

Introduction

This paper investigates the impact of COVID-19 on higher education. A pilot online survey followed by a course test and one field survey has been conducted sequentially in Chinese universities. The results of this exploratory research reveal that (1) more than half of respondents argue that online and traditional teaching pattern does make a difference in terms of teaching quality, and only a few students prefer virtual classroom to traditional classroom; (2) real data highlights that the pandemic has a critical impact on Chinese student grade via distance learning; and (3) only 49.33 percent students are satisfied with the experience of using virtual classroom during the earlier stage of the pandemic. The results are of particular interest to classroom teachers as well as administrators of higher education institutions under the ongoing COVID-19 pandemic.

Purpose

This research aims to explore Chinese students' experience of using VC or online learning and the outcomes associated with online learning.

Research Method and Main Process

The research consists of two surveys and one final exam. The online survey (survey 1) followed by a course exam at the end of the the spring term of 2020 and one field survey (survey 2) in March 2021 have been conducted in sequence. Both surveys were anonymous.

Survey 1 contained six closed questions exclusive of respondent demographic information Regarding the course final test, it was launched online and applied the open-book approach because of COVID-19.

survey 2 was conducted in class in Business School of Qingdao University of Technology (QUT) in China. Survey 2 aims to investigate students' learning experience of VC during COVID-19. The paper questionnaire using five-point Likert scale technology was sent to two classes of 150 students who selected microeconomics course opened. Underline one answer for each of the above 10 questions from options: "Strongly agree (SA)"; "Agree (A)"; "Neutral (N)"; "Disagree (DA)" and "Strongly disagree (SDA)".

Results and Analysis

Following survey 1, about 3 months later, the final test of microeconomics in the form of open-book was launched on July 22, 2020, with a total of 794 students enrolled the test. The grade distribution associated with the test is displayed in Figure 1. In general, the mean of the grades is smaller than 65, which is much lower than the one before the outbreak of COVID-19 pandemic.

The reliability and validity tests for both surveys have been accomplished by using Stata software. The matrix concerning the validity test of survey 2 is as shown in Table 1 below.

This research finds that VC has a negative impact on Chinese students' experience and performance associated with using VC during the early stage of the epidemic. Regarding survey 1, it showcased that there were some major problems such as poor internet connectivity, less interaction between teacher and students and noise interruption during class. Particularly, survey 1 reveals that VC does affect teaching quality during the COVID-19 period, at least in our case.

As to course final test score which is shown in Figure 1, students' performance with VC is less desirable when compared to those before the outbreak of the pandemic. With regard to survey 2, most students are not satisfied with the experience of VC.

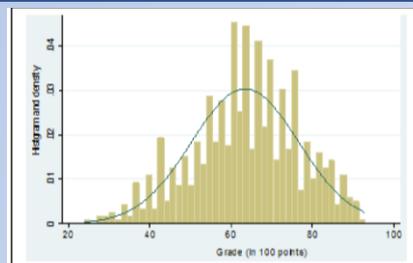


Figure 1 Student grade distribution from full sample.

Table 1 Validity Test Matrix of VC Experience

	SA	A	N	DA	SDA
SA	1.0000				
A	0.7622	1.0000			
N	-.8632	-0.9113	1.0000		
DA	-.7792	-0.9692	0.9416	1.0000	
SDA	-.7034	-0.8246	0.8620	0.8916	1.0000

* "Strongly agree (SA)"; "Agree (A)"; "Neutral (N)"; "Disagree (DA)"; "Strongly Disagree (SDA)".

Table 2 Descriptions of Student VC Experience (N=150)

Items	SA ^a		A ^a		N ^a	
	Count	%	Count	%	Count	%
(1)	12	8	89	59.33	39	26
(2)	18	12	85	56.67	34	22.67
(3)	15	10	79	52.67	41	27.33
(4)	37	24.67	89	59.33	20	13.33
(5)	13	8.67	36	24	62	41.33
(6)	6	4	26	17.33	59	39.33
(7)	21	14	94	21.67	29	19.33
(8)	30	20	94	62.67	22	14.67
(9)	16	10.67	68	45.33	41	27.33
(10)	8	5.33	66	44	57	38

* "Strongly agree (SA)"; "Agree (A)"; "Neutral (N)"; "Disagree (DA)"; "Strongly disagree (SDA)".

Table 2 Descriptions of Student VC Experience (Cont.)

Items	DA ^a		SDA ^a	
	Count	%	Count	%
(1)	9	6	1	0.67
(2)	12	8	1	0.67
(3)	13	8.67	2	1.33
(4)	4	2.67	0	0
(5)	34	22.67	5	3.33
(6)	50	33.33	9	6
(7)	4	2.67	2	1.33
(8)	4	2.67	0	0
(9)	17	11.33	8	5.33
(10)	15	10	4	2.67

Conclusion

Results show that there exists a difference in terms of teaching quality between different teaching and learning patters. In our case, the rank of preference to learning environments is face-to-face format, followed by the blended approach and virtual classroom. Concerning the experience of using virtual classroom as indicated in table 1 of survey 2, only 49% students agreed that they are satisfied with the usage of virtual classroom, and on the order of 13% students were dissatisfied with virtual classroom even though there is no other better alternatives in the early stage of COVID-19 crisis. As to the learning outcomes relevant to microeconomics course, the overall effect is lower than expected when compared with those prior to the pandemic.