learners is the fundamental element for a quality online environment. Learners who are using the online environment often feel isolated and distant and, therefore, are not in the mood to interact with other people. This leads to a lack of trust and motivation in the virtual environment. The community would obviously become a place where both teachers and students could build and consolidate social interaction, cultural identities, and personal involvement and, thus, it would be a great tool for improving students' psychological state of feeling.

7 CONCLUSION

7.1 Human

The analysis of the human factors group reveals a relatively negative result as most of respondents' e-learning process are strongly impacted, particularly to their psychological side during the lockdown due to Coronavirus pandemic. A large number of learners think that it is challenging to blend into a new online learning environment. Because of the sudden restriction of face-to-face contact and the difficulty to concentrate on mobile devices for a long duration, learners' motivation, and engagement in online interaction with friends and teachers have decrease. Additionally, other students state that the unpredictable change in learning method causes them more stress since the increase in the number of homework is overwhelming and out of their control; therefore, many students have a tendency to dismiss online courses. Apart from learners' attitude, teaching method after the rise of Coronavirus also reduce the learners' satisfaction within the most common reason is lessons misunderstanding as students cannot communicate in person with teachers and cannot fully express their ideas during the lectures.

Additionally, without the physical presence as in traditional classroom, it is crucial for teachers to develop a virtual presence at the early stage in online courses. Teachers should have a fixed and transparent schedule to show which days and timeframe they are available for consultancy, or how to contact the lectures outside those hours. For instance, students can book one-to-one or a small group discussion with teachers via online discussions, forum or social media. By this way, students will be more encouraged to participate more when they see teachers putting time into discussions and engagement. Through this dedication, the instructors themselves will be able to build professional relationships with their students and give learners a memorable experience to learning throughout the courses.

In order to improve the teaching method which is also negatively perceived by learners during the change of learning environment the university management should consider applying mixed teaching practices to make e-teaching more creative and compelling to learners. The best online instructors use a combination of synchronous and asynchronous practices, mixing the traditional learning models with modern audio and video resources. Learning together with various activities; for example, creating fun-facts quiz on Kahoot.it, makes the curriculum more engaging and enjoyable and allows student interaction with both teachers and other students. To optimize the teaching methods, teachers need to ensure their e-learning content are always accessible via smartphones, laptops and iPads in order to let learners know that instructors are also in contact with the needs of high teach and modern workflow. Within these techniques, teachers would be more confident with their e-teaching skills and online materials; thus, successfully create a collaborative learning environment for a more effective learning process.

7.2 Technology

While the human factors group seem to be negatively influenced, the technological factors are positively evaluated by the respondents. Many students have been satisfied with their university system quality in terms of eases of use, ease of access, flexibility, audio quality and video quality. They think that the digital tools such as Zoom, Microsoft Teams and Adobe Connect are doing well in the role of e-learning facilitator and intermediate lessons deliverer, which help learners keep pace with the lectures more effectively even though the audio and video quality sometimes is poor for a large group of people. In addition to the system quality, content quality factor also receives positive feedback from respondents. The general experience with the lesson contents is extremely satisfying as approximately 50% of respondents agree that the learning content is easy to access, relatively relevant to the learning topic, well-organized and understandable. Likewise, service quality are also highly evaluate, which reflects that the school administration is trying their best in providing updates and guidance to keep students informed about the current situation as well as new implementation of the learning curriculum.

7.3 Summary

Overall, the result of the survey shows that learners' attitudes are mostly impacted in a negative way as compared to other factors. The improvement of learners' satisfaction significantly depends on their personalities, self-motivation and self-discipline. Learners should learn to manage their time and to arrange a suitable schedule for a better engagement in online courses as well as following the assignment deadlines punctually. In order to improve psychological feeling, learners are advised to develop some basic practices for good and stable mental conditions including exercising, good sleep, regular eating habits and social activities. These activities can be easily searched online via online books club and podcasts. Once mental health is strong, learners will be more proactive and motivated in online interaction with fellow friends and instructors.

To sum up, implementation of online learning methods has certain challenges to any involved participants. It is obvious that it costs a lot of time for both instructors and learners to adapt to a new e-learning education throughout the spread of COVID-19 pandemic. Although it is challenging to settle into a new learning platform, it requires both learners and instructors to be more proactive, more self-motivated to explore and adapt to the new learning environments. Especially, metal health should be remained active for all educational participants in order to overcome the situation and drive the learning process more efficiently. Learners, in particular, should be more disciplined to develop an appropriate learning routine so as to improve the productivity, concentration and effectiveness in the e-learning process.

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APPENDICES

Questionnaire in the survey:

1. Which field are you studying?

2. Which country are you studying?

3. What proportion of your studies have you completed?

4. How is your motivation for remote studies in comparison to the situation before the state of emergency?

5. If you wish, you can tell us more about what is affecting your motivation.

6. How does the state emergency change your psychological feeling?

7. How willing are you to attend the online classes?

8. Do you feel like remote learning has caused you more stress than face-to-face learning?

9. If you wish, you can tell us more about the factors that caused you more stress.

10. Do you feel motivated to interact with teachers or other students while attending the platform?

11. If you wish, you can tell us the reasons that caused you less motivated to interact with teachers or other students.

12. How do you feel about your teacher's performance after switching to an online platform?

13. Do you feel that you have got enough support from school before and during your remote studies?

14. How would you rate your school's online teaching tool (Zoom / Adobe Connect / ...)?

15. How would you rate your online course's content learning as the following factors?

16. Can you please tell us which tools/platforms that you are using in your online courses?

17. Does your school e-library system provide reliable resources and material for your schooling work?

18. Do your faculty/ your learning coordinators provide available support in time?

19. How do you think the pandemic is affecting your progress in your studies?

20. If you wish, you can tell us what affects you the most on your e-learning progress.

21. How important is the teaching method to the e-learning process?

22. Do you think online courses can take place WITHOUT teachers?

23. How has technology been working for your remote learning? (E.g. devices, internet connection, and applications.)

24. How would you rate your experience with this new remote learning system so far?

25. If you wish, you can tell us more about what has been your struggle with this new remote learning?