THE HONG KONG POLYTECHNIC UNIVERSITY
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School of Professional Education and Executive Development
專業進修學院

SPEED

Are students ready for flipped classroom learning?
Plenary Session 4

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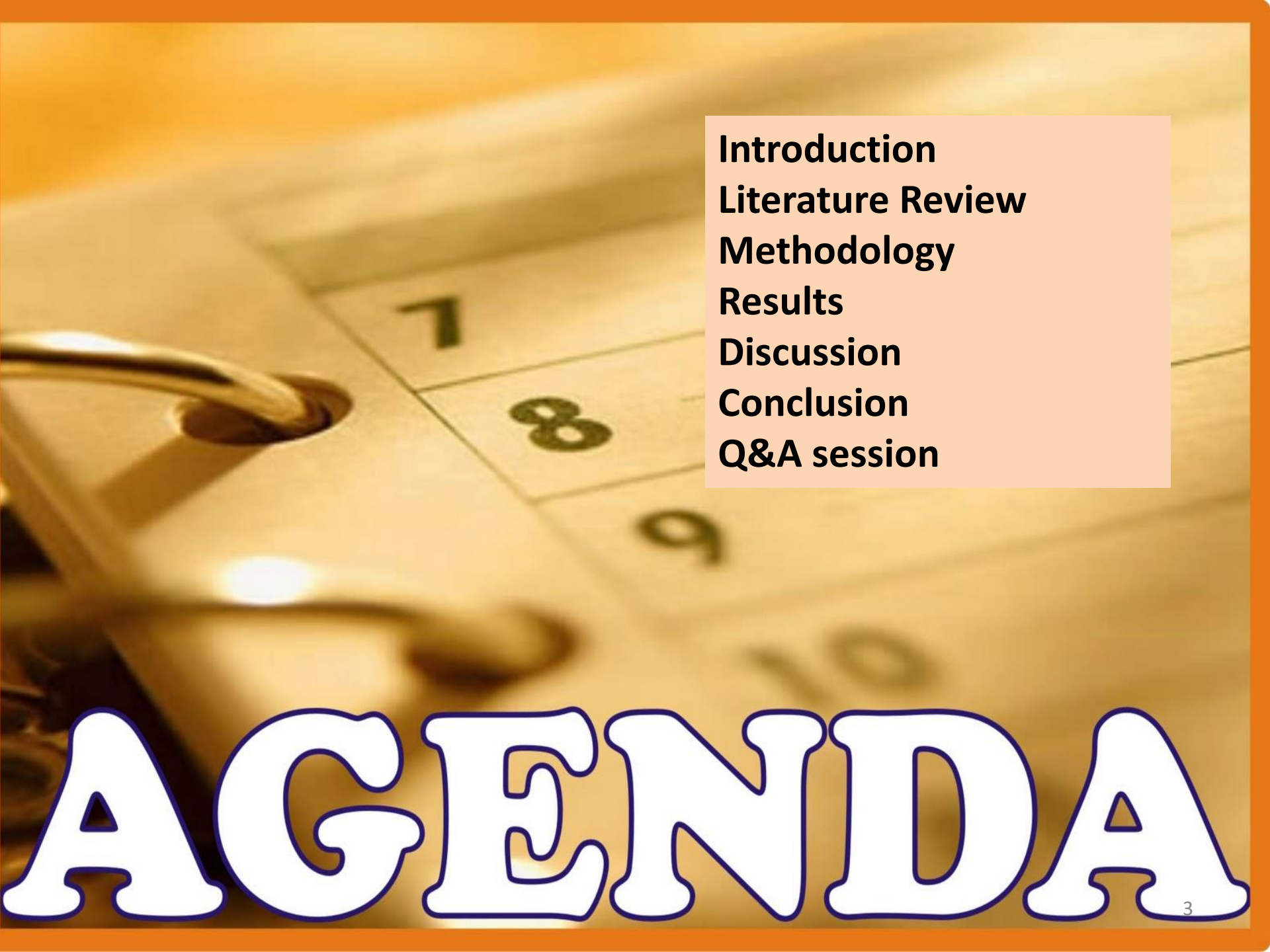

- Introduction
- Literature Review
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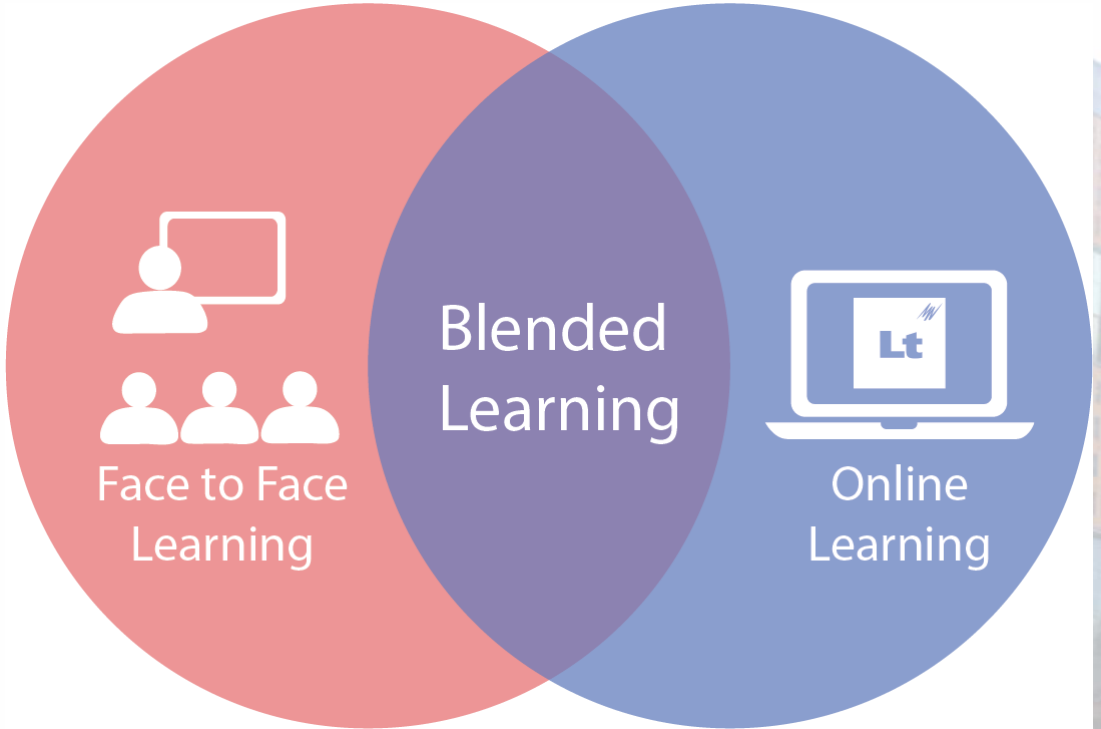
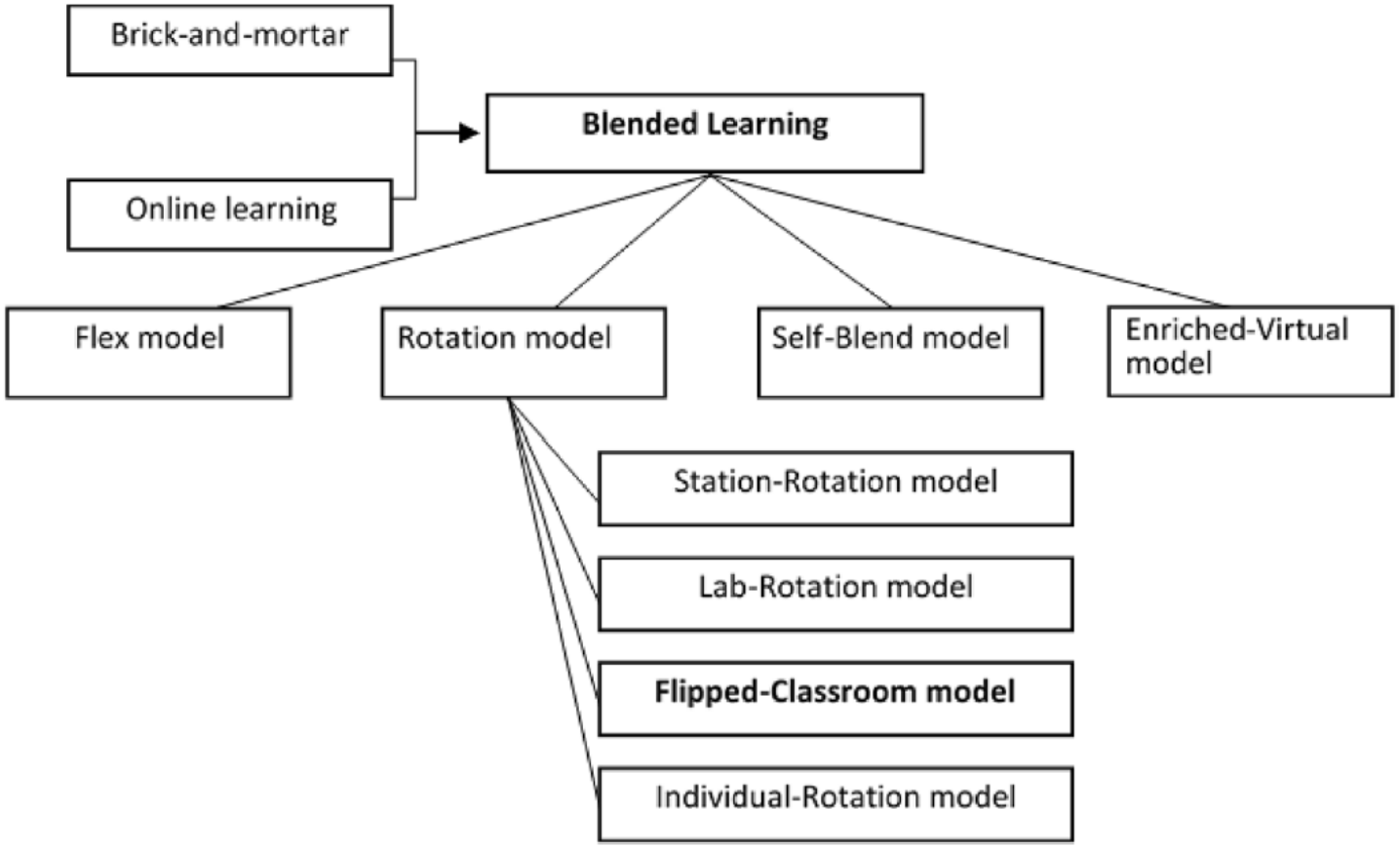
- Results
- Discussion
- Conclusion
- Q&A session

Introduction

Flipped classroom consists of video viewing and class discussion. Is flipped classroom method is the same as blended learning? Blended learning consists of four models: rotation model; flex model; self-blend model and enrich-virtual model (Staker & Horn, 2012, 2). From below, flipped classroom method is a subset of Blended learning.



Blended Learning Model



Literature review

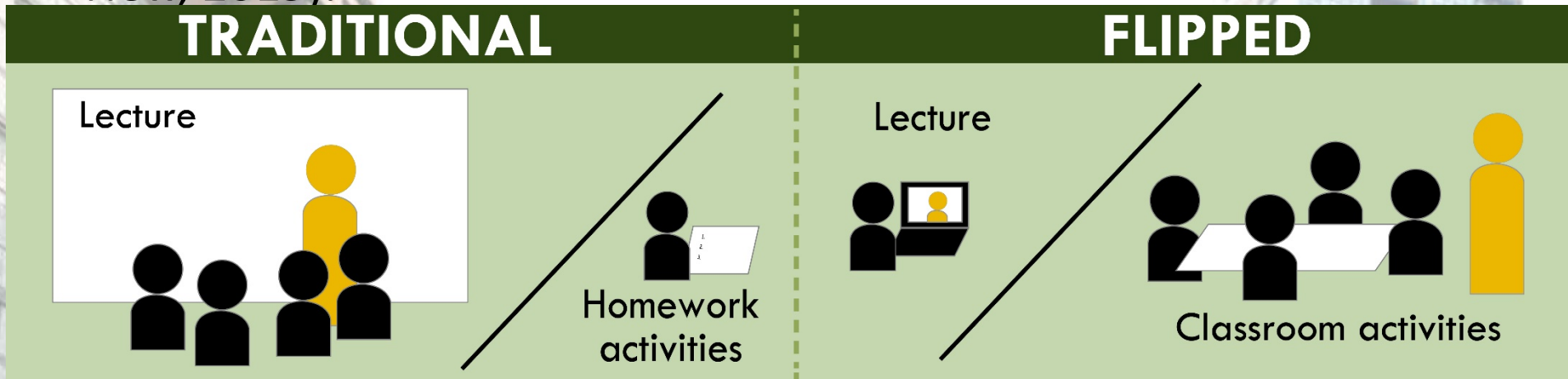
Blended learning is composed of asynchronous learning and synchronous learning. The advantages of blended learning is to give student unique experience. Anyhow, teaching and learning strategies are redesigned and the outcome probably significant better than traditional approach (Garrison & Vaughan, 2008). Flipped classroom is one of the typical blended learning examples.

Literature review

Students study the lecture material before the class. Teachers will lead through students apply the lecture material using assignment, problem solving exercise and peer interaction activities (Yarbro et al., 2014). The class time is ideally in developing students' higher order thinking (Hwang et al., 2015). Thus, the first and most important affordance is video lectures which teachers have prepared in advance. It offers a new way to make use of classroom time (De Araujo et al., 2017).

Literature review

Flipped classroom is not a new thing and The Chinese University of Hong Kong and University of Hong Kong used it for some of their classes some years before. It is a student-centered. A meta-analysis of 10 years of research in engineering education shows that flipped classrooms approach is better than tradition lecturing. If the instructors offered a short recap at the beginning of class would enhance the effectiveness of the approach (Lo & Hew, 2019).



Motivation

- Video recording is one of the essential parts of flipped classroom approach (Hao, 2016). During the COVID-19 period, teachers are forced to use online teaching. Most of the teachers recorded their lesson for student reviewing. They are trained to be a good presenter using a video (Wut & Xu, 2021).

Motivation

Students sometime miss the class and watch the recorded video in order to catch up the content. Both university teachers and students are used to make use of video recording in their teaching and learning. Previous literature put more focus on teachers' readiness for flipped approach (Milman, 2012). It would be a good opportunity to explore the students' flipped learning readiness in the higher education sector.

Research Objectives

Are students study in online mode ready for flipped classroom method?

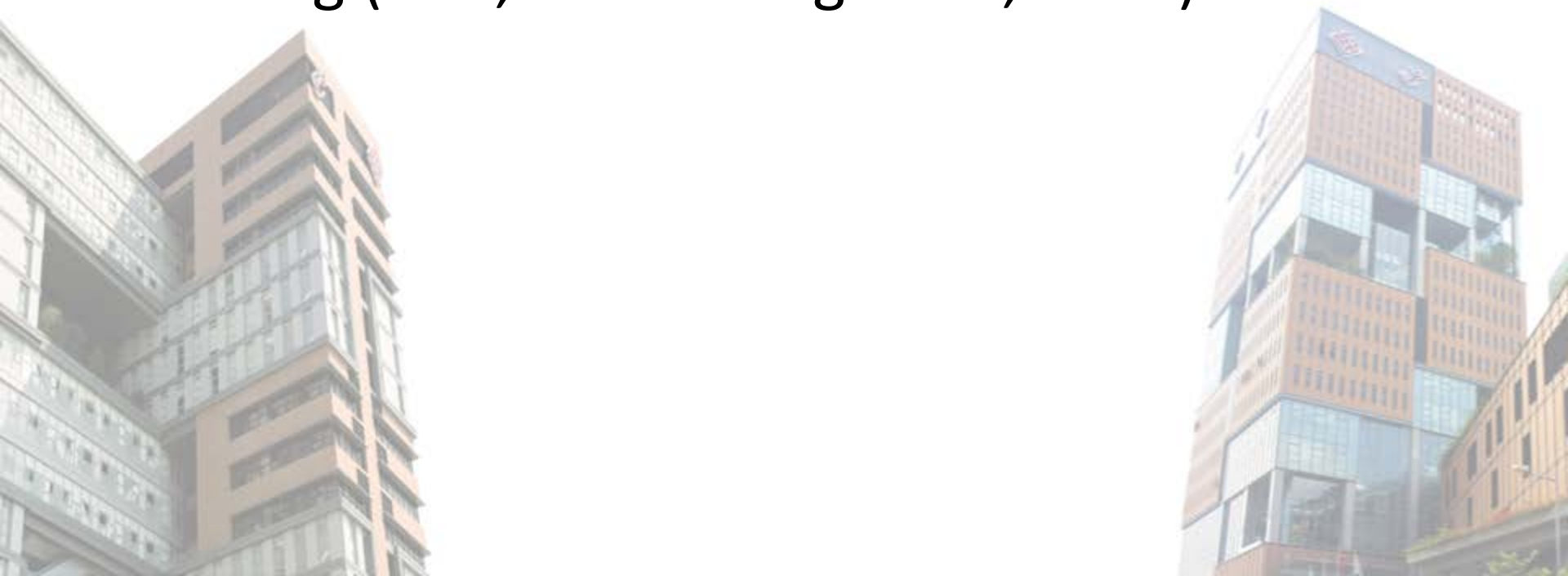
Does online flipped classroom method better than face to face flipped classroom method?

Readiness

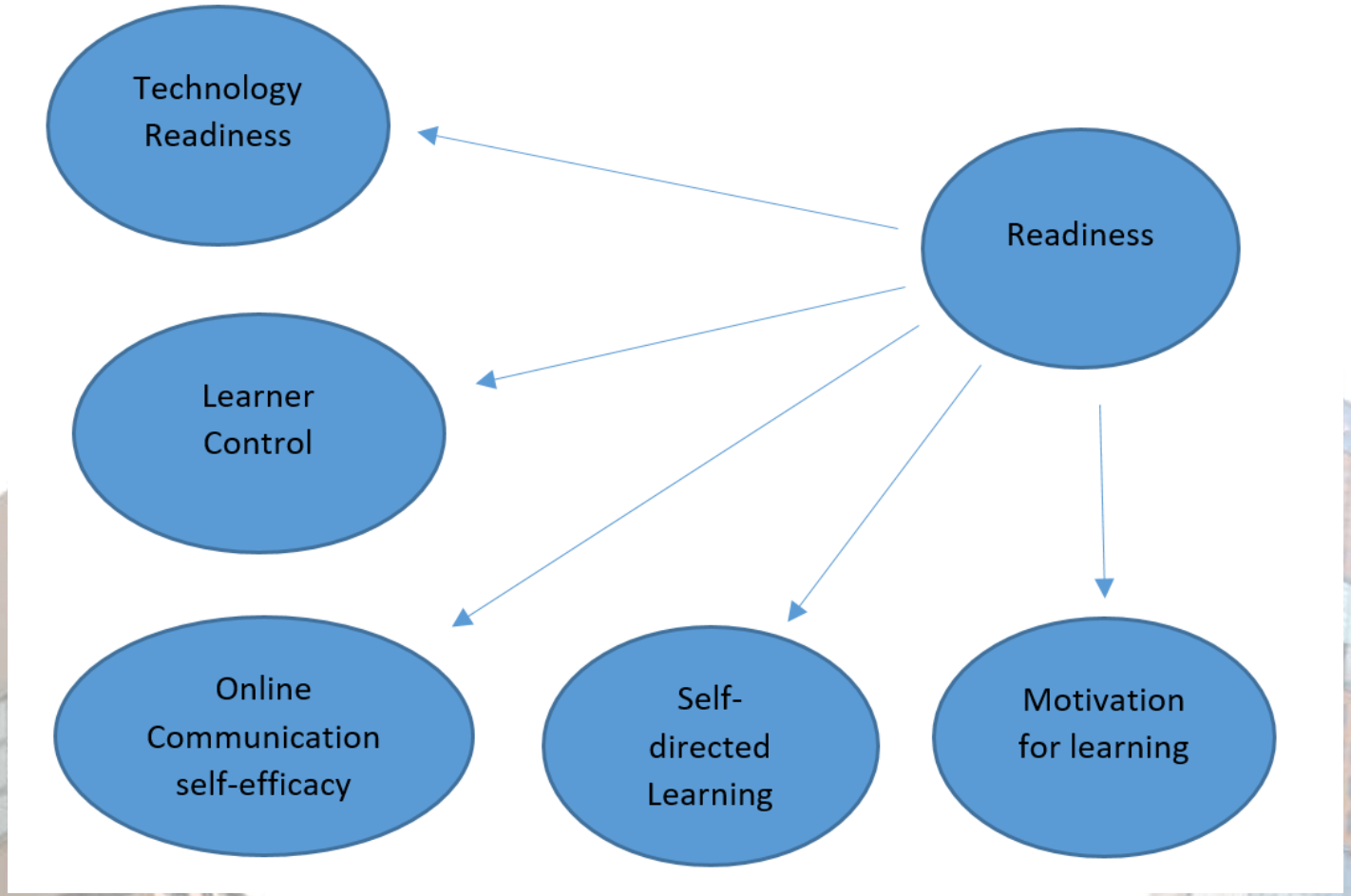
- More and more students accept online learning for some reasons (Wut et al., forthcoming). Readiness for online learning had been studied. Factors contribute to the readiness were identified: self-directed learning; online communication self-efficacy; technology readiness; learner control and motivation in learning (Hung et al., 2010; Tang et al., 2021).

Readiness

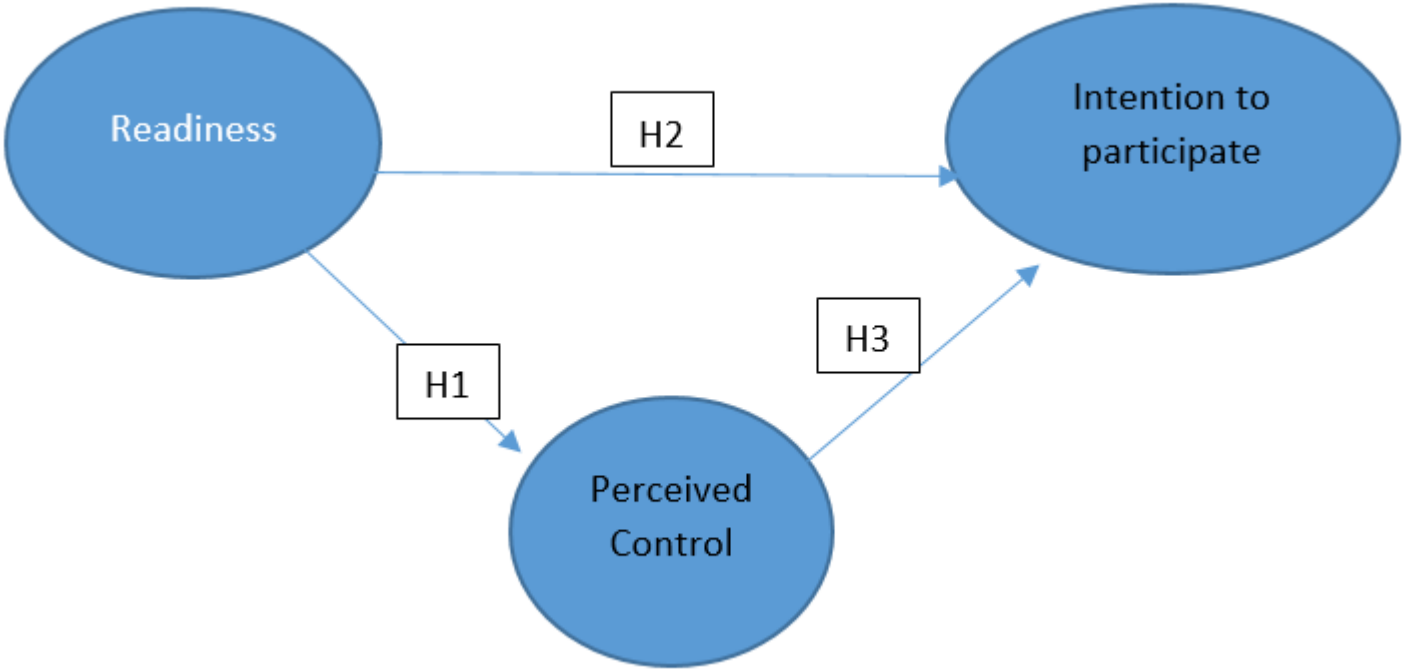
- The readiness measurement scale has been used by scholars in flipped language classroom both in face-to face and online setting (Hao, 2016: Jiang et al., 2021).



Flipped classroom readiness



Research Model



Methodology

- The study was conducted in October 2021. Two classes of students were participated in the study. One class is final year undergraduate students, studying in Marketing Research. The topic is qualitative research. Content are in-depth interview, and observation. Another class is first year undergraduate students, studying in Managing Organizations. The topics covered are external environment & organizational culture and global management.

Methodology

- They were given videos to watch one week before the class. Students were notified that they would be taught in a manner in which different from traditional format. When they returned to the class time, they were divided into small groups. Each group consists of three to five students. They were given several discussion questions and asked for possible answers. The investigation period was two weeks. They were asked to fill in a survey after the class.

Analysis

- As addressed by Hair *et al.* (2017, p.20), the minimum sample size of the study should be equal to or larger than '10 times the largest number of structural paths directed at a particular construct in the structural model'. In this study, the largest number structured paths used for continuance intention was 5. Thus, the minimum sample size should be larger than 50. Given the 100-sample size, PLS-SEM is applicable to this study. The nature of population should also be considered to form a reasonable justification of the small sample size (Hair *et al.*, 2019). Our population was a pool of undergraduate students, which was a rather homogeneous population.

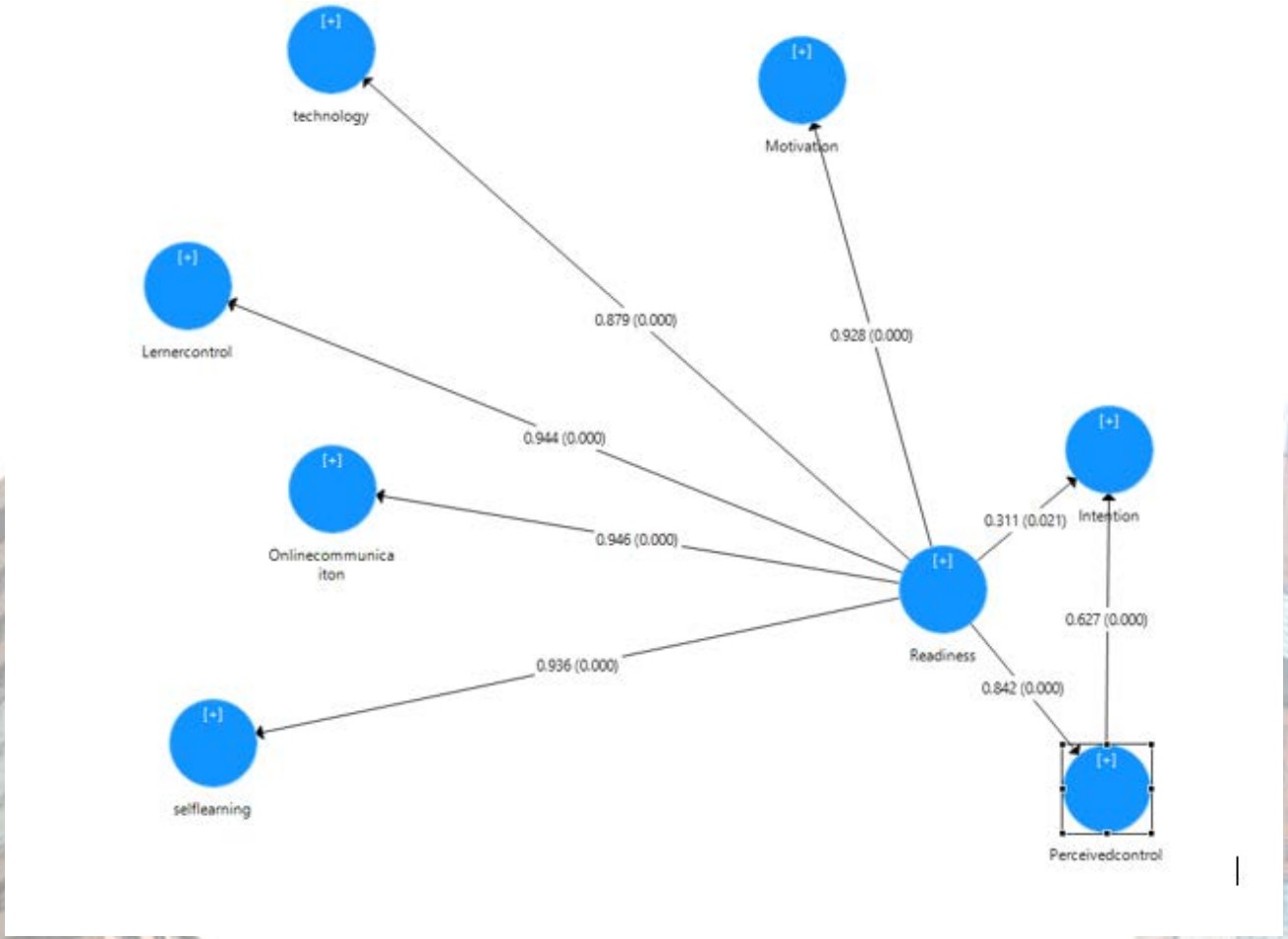
Measurement model

Construct	Item	Loading	Cronbach's alpha	Composite Reliability	AVE
Technology Readiness	TR1	0.926	0.956	0.964	0.792
	TR2	0.909			
	TR3	0.932			
	TR4	0.875			
	TR5	0.882			
	TR6	0.880			
	TR7	0.823			
Learner Control	LC1	0.894	0.970	0.975	0.849
	LC2	0.929			
	LC3	0.937			
	LC4	0.927			
	LC5	0.896			
	LC6	0.936			
	LC7	0.928			
Online Communication Self-efficacy	OC1	0.934	0.957	0.967	0.854
	OC2	0.922			
	OC3	0.924			
	OC4	0.925			
	OC5	0.915			
Self-directed Learning	SL1	0.865	0.964	0.970	0.801
	SL2	0.866			
	SL3	0.867			
	SL4	0.906			
	SL5	0.929			
	SL6	0.910			
	SL7	0.909			
	SL8	0.906			
Motivation for learning	ML1	0.922	0.975	0.979	0.849
	ML2	0.904			
	ML3	0.926			
	ML4	0.940			
	ML5	0.913			
	ML6	0.938			
	ML7	0.918			
	ML8	0.923			
Perceived Control	PC1	0.935	0.947	0.962	0.864
	PC2	0.933			
	PC3	0.936			
	PC4	0.913			
Intention	IT1	0.963	0.960	0.974	0.927
	IT2	0.956			
	IT3	0.968			

Discriminant validity

Constructs	1	2	3	4	5	6	7
1. Intention	0.963						
2. Learner control	0.790	0.921					
3. Motivation	0.761	0.836	0.923				
4. Online Comm	0.790	0.915	0.841	0.924			
5. Perceived Con	0.890	0.802	0.757	0.791	0.929		
6. Self Learning	0.751	0.840	0.841	0.872	0.752	0.895	
7. Technology	0.805	0.790	0.752	0.807	0.807	0.768	0.890

Partial Least Square model



Hypothesis testing

Table 4: Results of Hypotheses Testing

Hypothesis	Item	(*β*) Path Coefficient	*t*-value	*p*-value	Result
H1	Readiness >> Perceived Control	0.842	16.135	0.001***	Supported
H2	Readiness >> Intention	0.311	2.309	0.021*	Supported
H3	Perceived Control >> Intention	0.627	4.616	0.001***	Supported

(Bootstrap samples = 5000, n = 100 cases)
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

PLSpredict

Table 5: PLSpredict: Out of-sample predictive ability of Intention

Construct	Indicator	PLS-SEM		LM	PLS-SEM minus LM
		RMSE	Q2 predict	RMSE	RMSE
Intention	IT1	0.854	0.636	1.100	-0.246
	IT2	0.904	0.642	1.200	-0.296
	IT3	0.827	0.671	1.206	-0.379

Multi groups analysis

- 54 students jointed the discussion part online while 46 student in the face-to-face classroom.
- No significant result has been found between these two groups

Discussion

- As expected, the flipped classroom readiness scale was validated.
- We need to get students prepare in order to have high intention to participate. The preparation include technological, motivation, self-directed learning, learner control, and motivation.

Implications

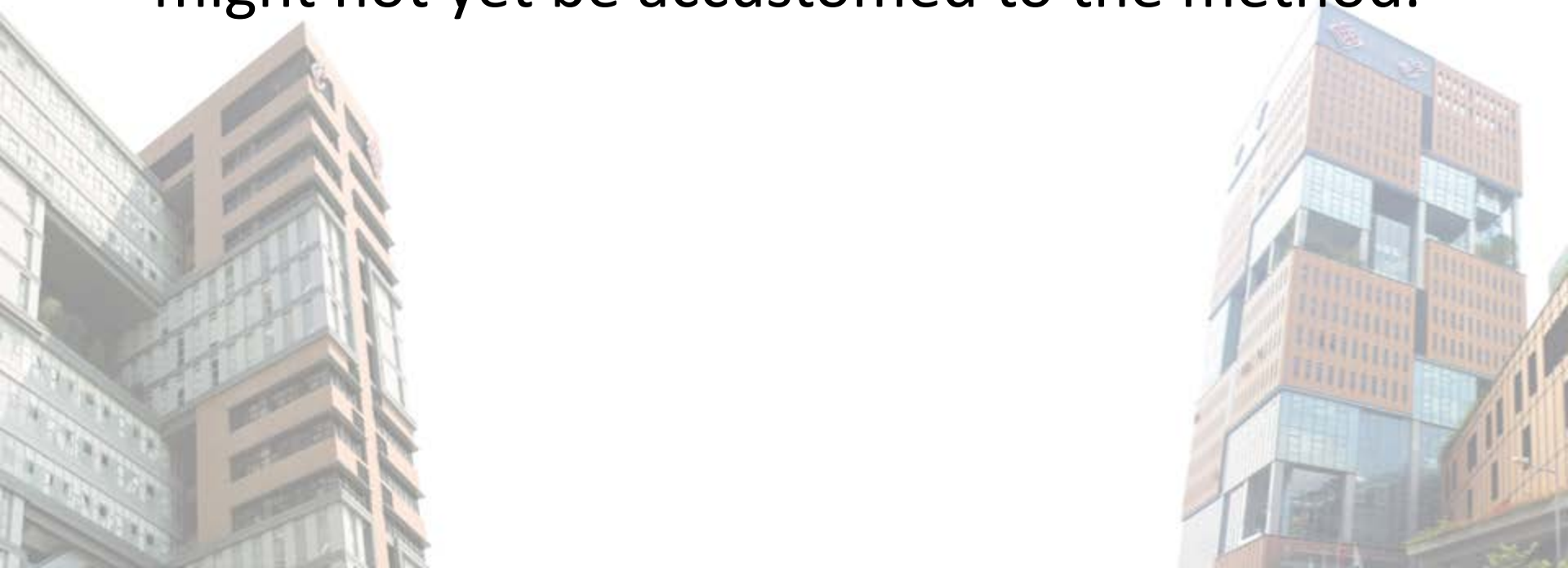
- Institutions in the higher education sector should consider flipped classroom learning; making use of Small Private Online Courses (SPOCs) and Massive Open Online Courses (MOOCs).

Conclusion

- The flipped classroom readiness scale was validated. Intention to participate on flipped classroom are associated with the readiness and perceived control. The intention to participate on flipped classroom are the same no matter face-to-face or online mode.

Limitations

- Sample is restricted to students in Hong Kong
- Flipped classroom method is only implemented for two weeks. Some students might not yet be accustomed to the method.



Future research directions

- More flipped classroom experiments on other subjects
- Time duration could be longer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Questions