

## Perception of Flipped Learning Approach among Nursing Students.

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### Abstract

**Objective:** The purpose of the study is to explore the perception of flipped learning approach among nursing students in a polytechnic in Singapore.

**Design:** Descriptive Cross-Sectional Study.

**Setting:** A polytechnic in Singapore

**Participants:** 863 participants ranging from Year 1 to Year 3 nursing students.

**Measurements:** A questionnaire was used to collect the data and was analyzed through SPSS V24.

**Results:** Both male and female participants' perceptions of the flipped learning approach were positive, including engagement level, understanding level, comfortable level and knowledge reception level ( $p < 0.05$ ). However, there is no significant relationship between different gender motivation level of flipped learning approach ( $p > 0.05$ ). There is a correlation between different gender and the perception of flipped learning approach ( $p < 0.05$ ).

**Conclusion:** These results show that the perception of flipped learning approach is associated with gender differences. These findings can help school to determine how to implement the flipped learning approach.

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### I. Introduction

Classrooms and lessons all over the world are being flipped with good reason. More research reveals that a flipped classroom environment is able to enhance learning retention among learners (Ferriman, 2014). Flipped classroom is a pedagogical approach in which the notion of the classroom-based is inverted. The flipped learning approach involves taking direct instruction and placing the onus on the individual learner rather than group instruction. Flipped classroom enables learners to acquire knowledge before the lesson starts and further their understanding conducted during the lesson. Face-to-face interaction are assorted together with independent study by using technology. Learners had been ordered to watch pre-recorded videos at home, before class, then attend lesson for homework armed with questions and retaining at least some background knowledge. This use of class-time can create a classroom environment which uses collaborative and constructivist learning; blending with the direct instruction used outside the classroom (Tucker, 2012).

There are some benefits of flipped classroom for both students and teachers. For students, flipped classroom helps with the frustration of homework. Students are able to watch or listen to lectures at home which aids them to solve problems and apply the new knowledge in the classroom therefore, reducing their frustration with homework (Mihai, 2016). In addition, when students lack the understanding of a new concept, they can ask questions and get immediate targeted answers. Furthermore, students who are absent due to illness or any other reason, will be able to catch up with their peers faster and easier with the flipped classroom model than with the standard one. Teachers are able to gain the benefits of flipped learning as well through recording lectures that involve critical ideas, power standards, and the pace of a given curriculum map. With these benefits, flipped classroom is able to create a win-win situation for both students and teachers.

Some research has shown that the flipped classroom actually helps learners to improve their results. Scott Freeman, a University of Washington professor showed the decrease of failure rate in biology these from 17% to 4% (Hines, 2014). Meanwhile, instructors at the University of British Columbia found that student attendance in experimental flipped classroom increased by 20% and 40% for student engagement (Washington College, 2012). Meanwhile, research done by Haciosalihoglu, Stephens&Johnson (2018), stated that Students that score grade A also increased from 14% to 24% in biology these. The passive learning happens through flipped classroom outside of class as it frees up class time for active learning (Tucker, 2012). Research showed that active learning is able to produce better grades than passive learning (Minhas, Ghosh, & Swanzy, 2012).

Flipped classroom can be relevant to nursing for both nurses and student nurses. Nowadays, many nurses are keen to further their education with Advance Diploma, Degree and so on. Through the flipped classroom, it enables nurses to have a flexible learning time with regards to swift work so that it allows nurses to learn the content at their own pace. On the other hand, flipped classroom is also relevant to nursing students as it

can increase more interaction with lecturers and friends during class activities. Improve in knowledge, skills, attitude, self-learning, study satisfaction, critical thinking and problem-solving skills are also benefits of flipped classroom for both nurses and nursing students.

Therefore, the study aims to explore the correlation between different gender and perception of flipped learning approach nursing students in Ngee Ann Polytechnic.

## **II. Literature Review**

### **Theme 1: Female students prefer flipped classroom than male students**

According to the study done by Goh and Ong (2019), it was found that female students have a significantly higher average rating on their preference on animation in the video lecture ( $p=0.012$ ) and a better understanding with the aid of animation ( $p=0.036$ ), as well as a significantly higher average rating on the two-way communication environment created in the flipped classroom ( $p=0.024$ ).

It was observed by Stumed et al. (2011) that female students get greater help using a collaborative learning strategy than their male peers. (Munir, Baroutian, Young & Carter, 2018). Therefore, female students find flipped classrooms more engaging and easy to adapt.

### **Theme 2: Advantages of flipped classroom**

Based on the study done by Mikkelsen (2015), where forty-eight first year nursing students were asked to complete a questionnaire after their flipped learning these. The results showed that the flipped classroom had the potential to enhance student learning as evidenced by the active participation by students in the learning process and the opportunities for instructors to interact with students on their doubts.

In a study done by Hanson (2015), students were enthusiastic about flexible delivery and self-paced learning, and faculty staff noted an increased understanding of the relevance of studying population health in the nursing programme.

The study by Goh and Ong (2019), did a quasi-experimental pre- and posttest control group design on 114 year two pharmacy students which reported an enhancement in the learning experience and engagement of pharmacy students through flipped classroom in Malaysia.

### **Strength**

The study by Goh & Ong (2019) was completed during, pre and post-flipped classroom. Munir et al. (2018) compared students' perception of flipped classroom through 3 surveys at different times of the semester which enhanced the study as there was a major difference in student satisfaction at the start and the end of the semester.

### **Limitations**

The study by Goh & Ong (2019) showed no significant gender difference. The article also focused more on the difference in student exam performance of the flipped classroom and the traditional teaching methods rather than what they perceived of the different teaching methods. The study by Hanson (2015) failed to ensure that teachers explained the potential benefits of the flipped classroom to the participants. Studies by Munir et al. (2018), Mikkelsen (2015) and Goh & Ong (2019) had smaller sample sizes therefore, the results may provide inaccurate values and have a bigger margin of error.

### **Research Gaps**

Goh & Ong (2019) findings showed no significant results that have emerged about flipped classroom effects on students learning. Furthermore, studies displaying students' opinion about the flipped classroom with cooperative learning are rarely found in the literature. Both studies by Goh & Ong (2019) and Mikkelsen (2015) should have included students from other years to find whether there is a correlation between different academic levels and flipped learning.

### **Research Questions & Hypothesis**

We hypothesise that: There is no significant difference between genders in the perception of flipped classrooms.

The Research Questions are:

1. Does gender affect the perception of flipped classroom in nursing students?
2. Does gender affect the motivation level in nursing students?

### **Research Design**

The study used a descriptive cross-sectional design which helps to establish the correlation between variables and provide more information about flipped classroom. This design allows us to evaluate the correlation

between gender and the perception of flipped classroom among nursing students. The independent variable of the study is gender. The dependent variable is the perception of flipped classroom which can be further defined as the understanding or the interpretation of flipped learning.

**Sampling Procedure**

The sample size consisted of 863 participants. Nursing students were conveniently sampled from Ngee Ann Polytechnic, School of Health Sciences.

**Inclusion Criteria**

Year 1 to Year 3 Nursing students.

**Exclusion Criteria**

Students from other faculties and institutes.

**Data Collection Procedure**

1. Data was collected in May 2019 by 23 students from 4 different groups. Schedule was allocated by PI.
2. Purpose of study and data collection was explained to participants.
3. Participants were briefed about their right to opt out from the research.
4. Queries were elucidated, questions were explained to participants clearly.
5. Implied consent was obtained through completion of the questionnaire via google docs.
6. 10 mins were given for the students to complete the questionnaire.
7. Data was collected and analyzed via SPSS V24.
8. No missing data was detected.
9. All data was handed over to PI for further evaluation.

**Validity and Reliability**

**Reliability Statistics**

Cronbach's	
Alpha	N of Items
.828	14

The alpha coefficient for the 14 items is .828, suggesting that the items have relatively high internal consistency.

**Ethical Considerations**

This research project was approved by Ngee Ann Polytechnic Institutional Review Board (IRB) and Director of School of Health Sciences. The purpose of the study was stated in the questionnaire and consent was implied through completion of the questionnaire. It was stated that answering the questionnaire indicated voluntary participation. Participants were also noted that the data collected will be kept confidential.

**III. Results**

This study included 863 nursing students, 742 (86%) of them were female and 121 (14%) were male. Most of the participants were between the ages of 17 and 20 (69.1%). More than half of the participants (60.8%) were “O” level leaver. There were 129 (14.9%) participants from year 1, 336 (38.9%) participants from year 2 and 398 (46.1%) participants from year 3.

Pearson Chi-Square test was used to analyse the relationship between different gender and the perception of flipped learning approach.

**Table 1. Student perceptions of overall flipped learning approach.**

Statement	Gender	Strongly Disagree % (no.)	Disagree % (no.)	Neutral % (no.)	Agree % (no.)	Strongly Agree % (no.)
The Flipped Classroom is more engaging than traditional classroom instruction.	male	2.9 (25)	2.3 (20)	4.4 (38)	3.5 (31)	1.9 (7)
	female	6.0 (52)	16.3 (141)	36.7 (317)	22.7 (196)	4.2 (36)
The Flipped Classroom allows me to learn more.	male	1.9 (16)	2.3 (20)	4.8 (41)	4.1 (35)	1.0 (9)
	female	5.0 (43)	13.6 (117)	35.9 (310)	27.9 (241)	3.6 (31)
The Flipped Classroom makes me understand the lesson better.	male	2.0 (17)	2.5 (22)	4.6 (40)	4.1 (36)	0.7 (6)
	female	5.8 (50)	14.2 (123)	26.7 (317)	25.7 (222)	3.5 (30)
I am motivated to learn because of Flipped Classroom.	male	2.0 (17)	3.1 (27)	5.4 (47)	2.8 (24)	0.7 (6)
	female	9.0	18.3	38.5	18.5	2.8
		(78)	(158)	(332)	(160)	(24)
My understanding of a module improve because of Flipped Classroom.	male	2.0 (17)	2.2 (19)	5.7 (49)	3.4 (29)	0.8 (7)
	female	7.0 (60)	16.6 (143)	39.0 (337)	39.0 (183)	2.3 (20)
I am comfortable having Flipped Classroom in all my nursing modules.	male	3.4 (29)	3.1 (27)	3.0 (26)	3.4 (29)	1.2 (10)
	female	14.6 (126)	17.1 (148)	29.5 (255)	19.9 (172)	4.8 (41)
I spend a lot of time to prepare for the Flipped Classroom.	male	2.2 (19)	2.8 (24)	5.0 (43)	3.1 (27)	0.9 (8)
	female	3.8 (33)	16.2 (140)	37.2 (321)	24.6 (212)	4.2 (36)
The Flipped Classroom allows me to be responsible in my studies.	male	1.6 (14)	1.2 (11)	2.0 (17)	6.7 (58)	2.4 (21)
	female	3.8 (33)	5.9 (51)	23.3 (201)	40.6 (350)	12.4 (107)
The Flipped Classroom allows me to learn at my own pace.	male	0.8 (7)	1.5 (13)	1.9 (16)	6.5 (56)	3.4 (29)
	female	3.0 (26)	3.9 (34)	20.6 (178)	41.7 (360)	16.7 (144)
The Flipped Classroom gives me greater opportunities to communicate with other students.	male	2.5 (22)	2.9 (25)	3.7 (32)	2.8 (33)	1.0 (9)
	female	8.3 (72)	20.9 (180)	34.0 (293)	20.0 (173)	2.8 (24)
Total sum up	male	15.1 (185)	14.2 (174)	32.4 (398)	29.2 (358)	9.1 (112)
	female	7.7 (573)	16.6 (1235)	37.2 (2762)	31.9 (2369)	6.6 (493)

Due to rounding, percentages may not add up to 100%.

**Table 2: analysis of the relationship between different gender and perception of flipped learning approach.**

**Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	49.524 <sup>a</sup>	32	.025
Likelihood Ratio	51.058	32	.018
Linear-by-Linear Association	1.679	1	.195
N of Valid Cases	863		

a. 26 cells (39.4%) have expected count less than 5. The minimum expected count is .28.

**Table 3: analysis of the relationship between different gender and motivation level.**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.773 <sup>a</sup>	4	.596
Likelihood Ratio	2.622	4	.623
N of Valid Cases	863		

**Gender and the perception of Flipped Learning approach**

Results of student rating of the perception of the overall flipped classroom learning approach are shown in Table 1. We added a “total sum up” to the last row in Table 1. The last row shows that the majority of male and female students chose agree or strongly agree (male: 38.3%; female:38.5%). It also showed that both male and female were in a minority of those who choose to disagree or strongly disagree (male: 30.5%; female: 24.3%). The rest of the male and female chose neutral (male: 32.4%; female: 37.2%). Table 2 shows perception of the flipped learning approach were significantly associated with different gender ( $p=0.025, <0.05$ ).

**Gender and Motivation Level**

However, for the motivation level, the majority of male and female students chose neutral (male: 5.4%; female: 38.5%). Comparing disagree and strongly disagree with agree and strongly agree, there were more male and female students choosing disagree and strongly disagree (disagree or strongly disagree: male: 5.1%; female: 27.3%), (agree or strongly agree: male: 3.5%; female: 21.3%). Table 3 shows there is no significant relationship between different gender and motivation level of the flipped learning approach ( $p=0.596, >0.05$ ).

**IV. Discussion of findings**

The research regarding whether gender affect the perceptions of flipped classroom is limited and only a few flipped classroom in nursing education has been carried out. In this study, we have successfully implemented that there is a significant difference between perception of flipped-classroom and gender. And compared to male students, female students have a better perception of flipped learning than male students. Based on the study by Goh and Ong (2019) and the study, we also found that female students have higher engagement than male students when they watch the videos before the class. Therefore, they have a better understanding of the topic. To add on, female students prefer the animation in the video, which helps them to understand the learning content better. However, flipped classroom does not motivate students to learn. The importance to watch the powerpoint slides, videos and complete the quiz before class are some major reasons for the low motivation level as it increases their stress.

The participants noted that flipped classroom improves the understanding of module as evidenced by 41.3% female students and 4.2% male students choosing agree and strongly agree. The advantage of the flipped classroom is that it allows students to learn at their own pace and it also improves the communication during the class. However, a minority of students believe that the flipped classroom pre-class activity is heavy, therefore, it does not motivate students to learn. In addition, there are only a few students who agree to put the flipped

classroom in all nursing modules.

Result from the study allows school to understand that not all students are suitable for the flipped classroom, especially male students. The finding shows that the flipped classroom does not motivate students to learn better. Thus, school who choose the flipped classroom as a teaching method needs to assess students to make it suitable for them. For example, cut pre-class task-work, so they would not feel stress. However, students learning with flipped classroom have better knowledge, perception and understanding level. So the school can implement flipped classroom smartly and nursing students can learn nursing skills better.

#### Limitations

For the study, there are a few limitations that requires further attention. Firstly, the study only conducted nursing students from Ngee Ann Polytechnic. Thus, we are unable to generalize all nursing institutions in Singapore. Hence in future studies, various local nursing insitutions can be involved in the survey, such as Singapore institution of technology and the National University of Singapore. Increasing the number of participants in this study can strengthen the results of study. Secondly, there are more female students participating in this study than male students. The result of this study is not representative. Therefore in future studies, we need to control the number of female students and male students to make the results more representative. Thirdly, this is a self-reported data and results may not be accurate. For future studies, data collection can be collected from student focus groups, student assignments and student written reflections. We also have the opportunity to observe the student's reactions during and after class. Lastly, the study only collected data from questionnaires, in future research, we can also provide open-ended questions to be analyzed quantitatively. This allows students to express their feelings and aids us to gain a better understanding of their perception level of flipped classrooms.

#### V. Conclusion

This study demonstrates that there is a significant difference between perception of flipped-classroom and gender difference therefore, we reject the hypothesis. Compared to male nursing students, female nursing student have better perception. It also shows that the flipped classroom can motivate nursing students in engagement, knowledge and understanding level. However, the study found that the flipped classroom cannot motivate students to learn. Therefore, there is no relationship between motivation level and gender. These findings can help school to determine how to implement the flipped learning approach on how to motivate students to learn in the future. Further studies can be done to investigate the reason why the flipped classroom does not motivate students to learn. We also recommend future research teams to obtain approval from Singapore institution of technology, the National University of Singapore, as we believe that these places would be a good resthce for representative data.

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## Appendix

### Consent form & Information sheet

# Nursing Students' Perception of Flipped Class Room

Thank you for participating in this study. All information provided will be treated as CONFIDENTIAL.

#### CONSENT FORM

Protocol title:

Nursing students' perception of the flipped classroom.

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#### Information Sheet

Introduction

You are invited to complete the Student Perceptions of the Flipped Classroom Survey

Purpose of research

The aim of this study is to assess nursing students' perception of the flipped classroom. The results of the study will assist the school to understand student's perception of the flipped classroom.

The study too will serve as a guide for providing valuable information for further education curriculum and delivery.

Voluntary Participation

By answering this questionnaire, you have voluntarily participated in this study.

Please note that all data collected will be treated as confidential.

Thank you.

### Questionnaire

The Flipped Classroom is more engaging than traditional classroom instruction. \*

Choose ▼

The Flipped Classroom gives me greater opportunities to communicate with other students. \*

Choose ▼

The Flipped Classroom allows me to learn more. \*

Choose ▼

The Flipped Classroom allows me to learn at my own pace. \*

Choose ▼

The Flipped Classroom allows me to be responsible in my studies. \*

Choose ▼

I spend a lot of time to prepare for the Flipped Classroom. \*

Choose ▼

The Flipped Classroom makes me understand the lesson better. \*

Choose ▼

I am comfortable having Flipped Classroom in all my nursing modules. \*

Choose ▼

My understanding of a module improve because of Flipped Classroom. \*

Choose ▼

I am motivated to learn because of Flipped Classroom. \*

Choose ▼

I am in Nursing \*

Choose ▼

My age is \*

Choose ▼

I am a/an \*

Choose ▼

My gender is \*

Choose ▼

**SUBMIT**

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