

Students' Perceptions of Online Education During the COVID-19 Pandemic

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The COVID-19 pandemic forced many universities around the world to move their educational activities onto online platforms. We conducted a survey in which asking undergraduates at a Chinese university how they felt about different aspects of online education during the pandemic. We received responses from 1,088 students. A majority of the students (67.9%) thought that physical classroom is better than online education and MOOCs. The students believed that teachers have improved their ability to teach online since the pandemic (67.3%) and online teaching is a suitable option in the current situation (65.8%). The students expressed satisfaction with the online educational resources and teachers' flexible use of online tools. However, the students felt that online education is stressful and affecting their health and social life. The pandemic has led to widespread use of online education, and we hope that online education can be better in the future.

Keywords: assessment, content delivery, COVID-19, health, interaction, online education, social life

Introduction

With the outbreak of COVID-19 pandemic, universities around the world had to close their campuses down in the spring of 2020 and shift all their academic programs online (Bao, 2020). In fact, many universities were not fully prepared to move from classroom-based to online education.

There has been a lot of advances in educational technology in the last few decades and the same proved to be immensely useful during this pandemic. Several online platforms to support online education were available. However, for college students, online education, as a new teaching method, may brought some challenges to their learning. In addition, teachers and students faced a variety of technical, financial, logistical, and social problems.

The pandemic and the lockdowns to contain it have affected the mental health of people around the world. Many students are suffering from stress and anxiety. Such psychological problems can seriously affect the effectiveness of online education. In addition, not all students have the changes to participate in online learning, and the digital divide has widened further due to the impact of the pandemic.

Huazhong University of Science and Technology is a prestigious university in China that offers undergraduate and postgraduate programs. The university covers a large area and has two different campuses, attracting a large number of domestic and foreign students to study here. The university suspended offline teaching since February 2020 and continued online teaching for one semester.

In recent years, with the changes of the pandemic, the university has adhered to the principle of combining online and offline teaching to complete teaching tasks. For students in school, the university organized students

to study in the form of MOOCs; for students who were not at school, students learned online classes at home by themselves. At present, teachers and students were gradually adapting to this teaching method. At the same time, some professors gave academic lectures through Tencent Meeting, using presentation programs such as PowerPoint to transmit academic information. In addition, depending on the nature of the curriculum, teachers can flexibly use a variety of teaching tools to enhance the learning effect. We surveyed the university's undergraduates to try to understand their views on online teaching activities during the COVID-19 pandemic. In particular, we were interested in the students' views on teaching content and interaction in online education and the health and life impacts of online education.

Methods

We prepared a questionnaire with 20 statements related to online education during the COVID-19 pandemic (Table 1). Students had to respond to each sentence on a five-point Likert scale, with "1" for "strongly disagree" and "5" for "strongly agree". These statements were related to the general teaching process, content delivery, teacher-student interactions, assessments, and the health and social impact of online education.

We asked the students to compare online education to physical classroom education (GE1) and MOOCs (GE2). We continued asking them whether teachers have improved their ability to teach online since the beginning of the pandemic (GE3) and whether online education is a viable alternative in the current circumstance (GE4). We wanted to know from students whether there are enough online educational resources (CO1), whether the reflection of slides can make the classroom more vivid (CO2), whether the software can help teachers and students analyze the resources (CO3), and whether the relevant online tools can enrich the course content (CO4). We wanted to know what it was like to interact with students and teachers through online education. We asked them if physical classroom interaction was better than online (IN1). We asked them if the classroom was more interactive when using online teaching tools (IN2). When teachers showed their faces (IN3) and allowed students to send views in the screen (IN4) during the lectures, the class was more interactive.

We asked students if they thought online tests were effective in helping them assess what they had learned (AS1), and whether staged tests helped them learn (AS2).

We wanted to know if online education affects students' health and social lives. We asked them if online education is leading to a phobia of losing the internet connectivity (HE1), as well as an over-reliance on digital technology (HE2). In addition, we asked them if excessive screen time is hurting their eyes and interfering with their sleep (HE3). We wanted to know from students whether online assessments are more stressful than traditional assessments (HE4). Finally, we also wanted to know if online education is affecting their daily lives (SO1) and exposing the digital divide among students (SO2).

Table 1

The Questionnaire

Indicator	Statement
General teaching process	
GE1	Physical classroom learning is better than online education.
GE2	Online education is however better than attending MOOCs.
GE3	Teachers have improved their online teaching skills since the beginning of the COVID-19 pandemic.
GE4	Online education is a viable alternative during the COVID-19 pandemic.

Table 1 to be continued

Content delivery	
CO1	Adequate study materials are available online.
CO2	Slideshows make a lecture more informative.
CO3	Software can help teachers and students analyze the resources.
CO4	Relevant online tools can enrich the course content.
Interaction	
IN1	Physical classroom interaction is better than online education.
IN2	Using online teaching tools makes class more interactive.
IN3	If the teacher and students show their faces, then a lecture becomes more interactive.
IN4	If the teacher allowed students to send views in the screen, the class becomes more interactive.
Assessment	
AS1	Online tests effectively evaluate the knowledge of students.
AS2	Staged tests helped student's learning.
Healthy issues	
HE1	Online education is leading to a phobia of losing the internet connectivity.
HE2	Online education is leading to over-reliance on digital technology.
HE3	Excessive screen time is hurting their eyes and interfering with their sleep.
HE4	Online assessments are more stressful than traditional assessments.
Social issues	
SO1	Online education is affecting student's daily lives.
SO2	Online education is exposing the digital divide among students.

We sent the questionnaire to 1,200 undergraduate students of the university on 18th December 2022 and continued to receive their responses for next three days.

Results

We received responses from 1,088 students. The mean age of the respondents was 19.88 years (SD: 1.10). Among the respondents, 468 (43.0%) were female and 620 (57.0%) were male.

During the COVID-19 pandemic, students had mixed views on online education. A majority of the students (67.9%) thought, that is, "agreed or strongly agreed", that physical classroom is better than online education and only a minority of the students (37.8%) felt that online education is better than attending MOOCs (Table 2). Moreover, the students believed that teachers have improved their ability to teach online since the pandemic (67.3%) and online teaching is a suitable option in the current situation (65.8%).

The students expressed satisfaction with the online educational resources and teachers' flexible use of online tools. The students (81.5%) felt that there are currently ample educational resources on the Internet. The students felt that slideshows (77.1%) and software (75.4%) are effective in analyzing the resources. The students (73.5%) felt that relevant online tools can enrich the course content.

The students expressed how to make class more interactive. The students (71.4%) felt that they can interact better with teachers in a physical classroom. The students (56.4%) thought using online teaching tools can make class more interactive. Interestingly, some of the students (50%) felt that if the teacher and students can show their faces, the lecture may become more interactive. 73.2% students thought if teacher allowed students to send views in the screen, the class can become more interactive.

Half of students believed that regular assessments can improve online education. We found that 46.3% students felt that online assessment can properly evaluate their knowledge and 68.3% students felt staged tests helped their learning.

The students thought that online education is affecting their health. We found that 65.8% students felt that online education is leading to a phobia of losing the internet connectivity. A majority of the students (76.2%) felt that online education is leading to over-reliance on digital technology and 67.5% students thought excessive screen time is hurting their eyes and interfering with their sleep. They (51.9%) also thought online assessments are more stressful than traditional assessments.

Online education also has an impact on students' social lives. We found that 70.7% students felt that online education is affecting their daily lives and 67.4% exposing the digital divide among students.

Table 2

Responses

Indicator	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
GE1	3.6	8.8	19.7	39.1	28.8
GE2	12.2	25.6	13.4	26.7	22.1
GE3	4.1	10.4	18.2	40.1	27.2
GE4	3.8	11.6	18.8	38.6	27.2
CO1	2.9	5.5	10.1	50.5	31.0
CO2	3.9	6.4	12.6	46.6	30.5
CO3	2.7	7.1	14.8	36.7	38.7
CO4	3.9	7.4	15.2	40.8	32.7
IN1	2.6	8.9	17.1	36.8	34.6
IN2	7.6	13.7	22.3	34.7	21.7
IN3	8.6	19.8	21.6	28.4	21.6
IN4	3.1	8.4	15.3	43.4	29.8
AS1	10.2	19.9	23.6	26.3	20.0
AS2	4.5	9.8	17.4	40.1	28.2
HE1	6.1	8.7	19.4	33.1	32.7
HE2	2.3	6.4	15.1	42.6	33.6
HE3	5.2	10.1	17.2	38.7	28.8
HE4	7.7	15.6	24.8	28.2	23.7
SO1	3.6	10.4	15.3	35.2	35.5
SO2	4.2	8.3	20.1	37.6	29.8

Note. Percentages may not total 100 due to rounding.

Discussion

We collected students' opinions on online education during the COVID-19 pandemic. We asked students to compare physical classroom learning to online education and MOOCs. We know that the comparisons are somewhat uneven. On the one hand, the discussion and assistance that appears in the physical classroom is difficult to achieve in online education; on the other hand, MOOCs provides a wide range of studying resources for students, which may not be available in their universities. Undergraduate engineering students typically like to attend MOOCs on subjects like computer programming and system designing (Sra & Chakraborty, 2018). However, online education can provide personalized services due to the small class size.

Students reported that their teachers' ability to educate online had improved. Teachers are used to teaching offline, and before the pandemic, most of them had no experience teaching online. We believe that the flexible use of online teaching tools is beneficial to teachers' ability to teach online.

We found that teachers are accustomed to using e-learning tools in online education. PowerPoint is suitable if a professor wants to deliver a lecture following a predetermined sequence. Educational technologies require supporting quality interaction (Singh, Adhikary, Gupta, & Singh, 2010). To our surprise, students were reluctant to show their faces during the online teaching process. We suspect that this may be because they are reluctant to participate in class discussions. Teachers also enjoyed using screens to interact with students, where students can ask questions at any time.

In recent years, educational technology has been advancing. Nowadays, there are several mature educational platforms that can provide rich educational resources. Our survey found that students considered regular educational assessments was essential. Teachers may use new online education tools for this purpose. Teachers should try to provide some flexibility to students attending their online courses (Mahmood, 2022). At the same time, we should also pay attention to the issue of the digital divide and the impact of online education on students' physical and mental health.

Conclusion

Online education has been around for a long time. The COVID-19 pandemic made it the mainstream. We conducted a survey to understand how undergraduates at a university in China felt about different aspects of online education during the pandemic. We found that students believed that online education is a smart choice in the moment. We however think that there is scope for improvement. Teachers should do their best to enhance the teaching effect of online education. At the same time, it is also necessary to minimize the negative impact of online education on students. We look forward to a broader future in online education.

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