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ANALYSING THE STUDENTS' PERCEPTION TOWARDS A FLIPPED CLASSROOM APPROACH IN A MALAYSIAN PUBLIC UNIVERSITY

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Abstract:

The flipped classroom gives students instant access to video lectures, slideshows, and other educational resources via online learning platforms. Students will be more motivated to learn if they combine in-class activities with online learning experiences outside of the classroom rather than conventional instruction. The objective of this study was to investigate students' perceptions towards the implementation of flipped learning in a Malaysian public university. 402 students participated in this study, and data were gathered through an online survey. The study's findings indicated that most students had positive perceptions of using flipped learning in their studies. The fact that students could watch the recorded videos repeatedly at their own pace was the main reason they preferred a flipped classroom. In particular, the majority of them stated that flipped learning increases learning effectiveness and encourages student motivation. This indicated that the vast majority of students reported being very engaged in the flipped classroom lesson. There are also significant differences between male and female students in that female students typically have more positive perceptions of the flipped classroom approach. In this study, it was claimed that the flipped classroom

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approach may be applied and employed in all components of teaching undergraduate students in higher education. In order to compare different approaches to flipped learning, future studies will need to look into how pretests and posttests are implemented in flipped classrooms.

Keywords:

Flipped Classroom, Perceptions, Students, Education, Learning

Introduction

As technology developed, teaching-learning strategies shifted from passive to active and from the traditional classroom to the modern classroom. Nowadays, most students use their mobile phones, iPads, and other digital gadgets as their teachers in their studies. Due to its greater availability, accessibility, and technological advancement, people choose to access information online (Eppard & Rochdi, 2017). Thus, lecturers need to implement a new teaching strategy in their lessons with the intention of having more adaptive classes. As such, the utilisation of flipped learning methodologies as quality enhancers of curriculum delivery is now the trademark of most higher education institutions worldwide (Chowdhury, 2020). Currently, learning is guided by mixing activities assisted by various digital tools outside of the classroom with traditional face-to-face classes. The combination of in-class activities and outside online learning opportunities will improve students' learning motivation and attitude more than traditional teaching. Among numerous classroom types, the flipped classroom concept has recently grown in popularity (Ma'ruufah, 2024). This approach allows for the active and collaborative use of classroom time; flipped learning can complement the common classroom. In recent years, the flipped classroom has evolved into a key methodological choice for delivering more individualised educational opportunities (Palazón-Herrera & Soria-Vílchez, 2021). Chowdhury (2020) claimed that the flipped classroom encourages more cost-efficiency, increased involvement, and efficacy than traditional classrooms. It is an effective strategy for promoting active learning among students and developing strong connections between them and their teacher. The flipping model can offer instructional opportunities, encouraging students to be more involved. This approach has developed into a tool for encouraging academic peer engagement, collaboration, and critical thinking.

According to Aljaraideh (2019), flipped learning involves the teacher presenting content to the students before class starts, which enables both sides to focus more on higher-level thinking abilities. The flipped classroom is a mixed-mode teaching approach that combines in-person instruction with online learning. Students complete their coursework outside of class, and teachers spend a lot more time in class working with students on real-world problems and engaging them in active learning (Mengual-Andres et al., 2020). This approach involves switching from the traditional teacher-centred paradigm of instruction to a learner-centred one (Latorre-Coscolluela, 2021). Chick et al. (2020) claimed that the flipped classroom has the benefit of allowing students to have more time in the classroom for deeper investigation of the content and more meaningful learning because new material is typically delivered outside of the classroom. It involves students participating in lower-order thinking activities outside of the classroom with the purpose of utilising class time for deeper discussions and activities that require higher-order thinking. According to Bergmann & Sams (2014), flipped learning enables the introduction of flexible pedagogy that meets the diverse needs of students and improves their involvement and engagement in the learning processes. Basically, the instructor creates

the materials in some sort of audio-visual medium, primarily video (Zainuddin, 2018). Most of the time, these materials are available online so that learners can access them immediately before class. Based on Collado-Valero et al. (2021), the topics or modules delivered through this approach can be delivered in a variety of ways. It utilises a variety of instructional strategies, including online group discussions, video lectures created by the instructor or even other parties, online research, and the traditional method of reading from published materials. At the same time, it provides students direct access to online educational platforms' resources, which have gradually grown in popularity and significance.

In flipped learning, the instructors play the role of facilitators, helping and directing the students as they work towards their learning goals (Maidin & Shukor, 2021). Their job is to direct and coordinate the activities and skills, while the students' roles are created by using specific strategies, including self-learning, lesson preparation at home, and discussion preparation in the classroom. According to Santikarn et al. (2018), the flipped method demonstrated a positive impact on students. This supported the fundamentals of the flipped method, and flipped instruction, in comparison to traditional instruction, also facilitated student learning. Although many earlier studies indicated that students provided positive feedback regarding the flipped classroom approach, some students also demonstrated less interest in it. Students from various educational backgrounds have been shown to have diverse perspectives on how the flipped classroom concept is being implemented. Despite all the benefits of flipped learning, the students' perceptions ultimately determine how well this method works in the teaching and learning process. Therefore, a study has been conducted in a higher education institute in Malaysia between various courses of participants from different faculties to provide a more in-depth investigation of students' perceptions of the use and implementation of the flipped classroom model in higher education. This study also determined the differences in the students' perceptions of the flipped classroom approach based on gender, level of education, and faculty.

Literature Review

There are a few studies on phases of the flipped classroom approach and students' perceptions of the flipped classroom.

Phases in the Flipped Classroom Approach

Jonathan Bergmann and Aaron Sams were the first to use the flipped classroom model. They produced a significant number of instructional videos to help their students understand the key ideas of brand-new classes and to explain any areas of doubt. This method helps students learn by simulating real-world scenarios. The flipped classroom approach has been the subject of numerous studies to investigate its potential for improving students' academic achievement in particular courses (Sourg et al., 2023; Cho et al., 2021; Lo et al., 2018; Chang & Hwang, 2018). By helping students prepare for classes and exams, the flipped classroom method raises students' academic performance (Zainuddin et al., 2019). Other studies also found that flipped classes can boost students' motivation for learning. According to Huang et al. (2019), pre-class content is a crucial component of motivation while working in a flipped classroom environment since it frequently coincides with a greater commitment to activities both inside and outside the classroom. Chuang et al. (2018) further stated that pre-class subject courses and the practise of performing assessments shortly before class have an optimistic effect on students' motivation since they prepare students for active participation in class activities.

The flipped classroom approach consists of three phases: before the class, in the classroom, and after the class (Aljaraideh, 2019). This approach encourages students to reflect and engage in discussion while applying the knowledge they have learned from each stage of the learning process. The first stage requires the students to go over all the material prior to class in order to become ready to engage in the activities. In other words, when materials and details regarding the subjects that students are required to complete asynchronously prior to the session are given. They must watch a corresponding online lecture video and assimilate the learning content. The students can take notes, prepare questions about the material they do not understand, and jot down questions for later discussion (Colomo-Magaña, 2020; Thai et al., 2017). In the classroom, which is identical to the characteristics of the traditional flip. The students explore and practise what they have learned with the support and guidance of the lecturer. Lecturers will clarify the lectures or pertinent topics for the students. Based on Kanelopoulos (2017), basically, in this phase, students primarily engage in activities such as watching videos, collaborating, sharing knowledge, and completing assignments. After class, the teacher uses a formative assessment process to assess the students' understanding in the final phase. The students are subjected to various assignments or tests as a way to further their understanding of the material covered in the other phases (Cho et al., 2021).

Students' Perception towards Flipped Classroom

According to Male and Lumbantoruan (2021), perception refers to a person's thoughts or opinions about something. Perception involves prior information and experience, according to Gregory (1970). Research has shown that students tend to perform better when they possess a positive attitude towards their studies. Failure will occur, though, if the students have negative perceptions. The results of a study by Gunawan et al. (2019) lend support to this. Three categories, which are excellent, good, and bad, were used to measure the perception indicators. Their findings concluded that a good category of perception affects how well someone learns. Several studies have been conducted to determine the perceptions among students towards the implementation of the flipped classroom (Aljaraideh, 2019; Pham, 2021; Palazón-Herrera & Soria-Vílchez, 2021; Strohmeyer, 2016).

Most research findings show that students' perceptions towards the use of flipped classrooms were generally positive, and the majority of them would suggest flipped learning to other learners in other classes. Additionally, flipped learning also benefits timid and passive students, international students who struggle with English, and full-time students who have more time for study (Zainuddin & Attaran, 2016). Pham (2021) found that most students said that flipped learning increases learning effectiveness and motivates students to learn. They also reported being satisfied with their lecturers in the flipped learning classes. In addition, the study by Maidin and Shukor (2021) discovered that students had a positive perception of the flipped classroom strategy. It demonstrates that students have a favourable opinion of the flipped classroom method of teaching communicative English because they were able to comprehend the topic that was introduced. This method serves as a basis for students to improve their ability to simply comprehend the material. In addition, it was discovered that the flipped classroom technique was more interesting than a traditional classroom. This situation has a beneficial impact on students' achievement in the relevant topic.

In the flipped classroom, one of the most popular materials is video. Most students see the use of video in the flipped classroom as positive and one of the most used resources. Most students positively perceive the implementation of video in the flipped classroom. Through videos that

can be created by the teacher or chosen from the countless resources that can be viewed on platforms like YouTube, Vimeo, etc., students are presented with interactive learning experiences. Teachers can also create their own podcasts or choose from ones that are available on platforms like iVoox, SoundCloud, etc., allowing these to be incorporated and implemented during classroom activities (Van Alten, 2019). Anggoro and Khasanah (2022) stated that the students find that watching shorter lesson videos is beneficial and that they enjoy being involved in a flipped classroom. According to a few studies, videos improve learning, inspire students to keep learning, and have been related to enhanced academic achievement in students (Akintolure et al., 2024; Lee & Choi, 2019). Pham (2021) agreed that the video lectures were better than the face-to-face ones. In order to learn at their own pace, students can pause, stop, and rewatch video lectures before class. The study by Musdi et al. (2019) proved that students view flipped learning, which uses videos as its medium, positively. The videos are entertaining and simple to use. Students can view educational videos that have been recorded and rewatch them multiple times to better understand the material. Furthermore, the instructional videos can be accelerated so that students can bypass the sections they have mastered. It is also easy to take notes, claim Akintolure et al. (2024). Additionally, students are given more time to fully understand the material and are given the responsibility of planning their study time. Moreover, the use of video in the flipped classroom was seen favourably by Oyola (2016) as well. Students are more motivated and confident to participate in class discussion when videos are presented. Students are then able to temporarily cancel or view videos whenever they wish, as well as give details about the videos they have watched.

Methodology

This quantitative study was conducted at the Universiti Teknologi MARA (UiTM) Johor Branch, Segamat Campus. The data was collected once over a period of two months. In this study, the sampling method used was convenience sampling. This sampling method was used, in which the respondents were recruited based on ease of accessibility. In accordance with Sekaran and Bougie (2016) and Roscoe (1975), appropriate sample sizes for most of the research should be greater than 30 and lower than 500. So, for this study, a minimum sample size of 300 observations was chosen. A total of 402 students were selected at random to take part in and cooperate in answering the questionnaire. An online survey using a Google Form was used to collect the data from the respondents. This method was used because it was practical, affordable, and allowed respondents to finish the survey at their own pace.

The questionnaire was developed to assess perceptions towards the flipped classroom approach among the students. The questionnaire used is a survey adopted based on a previous study, which is from Aljaraideh (2019). The questionnaire is divided into two sections. The first section examines demographic profile details, including gender, level of education, courses, faculty, and general questions related to the flipped classroom approach. The second section consists of 30 items asking about students' perceptions of flipped classrooms. Before giving the survey to the study's sample participants, the researcher explained what a flipped classroom was. A 5-point Likert scale was employed in this questionnaire, which is: strongly disagree, disagree, neither agree nor disagree, agree, strongly agree. Since the questionnaire was adopted by Aljaraideh (2019), it has been tested for reliability and validity. The Cronbach's alpha for internal reliability for students' perception domain is high, at 0.87. According to Hair et al. (2019), reliability analysis has value and can be interpreted using a rule of thumb depending on strength. A value over 0.7 is the suggested alpha coefficient for a good association. Therefore, for this study, it can be concluded that this instrument is valid and reliable.

In this study, several statistical methods were used. Descriptive statistics, independent t-tests, and one-way analysis of variance (ANOVA) were employed for this study. Firstly, descriptive statistics were used to examine the demographic profile of the respondents. The frequency table and bar chart were employed. The profiles that would be analysed are gender, level of education, courses, and types of faculties, as well as the main reason for choosing the flipped classroom approach. Secondly, the independent t-test is used for comparing the means of the variables between two independent groups. Then, a one-way ANOVA is also used to test for differences between more than two groups. The collected data were then analysed using IBM SPSS software version 26.0.

Findings

Demographic Background

Table 1 shows the demographic information for 402 respondents. It shows that 71.4% of the respondents are female, and another 28.6% are male. Most of the respondents (63.7%) are from the diploma level, while 36.3% are from the degree level. Meanwhile, most respondents are from the Faculty of Management and Business, contributing about 48%. The Faculty of Information Management had the lowest percentage with 0.7%, coming in third behind the Faculty of Accounting and the Faculty of Computer and Mathematical Sciences (both with 25.6%). Furthermore, in this study, the majority of the respondents (26.6%) were studying for the Bachelor of Accountancy (Hons), while the lowest percentage came from the course Bachelor of Business Administration (Marketing) (Hons), which is only 0.2%.

Table 1: Demographic Profile of The Respondents (n = 402)

Variables	Frequency	Percentage (%)
Gender		
Male	115	28.6
Female	287	71.4
Level of Education		
Diploma	256	63.7
Degree	146	36.3
Faculty		
Faculty of Management and Business	193	48.0
Faculty of Accounting	103	25.6
Faculty of Computer and Mathematical Sciences	103	25.6
Faculty of Information Management	3	0.7
Courses		
Diploma in Business Studies	25	6.2
Diploma in Business Administration	10	2.5
Diploma in Investment Analysis	94	23.4
Diploma in Computer Sciences	80	19.9
Diploma in Banking Studies	29	7.2
Diploma in Mathematical Sciences	19	4.7
Bachelor of Accountancy (Hons)	107	26.6
Bachelor of Business Administration (Marketing) (Hons)	1	0.2
Bachelor of Business Administration (Finance) (Hons)	8	2.0
Bachelor of Business Administration (Investment Management) (Hons)	2	0.5

Bachelor of Information Science (Records Management) (Hons)	5	1.2
Bachelor of Digital Marketing (Hons)	22	5.5

Reasons for Choosing the Flipped Classroom Approach

According to Figure 1, 41.54% of respondents chose that being able to watch recorded videos repeatedly at their convenience as the main factor. Aside from that, another 22.1% of respondents believed that this flipped classroom approach would allow them to learn at their own pace. The lowest percentage was 2.24%, indicating that students could build a deeper understanding through a flipped classroom approach.

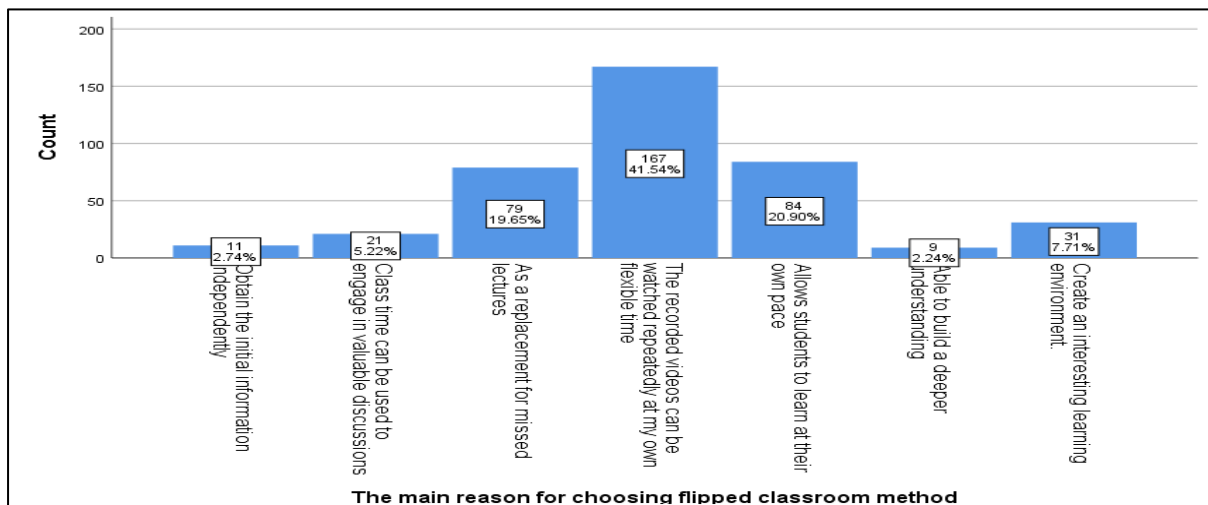


Figure 1: The Main Reason for Choosing The Flipped Classroom Method

Level of Students' Perception towards Flipped Classroom Approach

Table 2 shows the interpretation of mean score. According to Mahamod and Nor (2012), the mean value can be categorized into three, which are low, medium, and high.

Table 2: Interpretation of Mean Score

Mean Score	Interpretation
0.5 – 2.33	Low
2.34 – 3.66	Moderate
3.67 – 5	High

Table 3 indicates that item C6 is at a high level, while the remaining items are at a moderate level, with the mean range between 3.08 to 4.15 and the standard deviation (SD) range between 0.807 to 1.034. Overall, the level of perception of the flipped classroom approach among UiTM students was moderate.

Table 3: Level of Students' Perception

No	Items	Mean	SD	Interpretation
C1	I feel that watching videos and taking notes contribute efficiently to my learning.	3.66	0.965	Moderate
C2	With flipped classroom model, I feel more prepared for my exam.	3.25	1.014	Moderate

C3	I like watching the lessons on video.	3.30	1.021	Moderate
C4	I try to learn as much as possible while watching the videos.	3.70	0.938	Moderate
C5	I wish more instructors use the flipped or inverted classroom model.	3.28	1.020	Moderate
C6	I frequently pause or repeat parts of the videos in order to increase my understanding of the material.	4.15	0.957	High
C7	Flipped classroom encourages me to practice critical and creative thinking.	3.47	0.981	Moderate
C8	Learning foundational content prior to class greatly enhances my understanding of material.	3.59	0.881	Moderate
C9	Flipped classroom gives me the opportunity to ask more questions inside the classroom.	3.15	0.988	Moderate
C10	Flipped classroom attracts my attention to learning and teaching process.	3.23	0.979	Moderate
C11	With flipped classroom, we have to do more work out of the classroom.	3.47	0.921	Moderate
C12	Flipped classroom can be a suitable teaching strategy.	3.44	0.941	Moderate
C13	Flipped classroom can improve interest in exploring topics.	3.45	0.963	Moderate
C14	I felt prepared to complete course tasks in class after listening to the video content.	3.39	0.950	Moderate
C15	Flipped classroom is more engaging than the traditional classroom.	3.08	1.017	Moderate
C16	Flipped classroom gives me less class time to practice the concepts of course.	3.26	0.893	Moderate
C17	Flipped classroom reduces the effort to understand the basic knowledge of the subject matter.	3.18	0.902	Moderate
C18	Flipped classroom, along with delivery of content outside class and problem solving in class, is an instructional method appropriate for my specialization.	3.33	0.807	Moderate
C19	I am more motivated to learn the concepts of course via the flipped classroom.	3.22	0.958	Moderate
C20	Flipped classroom improved collaborative learning.	3.41	0.909	Moderate
C21	Flipped classroom can improve interest in class.	3.31	0.976	Moderate
C22	I got the ability to self-pace my learning with flipped courses.	3.52	0.929	Moderate
C23	Flipped classroom gives me greater opportunities to communicate with other students.	3.22	0.983	Moderate
C24	I believe that I am able to learn material with flipped classroom instruction better than with traditional lecture-based instruction.	3.16	1.000	Moderate
C25	I would recommend flipped classroom to a friend.	3.26	0.991	Moderate
C26	Flipped classroom matches my learning style.	3.18	1.034	Moderate

C27	I feel that mastering learning through flipped classroom improved my academic achievement.	3.25	0.956	Moderate
C28	Flipped courses did not limit my interaction with instructors.	3.28	0.970	Moderate
C29	I feel that mastering learning through flipped classroom improved my course understanding.	3.32	0.929	Moderate
C30	Flipped classroom learning has reduced my dependency on the instructor.	3.27	0.945	Moderate
Students' Perception		3.36	0.96	Moderate

The Difference between Students' Perception towards flipped classroom approach based on Gender, Level of Education and Faculty Types

Table 4 presents the result of the difference in students' perceptions between male and female UiTM students. The p-value is less than or equal to the significance level ($p = 0.050$, $\alpha = 0.05$). Therefore, there was a significant difference between students' perceptions and gender among UiTM students. The perceptions of UiTM female students were different from those of UiTM male students towards the flipped classroom approach.

Table 4: The Difference between Students' Perception and Gender

Gender	N	Mean	Standard Deviation	t	P-values
<i>Male</i>	115	3.2530	0.7201	-1.945	0.050
<i>Female</i>	287	3.4029	0.6890		

Table 5 shows the result of the difference between students' perceptions and levels of education among UiTM students. Since the p-value is greater than the significant level ($p = 0.075 > \alpha = 0.05$), there was no difference between students' perception and level of education among UiTM students. Therefore, the students' perception of diploma students is not different from that of degree students towards the flipped classroom approach.

Table 5: The Difference between Students' Perception and Level of Education

Level of Education	N	Mean	Standard Deviation	t	P-values
<i>Diploma</i>	256	3.3102	0.6373	-1.787	0.075
<i>Degree</i>	146	3.4475	0.7939		

Table 6 displays the result of the difference between students' perceptions and types of faculties among UiTM students using a one-way ANOVA. The results indicated that the p-value exceeds the significance level ($p = 0.615 > \alpha = 0.05$). Therefore, there was no difference between students' perceptions and the faculties. This means that the perception of UiTM students does not differ between faculties towards the flipped classroom approach.

Table 6: The Difference between Students' Perception and Types of Faculties

Model	Sum Squares	df	Mean Square	F	P-values
<i>Between Groups</i>	0.886	3	0.295	0.600	0.615
<i>Within Groups</i>	195.841	398	0.492		
<i>Total</i>	196.727	401			

Discussion

The top reason for the preferred flipped classroom method is the ability to watch recorded videos repeatedly at one's own convenience, and this approach would allow them to learn at their own pace. These findings were matched with Akçayır and Akçayır (2018). The flipped classroom encourages students to learn at their own pace and in the most convenient setting possible. It solves most problems faced by absent students who are missing classes by referring to the recorded video, which can be accessed at any time and from anywhere. According to other studies, the high degree of flexibility, unlimited access to online academic resources, and requiring learning settings make this approach appropriate (Lapitan et al., 2021).

Table 3 shows that item C6 ("I frequently pause or repeat parts of the videos in order to increase my understanding of the material") is at a high level, with a mean of 4.15 and a SD of 0.957. This indicated that most students prefer to learn using modern technologies and multimedia. Flipped learning gives students more control over how and when they interact with the material. This result is consistent with Palazón-Herrera and Soria-Vílchez (2021). Their findings claimed that the students highly valued video as pre-class material based on factors like content design, accessibility and adaption to the learning rhythm, analogy with face-to-face class, duration, or others with regard to the interaction between the students and the resources. The students can control the video lecture; they can pause, rewind, and fast-forward as needed. Aljaraideh (2019) also stated that most students like watching videos that contribute efficiently to their learning. Compared to traditional learning, multimedia components, such as pictures, videos, and animation, significantly impact students' learning. The results demonstrate that there is no doubt that including students in the learning process through video becomes a global issue that catches their interest and ultimately helps to strengthen their learning process. Additionally, technology could be utilised to provide a self-paced learning environment that encourages students to grasp new material, according to Pratiwi and Waluyo (2022). Most students thought the flipped video was effective. Multimedia-based videos work because of the multimedia principle, which allows for the simultaneous utilisation of the learner's verbal and visual cognitive pathways. Nowadays, students prefer to receive and submit their work via the institution's electronic gate instead of using more conventional resources like books, journals, and pamphlets (Blair et al., 2016; Newman et al., 2016).

Besides that, in this study, the level of students' perception of flipped classrooms shows a moderate level among UiTM students. This showed that most students expressed being highly involved in the flipped classroom lecture. This was consistent with Ma'ruifah (2024) showed that students believed that the flipped approach was interesting and useful, and they had favourable perceptions towards it. Cho et al. (2021) also found that the students who were in the flipped classroom did better and thought the flipped classroom approach was beneficial for getting ready for the course. Flipped learning allows students the opportunity to interact and work through challenges in the classroom rather than just listening to lectures. Students improved their learning by using their own time outside of class to complete assignments. Additionally, students had extra time to speak with the teacher and ask questions while benefiting from personalized feedback provided individually or within a group setting (Zainuddin & Attaran, 2016). The findings from Maidin and Shukor (2021) also proved that most students had positive perceptions of the use of flipped classrooms, were extremely driven to learn, and had favourable views towards adopting the flipped classroom methodology. This method serves as a foundation for students to improve their capacity to simply comprehend the material. It has a positive effect on students' success in the relevant subject. The usage of a

larger variety of online resources, the growth of more regular interactions between peers and teachers as well as students and teachers, and innovative approaches to managing knowledge and information were identified as having the most relevance by students (Campillo-Ferrer & Miralles-Martínez, 2021).

Female students generally had positive perceptions of the flipped classroom approach, according to independent sample t-tests, which revealed significant differences between male and female students. This result is consistent with Colomo-Magaña (2020), which indicated that female students emphasize the flipped classroom's ability to foster independent learning more than male students. Previous studies also agreed that female students have more positive views towards the use of technology for communication and information, prefer active learning techniques to more traditional ones, and are more supportive of the use of flipped classrooms (Gómez-Carrasco, 2019; Tapasco & Giraldo, 2017). Additionally, Campillo-Ferrer and Miralles-Martínez (2021) found that male and female students differed significantly, with female students having a significantly higher rating than the male group. Compared to male students, female students were more motivated by the tools and techniques used in the flipped classroom approach. Aljaraideh (2019) also found a significant difference between male and female students' perceptions of flipped classrooms. However, the findings showed that male students had more positive perceptions of the flipped classroom than female students. This shows that male students preferred informal learning practises and were more interested in new technology than female students. Female students participate less actively and contribute less to the online method.

Conclusions And Recommendations

The study's significance focuses on how important it is to deal with flipped classrooms. Based on the findings, it can be concluded that the overall mean score for students' perceptions towards flipped classrooms is at a moderate level. It indicates that students' feedback is positive towards this approach. This study also revealed significant differences in students' perceptions regarding gender variables in favour of female students. However, no significant differences exist in students' perceptions of the flipped classroom based on level of education and faculty type.

From this study, lecturers as well as students are going to benefit since it will give lecturers new and essential learning strategies that can encourage and inspire how the material is given. Aside from that, it will also help students become more involved once the material satisfies their needs and preferences. Instead of spending a lot of time repeating and explaining the pre-class learning materials, this gives lecturers and students more time in class for active learning. Encouraging students' interaction and teamwork demonstrates how students access the online class with their classmates and engage in online discussion with both their classmates and the lecturer. Students can decide to learn in their area at a time and place that is comfortable for them, depending on their learning preferences. Additionally, this study will make people aware of the value of flipped classrooms. From this study, it was suggested that the flipped classroom approach may be applied and employed in all components of teaching undergraduate students in higher education. There are various aspects that need to be considered while establishing a flipped classroom, including instructor creativity, school infrastructure, an internet connection, and technology. If teachers do not prepare for those things, implementing the flipped classroom may not be ideal. As for recommendations, investigating research on the real situation of classroom flipping in Malaysian higher education institutions will be preferable. Also, to

compare different approaches to flipped learning, future studies will need to look into how pretests and posttests are implemented in flipped classrooms.

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