

A snapshot of University students' perceptions about online learning during the COVID-19 pandemic

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Abstract. Gaining a better understanding of how the COVID-19 pandemic has affected students' attitudes towards online education is important in order to pave the way from education disruption to education recovery. The current study aims to investigate how COVID-19 pandemic has changed University students' perceptions about online education. The study used a localised version of a questionnaire developed by the Association for Smart Learning Ecosystem and Regional Development on different aspects of distance education. Participants were 90 University students. The results emerging from the investigation demonstrate a positive overall attitude of University students about online distance education, with relatively high levels of perceived ease of use, perceived usefulness, perceived interest and digital competences increase and a preference towards blended modes of delivery. The findings can help education professionals to better plan and design future online courses in the post-COVID-19 landscape.

Keywords: distance education, online learning, perception about technologies, smart learning ecosystems, Covid-19 pandemic

1 Introduction

During 2020, educational institutions around the world have been experiencing a prolonged lockdown due to the COVID-19 pandemic with the educational delivery to be shifted from face-to-face to online. According to UNESCO, 1.3 billion students were affected by school closures in 195 countries – from pre-primary to higher education [1]. However, digital technologies managed to ensure the continuity of learning worldwide [2]. This shift to online teaching, described as Emergency-Remote Teaching (ERT) [3],

has raised a debate on whether or not online learning should continue to play a predominant role in the post-COVID-19 era. During 2021, a year after the pandemic hit, close to half the world's students are still affected by partial or full school closures [4] and educational institutions around the world, due to social distance restrictions that continue to be in place, continue to deliver online classes eliminating face-to-face instruction. As educational systems work to build resilience and adaptability towards technology [5], online and blended learning are in the centre of discussions worldwide. There are many issues to consider during this journey from disruption to recovery. Ensuring access to information technologies for all children, mitigating the impact of learning losses during the pandemic, better understanding the interplay between technology and pedagogy, developing appropriate digital pedagogical resources, are a few of these issues [5].

There have been numerous efforts to investigate the impact of COVID-19 pandemic on the educational community worldwide [6], [7]. One of these efforts has been initiated by the Association for Smart Learning Ecosystem and Regional Development (ASLERD). ASLERD has developed questionnaires to investigate how COVID-19 pandemic has affected University and High schools teachers' and students' perceptions about distance education. The surveys gather current feelings and opinions on some aspects of the distance learning experience from the University teachers and students perspectives [8], [9], [10].

In the same context, the current study aims to investigate aspects of distance learning during the Covid-19 pandemic from the perspective of University students. The study has been based in a modified and localised version of the ASLERD questionnaire for students and has been carried out in a UK University. This work in-progress is aiming to provide a snapshot of University students' perceptions about online learning during the COVID-19 pandemic. The following sections describe the study methodology, the data analysis and results and also conclusions and discussions.

2 Methods

2.1 Participants – Procedures

The study has been conducted during November 2020, after having received the required ethics approval. The researchers contacted potential participants and informed them about the aims of the research. Participation in the study was voluntary. Students who agreed to participate were asked to give their informed consent. The email to the prospective participants included the participant information sheet, the consent form and a link to the online Qualtrics questionnaire.

The respondents in the questionnaire were 90 University students from a Department of Education in a UK University. There were 80 females (89%) and 10 males (11%). 63 students (70%) were undergraduate while 27 students (30%) were postgraduate. There were 46 students below 22 years old (51%), 20 students between 23 and 30 years old (22%) and 24 students above 30 years old (27%).

Regarding participating students' previous experience in online learning, 73% of the students self-reported a rather low previous experience (levels 1 to 5 in a 10-point Likert-type scale) and only 27% reported higher levels of previous online learning experience (levels 6 to 10 in the same scale). Overall, the previous experience with on-line learning of the participants was quite low, $M = 4.20$ (0.29) on a 10 point Likert-like scale (1-10).

Regarding student engagement with online learning, 23% of the students reported that they were engaged more than four hours a day, 43% of the students were engaged between two hours and four hours a day, 13% between an hour and two hours, 14% between 30 minutes and an hour and 7% less than 30 minutes.

2.2 Questionnaire

The study used a modified and localised version of the original questionnaire developed by the Association for Smart Learning Ecosystems and Regional Development (ASLERD) about student attitudes on distance learning. ASLERD has initiated a global research to investigate the effect of pandemic on education. The ASLERD questionnaire is focused on students' feeling about online activities, the change in their perceptions about online learning and their future expectations related to online education [8]. The title of the original questionnaire is "Me and the distance learning - university student questionnaire".

Our slightly modified version of the aforementioned ASLERD questionnaire is a subset of the original. The questionnaire is composed of five introductory questions (gender, age, educational level, previous experience with online learning, time engaged in online learning per day) and twenty questions related to students' opinions on distance learning as this has been experienced during the COVID-19 pandemic. The tool has been validated through pilot testing. Questions were both closed type (multiple-choice type, Likert-type) and open type as well where students could provide their comments to explain their answers to the close-type questions (multiple choice and numerical linear scale). The filling time of the questionnaire was less than 10 minutes if students answered only multiple choice questions, checkboxes and linear scale questions and about 20 minutes if they answered also open questions. The questionnaire was answered anonymously.

3 Results on students' perceptions about online learning

3.1 Perceived usefulness and perceived ease of use

Most students reported that they perceive online learning as being easy and useful. On a 10-point Likert scale the average perceived ease of use and perceived usefulness were reported as being quite high, e.g. 6.44 ± 0.28 for the perceived ease of use and 6.97 ± 0.25 for the perceived usefulness. 56% of the students perceived online learning as easy and 47% of the students perceived online learning as useful (both variables

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ranked above 7 on a 10-point scale), as figure 1 shows. Table 1 shows t-tests performed against 5.5 the midpoint of the scale. Results have shown that the mean is significantly greater than the midpoint with $t(89) = 5.785, p < 0.001$ and $t(89) = 3.325, p < 0.001$ and the corresponding effect sizes to be rather high for the perceived ease of use (0.61) and medium for the perceived usefulness (0.35) respectively.

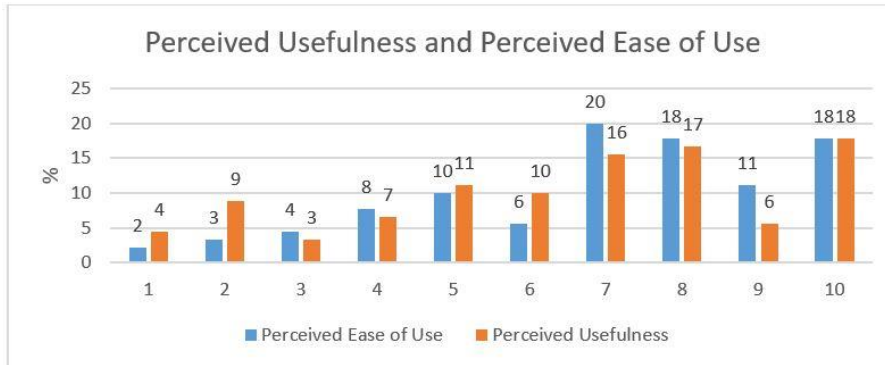


Fig. 1. Perceived usefulness and perceived ease of use

3.2 Studying on-line

The average perceived increase in educational working load online (as Figure 2a shows) was reported as being close to the midpoint of the 10-point Likert-scale with a value of 4.58 ± 0.33 . Most of the students (59%) believe that online learning cannot heavily increase (values 1 to 5 in the 10 point scale) their working load, $t(86) = -2.734, p < 0.01$.

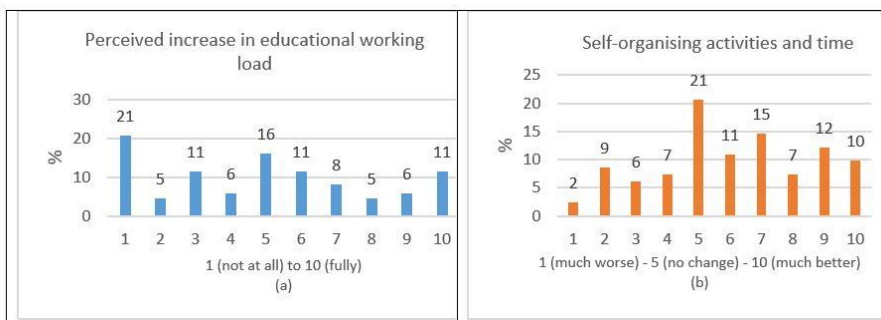


Fig. 2. Perceptions on educational working load (a) and self-organising activities and time (b)

Regarding the impact of online learning on self-organising learning activities and time management (figure 2b), 21% of the students do not consider that online learning can

have an impact, 24% believe that it can have a negative impact, while 55% believe that it can have a positive impact and improve their time management and organisation. The average value is 5.7 ± 0.30 .

Table 1. Survey results

Variable	Mean (Std. Error)	t-test	Effect size (Cohen d)
Previous online experience	4.20 (0.29)	t(89) = 4.409***	0.49
Perceived usefulness	6.44 (0.28)	t(89) = 3.325***	0.35
Perceived ease of use	6.97 (0.25)	t(89) = 5.785***	0.61
Increase working load	4.58 (0.33)	t(86) = -2.734**	0.29
Self-organisation	5.70 (0.30)	t(86) = 0.670	0.07
Interest in learning technologies	4.32 (0.32)	t(80) = -3.625***	0.41
Online competencies	4.92 (0.27)	t(80) = -2.051*	0.22
Change in educational experience	4.80 (0.30)	t(79) = -2.309*	0.26
Missed f2f classes	6.81 (0.38)	t(78) = 3.467***	0.39
University to continue e-learning	5.62 (0.27)	t(79) = 0.457	0.05
Working future as remote	4.85 (0.36)	t(75) = -1.788	0.20

*p < 0.05, **p < 0.01, ***p < 0.001

3.3 Interest and competency in educational technologies

The average value of the perceived increase in interest in learning technologies is 4.32 ± 0.32 . 27% of the students self-reported a full increase in learning technologies, while 33% reported almost no impact (values 4 to 6 in the 10-point scale). The population mean is significantly different from the midpoint of the 10-point scale $t(80) = -3.625$, $p < 0.001$ indicating a positive impact on the interest in learning technologies (Figure 3a).

Regarding the impact on educational technology competencies, 64% of the students self-reported a strong positive impact (values 6 to 10) and only 36% reported a rather lower positive impact (values 1 to 5). The mean value is 4.92 ± 0.27 with $t(80) = -2.051$, $p < 0.05$. (Figure 3b).

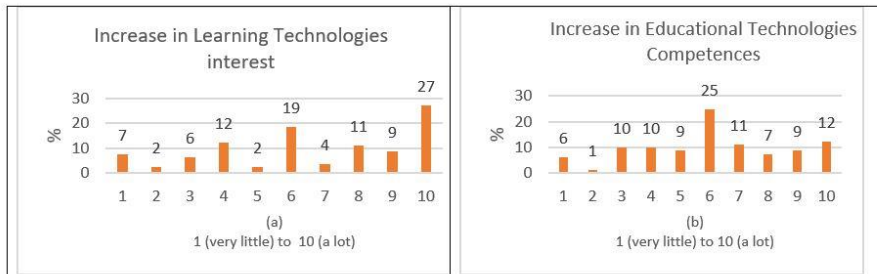


Fig. 3. Interest in Learning Technologies (a) and educational competencies (b)

3.4 Perceptions about educational technologies

Two important aspects that most students reported as a positive effect of online learning (Figure 4a) are (i) the development of students’ own digital identity (58%) and (ii) learning to work autonomously and develop their self-regulation (54%). Many students (39%) reported that learning efficiency is another improvement that online education can offer while learning effectiveness and designing and managing the learning process are important potential improvements as well (29%). Also online learning improves the quality of learning experience (28%) and facilitates interactions development.

Educational technologies are considered useful (Figure 4b) by students because they facilitate content sharing (76%), delivery of transmissive non-interactive lessons (e.g. video clips) (69%) and assignment of asynchronous tasks (61%). Communication with teachers (50%), delivering interactive lessons (40%) and carrying out exercises online (40%) are three aspects of the synchronous mode that educational technologies can support. 35% of student responses credit collaboration and team working.

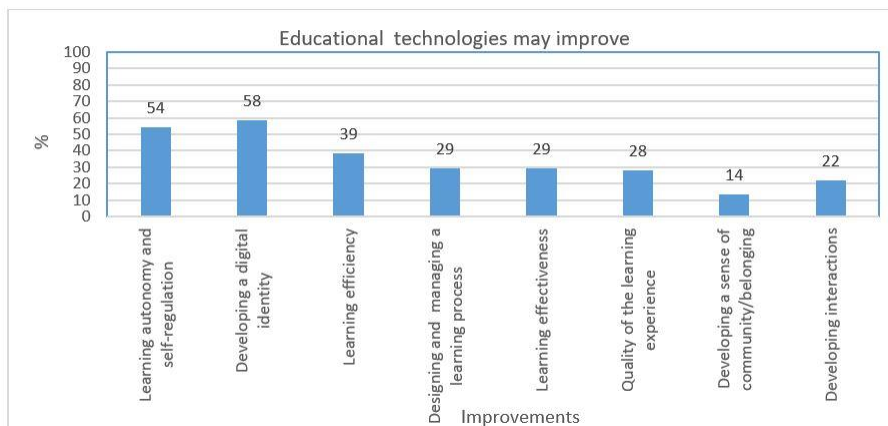


Fig. 4a. Perceptions on the improvements of educational technologies

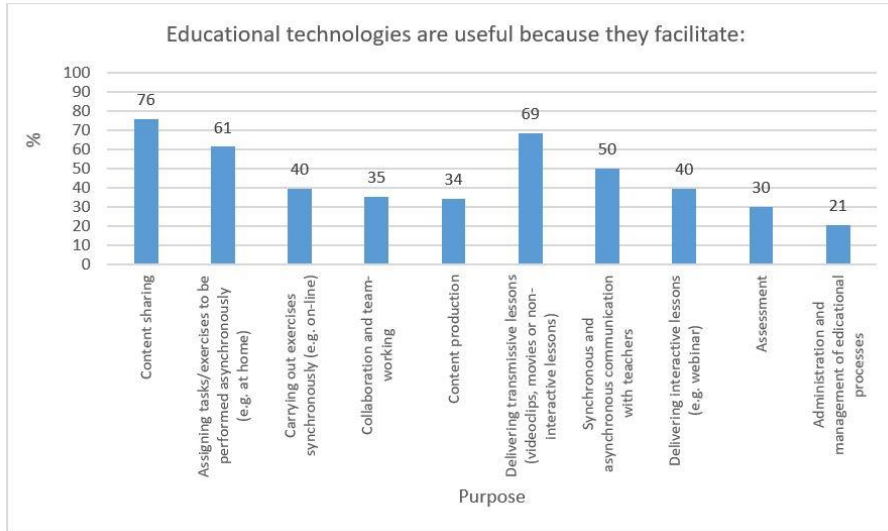


Fig. 4b. Perceptions on the usefulness of educational technologies

61% of the participating students reported that their idea of educational experience did not change much (values 1 to 5) while 39% self-reported a considerable change. The population mean is 4.80 ± 0.30 , differing from the midpoint of the scale, $t(79) = -2.309$, $p < 0.05$. Only 7% reported that their idea of educational experience has fully changed. (Figure 4c).

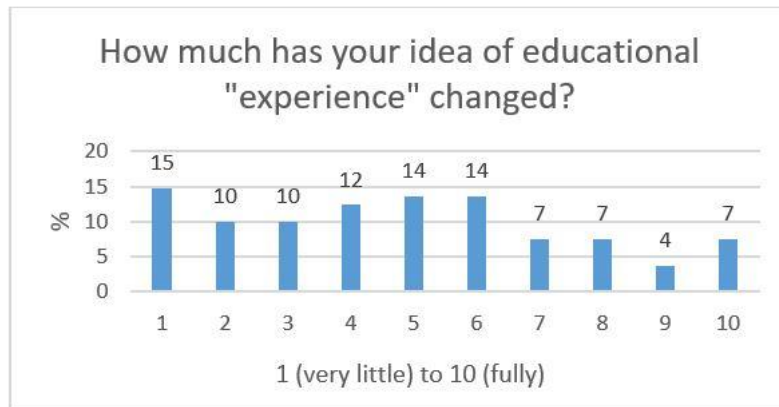


Fig. 4c. Change of students' idea of educational experience

Many students (65%) missed face-to-face classes (reported a score more than 5 in 10-point Likert scale). In this scale, the average perception of having missed face-to-face classes is 6.81 ± 0.38 and the sample mean is significantly greater than the mid-point of the scale, $t(78) = 3.467, p < .001$ as figure 4d shows.

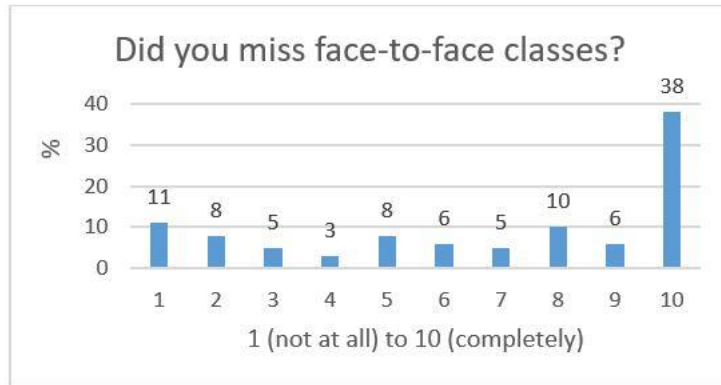


Fig. 4d. How much students missed face-to-face classes

3.5 Future expectations

Most participants (48%) would prefer to continue having a blended learning approach, while 30% would be in favor of face-to-face and 20% of online teaching, as figure 5a shows.

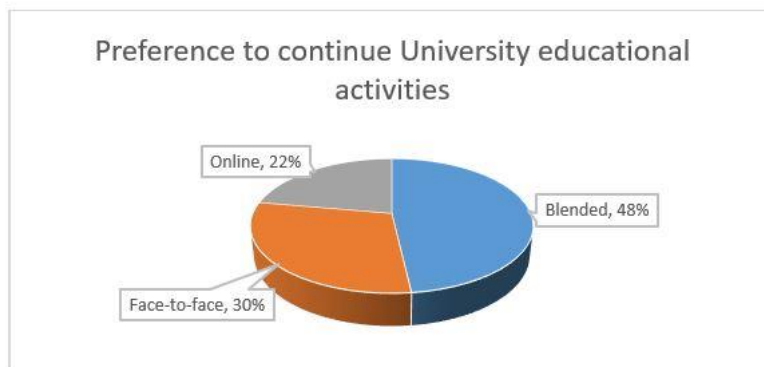


Fig. 5a. Students' general preference for the teaching delivery mode

Students (77%) prefer lectures to be offered online comparing to face-to-face (23%). For sessions that require more interactivity, students prefer to have them face-to-face instead of online, e.g. for the seminars/tutorials 73% prefer online vs. 27% face-to-face

and for the practical sessions 81% prefer online vs. 19% face-to-face. For the assessments, the preferred delivery mode is online (60%) vs face-to-face (40%), as figure 5b shows.

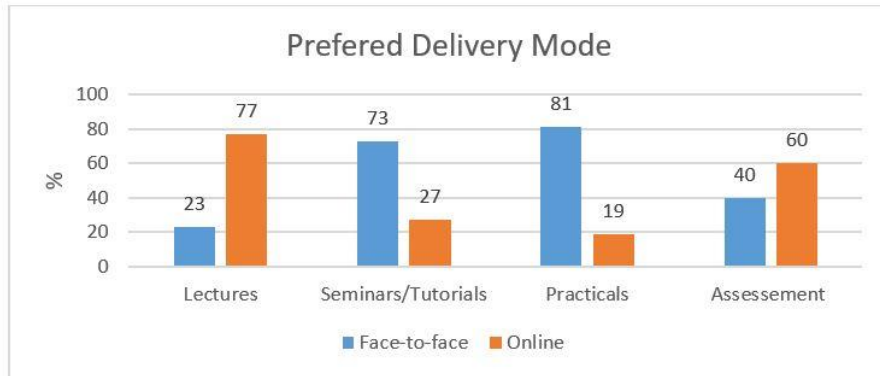


Fig. 5b. Students’ preference for the delivery mode of lectures, seminars, practicals, assessment

Many students (21%) did not answer either in-favour or against the idea of the University to continue using online educational activities, as figure 5c(a) shows. 46% of the students are in favor of the University to continue using online educational activities while 33% are rather unsure. On a 10-point Likert scale the average preference is 5.62 (± 0.27) while performing t-tests against the midpoint of the scale, the preference towards online educational activities has been reported with a positive but rather low effect size (0.25). Also, students did not seem to have a clear preference on whether they would prefer future working career to be online, as figure 5c(b) shows. 49% reported a score lower than the midpoint while 51% reported a positive preference. The mean does not significantly differ from the midpoint of the 10-item Likert scale, $t(75) = -0.401, p > 0.05$.

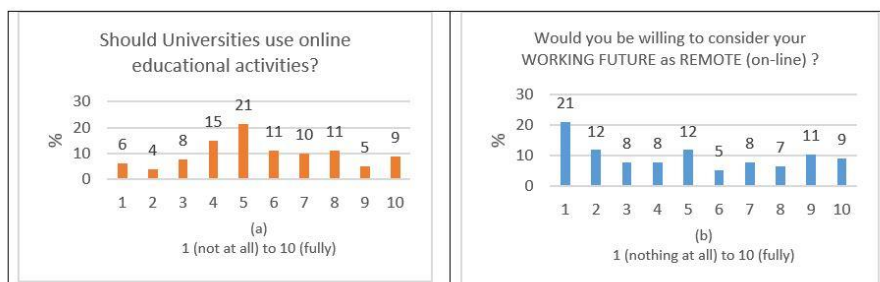


Fig. 5c. Students’ preference on the continuance of online learning (a) and online working (b)

4 Conclusions and Discussions

The current study has been conducted during a period of a global educational disruption due to the COVID-19 pandemic. The purpose of the study is to investigate aspects of University students' perceptions on distance learning. The study is based in a modified and localised version of the ASLERD questionnaire "Me and the distance learning - university student questionnaire".

While educational institutions around the world plan to move from education disruption (due to the COVID-19 pandemic) to education recovery, there are different issues that need to be considered. To ensure access to information technologies for all children, to mitigate the impact of learning losses during the pandemic, to better understand the interplay between technology and pedagogy, and to develop appropriate digital pedagogical resources and appropriately integrate online technologies to instructional design [5], are a few of them. In this process, students' attitudes and perceptions about educational technologies are very important factors to be considered. The current small-scale study is aiming to contribute towards this direction. It is part of our larger project that investigates the impact of this online transition on teachers' and students' attitudes on technology enhanced learning [11].

The results emerging from the current investigation (albeit preliminary) demonstrate a positive overall attitude of University students about online distance education. Students perceived online learning as easy to use and useful. Perceived usefulness and perceived ease of use are the most important determinates of technology acceptance [12]. These two main technology acceptance variables have been used in a plethora of studies investigating students' perceptions of information technology [13]. The same variables have been used in other similar studies that investigated the impact of the SARS-CoV2 pandemic in education [9]. Students indicated that online learning had a positive impact on their interest in learning technologies. Despite the challenges associated with online learning due to the complexity of technological variations [14] students self-reported that their competencies in educational technologies have been increased. Regarding the benefits that technologies can offer to improve learning activities, students acknowledged the positive impact of educational technologies in working effectively and efficiently. There is a variety of strategies used in online teaching and educational technologies are useful in both synchronous and asynchronous modes of educational delivery, which is in-line with other recent studies [15]. However, the correlation between adoption of digital technologies and student efficiency may need further investigation [16]. Students answered in a conservative manner on whether or not their educational experience has been considerably changed and improved, since the majority of them have missed their face-to-face classes. This is confirmed by the fact that they have indicated a clear preference for a future blended learning approach. Students prefer lectures to be offered online while for sessions that require more interactivity they would prefer to be face-to-face. Students seem to be ready for adopting online or blended learning processes [8].

The findings of this small scale work-in-progress study can contribute to previous investigations on student attitudes about educational technologies and how COVID-19 pandemic has affected their perceptions about distance education [8], [9]. However,

the results should be interpreted with caution as they are preliminary and the study has limitations. The small sample size is one of the study limitations. Another limitation may be the study demographic from the particular study program. Future work is aiming to involve a larger number of participants from different study backgrounds.

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