Teaching and Learning with Zoom: An Exploratory Study/ L. MARAFA, Z. WANG, C. S. CHAN

Introduction:

The study primarily focuses on the use of Zoom as a LMS to engage students in the teaching and learning context. Given that the university adopted the online teaching and learning using the Zoom platform as a stopgap initiative following the covid pandemic, how does it affect students' performance? The courses started on a traditional face-to-face format and subsequently moved into the online format. How effective were the online practices in teaching and learning? As an exploratory investigation, the objective is to investigate how the university can promote the community of learners in online platform like Zoom. Specifically, the study identified the perceptions, experiences, and attitudes of the students who participated in the courses.

Methodology:

An online questionnaire survey was conducted using a 6-point Likert scale on students that took three courses that were first started on face-to-face basis and switched to online format using Zoom. Questions were asked to identify what the students like or dislike in the online learning experiences. Open-ended questions were also asked to provide free flow responses without the constraints of a choice on scale.

Results:

Profiles of respondents:

Solid sample size: N = 146
Response rate: 24%

Table. Profiles of respondents.

	Frequency	Percent
Education level:		
Undergraduate	20	57.1
Postgraduate	15	42.9
Course type:		
UGE	14	40
Major	22	62.9
Elective	17	48.6
Gender:		
Female	30	85.7
Male	5	14.3

Overall satisfaction: Mann-Whitney U Test

Overall, are you satisfied with the learning experience on Zoom? (1 = highly unsatisfied; 6 = highly satisfied)

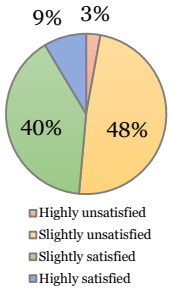


Figure. Pie chart of percentage in satisfaction level.

Zoom learning vs. Gender

Table. Median of the statement with significant differences.

Statements	Median			
	Female	Male	Mann-Whitney U	p
"I spent more time working on this course than my other courses"	4	2	24	.014

Zoom learning vs. Education level

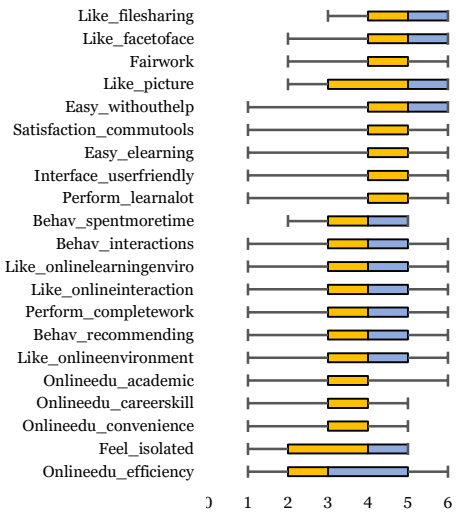
Table. Medians of statements with significant differences.

Statements	Median			
	Undergraduate	Postgraduate	Mann-Whitney U	p
"I spent more time working on this course than my other courses"	3.5	5	233	.014
"I would rather meet my instructors and classmates face-to-face rather than on Zoom"	5	6	253.5	.000
"I feel isolated and lonely as a result of the Zoom class"	2	4	237	.003
"Online education would allow me to do more work in less time"	4	3	74	.010

Students' experience of learning on Zoom:

Do you agree with the following statements?
(1 = highly disagree; 6 = highly agree)

- Students **agree** that they generally like the functions of zoom in their learning, while they still expect to meet with instructors and classmates face-to-face rather than on zoom.
- Students **slightly disagree** that online education are efficient.



Partial Confirmatory Factor Analysis (PCFA):

For the 21 agreement measures, **Cronbach's Alpha coefficient = .874**, indicating good internal consistency
Bartlett's test of Sphericity (**$\chi^2(210) = 556.297, p<0.001$**)
Kaiser-Meyer-Olkin measure of sampling adequacy (**KMO = 0.658**)

A series of factor analysis were conducted which indicated that **four factors** gave the most interpretable solution

An **Oblimin rotation** was performed since factors were expected to be correlated, resulting in a pattern matrix.

Four factors obtained are:

Factor 1: Preference of online education
Factor 2: Convenience
Factor 3: Functionality
Factor 4: Learning outcomes

67.726% of variance were explained by the four factors

Pattern Matrix[a]

	Factor			
	1	2	3	4
Onlineedu_convenience	1.063			
Onlineedu_efficiency	.762			
Onlineedu_academic	.560			
Onlineedu_careerskill	.539			
Easy_elearning		.999		
Easy_withouthelp		.638		
Like_onlinelearningenvir o			.818	
Like_onlineinteraction			.736	
Behav_recommending			.659	
Like_onlineenvironment			.612	
Like_filesharing			.591	
Feel_isolated			-.418	
Interface_userfriendly			.412	
Satisfaction_commutools				
Perform_completework				
Perform_learnalot				.805
Fairwork				.743
Behav_spentmoretime				.530
Like_facetoface	-.408			.484
Behav_interactions				.482
Like_picture				

Extraction Method: Maximum Likelihood.
Rotation Method: Oblimin with Kaiser Normalization.
a. Rotation converged in 13 iterations.

Table. Fit indices for PCFA.

Fit index	Results	Acceptable Threshold Levels
NFI	0.891052507	>0.9 (Steiger, 2007)
CFI	0.827235794	>0.95 (Hooper, Coughlan, & Mullen, 2008)
TLI	0.891405356	>0.95 (Hooper, Coughlan, & Mullen, 2008)
RMSEA	2.7355037	<0.06 (Hu & Bentler, 1999)
SRMR	0.074485285	<0.08 (Hu & Bentler, 1999)

Preliminary summary and implications:

- Students generally like the functions of zoom in learning experience, while they still cherish face-to-face format
- Female students tended to feel more isolated as a result of Zoom than male students
- PGS spent more time, are more isolated, and felt less efficient in Zoom learning
- Students slightly disagree that online education is efficient
- Further research is needed with a larger sample size and CFA can be conducted to understand factors and overall satisfaction of learning.