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Flipped Classrooms: Addressing Student Participation and Preparedness

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Abstract

The flipped classroom concept has gained attention in recent years as a modern pedagogical approach that offers an alternative to traditional teaching methods. While the flipped classroom model represents a significant shift in teaching strategies, its effectiveness in promoting active student participation and engagement cannot be guaranteed. The widespread use of mobile phones and computers has had a negative impact on digital learners, leading to a decline in the review of pre-class materials among higher education students. This paper critically examines the potential of the flipped classroom as an active learning strategy and raises questions about its effectiveness in meeting students' diverse needs. Results indicate that the flipped classroom teaching approach enhances student engagement and academic achievement. However, the effectiveness of this method hinges on digital learners adapting their study habits. A significant number of students fail to review course materials outside of class due to their reliance on digital tools, resulting in reduced pre-class preparation and fewer active participants in classroom discussions.

Keywords: flipped classrooms, digital students, class participation, student engagement

1. Introduction

An educational institution is more than just a place of learning; it is a microcosm of social interactions, relationships, and dynamics. The connection between society and education is profound, and any developments in one sphere inevitably shape and influence the other. Unceta (2008) argues that any educational institution is a kind of “setting for social life” (p. 428). In other words, there is a direct connection between society and education, so whatever occurs in one sphere impacts and alters the other (Sevillano-Monje, 2022). The interplay between society and education is a complex and dynamic relationship that continuously evolves and adapts. In this context, it is true that technology has significantly revolutionized the contemporary lifestyle, consequently leading to a transformation in the pedagogical approach within higher education. Therefore, there has been a progressive change in the approach to teaching in higher education in recent times. This shift involves “combining” or “replacing” traditional teacher-based methods with more active and student-centered models (Palazon-Herreraa & Soria-Vílchezb, 2021, p. 1). This leads to the emergence of new methodological approaches due to the availability of digital resources. Among the various active learning models, the FCM (flipped classroom model) is widely recognized as an effective approach for engaging students in active learning and fostering meaningful interactions between students and the instructor (Al-Samarraie et al., 2020; Durrani et al., 2022 Palazon-Herreraa & Soria-Vílchezb, 2021).

The FCM methodology emerged as a hybrid approach, combining both face-to-face and online teaching

methods (as cited in Palazon-Herreraa & Soria-Vílchezb, 2021). The flipped classroom approach, also referred to as the inverted classroom, has garnered substantial interest and recognition in the field of educational research and practice in recent years. This innovative pedagogical model presents a departure from the conventional learning setting by providing instructional materials outside of the physical classroom (as cited in Sosa Díaz et al., 2021). The teacher provides the students with course materials before the lecture, enabling them to learn at their own pace at home and in their free time (as cited in Palazon-Herreraa & Soria-Vílchezb, 2021; Sosa Díaz et al., 2021; Sevillano-Monje, 2022). In this way, the time spent in the classroom is dedicated to engaging in interactive activities designed to promote comprehension through active participation and collaborative learning experiences (as cited in Zain & Sailin, 2020; Sosa Díaz et al, 2021; Väisänen & Hirsto, 2020). Consequently, the students become in charge of the content before attending the lecture, and the teacher plays the role of a guide (as cited in Sosa Díaz et al, 2021).

2. Literature review

2.1 Historical development of the flipped classroom model

The active learning methodology of flipped classrooms was developed by Jonathan Bergmann and Aaron Sams (2012), professors at Woodland Park High School in Woodland Park, Colorado, United States. The two educators realized that students really need their help “when they get stuck”, not when they “receive content” (Bergmann & Sams, 2012, pp. 4-5). Hence, they thought of prerecording their lectures so they could dedicate the entire class period to assisting students with concepts they struggled to understand. It is important to note that Jonathan Bergmann and Aaron Sams were not the first teachers to utilize prerecorded lessons as an educational tool, nor did they “come up with the term flipped classroom”; however, they were considered "early adopters and outspoken proponents of the tool" (Bergmann & Sams, 2012, p.6). The concept of flipped learning (FL) was coined by Baker (2000) and Lage et al. (2000) with the aim of improving students’ learning outcomes and enriching the teaching experience in higher education (as cited in Durrani et al., 2022).

2.2 Effectiveness of the Flipped Classroom Approach

A recent study conducted by Pérez et al. (2019) delved into the perceived positive impacts of FL methodology (as cited in Durrani et al., 2022). The study discovered that students' motivation, knowledge, general skills, and engagement play significant roles in contributing to their effectiveness. Wright et al., (2017) state that the flipped learning approach has potentially revolutionized student-tutor communication, leading to increased engagement and performance (as cited in Al-Samarraie et al., 2020; Väisänen & Hirsto, 2020). Additionally, the literature has demonstrated how the flipped approach was utilized to enhance interaction among students and between students and instructors ***(***Al-Samarraie et al., 2020; Durrani et al., 2022). It promotes a strong teacher-learner connection. This is because the teacher can address all types of learners in the classroom, rather than addressing a large group of students for an extended period of time (Bergmann & Sams, 2022). The flipped classroom model can “benefit students of all learning styles”, including “gifted students” (Bergmann & Sams, 2022, p. 262). In the field of education, Hao & Lee (2016) stated that the flipped classroom model might help students to discuss ideas with each other and work collaboratively (as cited in Al-Samarraie et al., 2020; Väisänen & Hirsto, 2020). Moreover, a study by Lee and Wallace (2018) demonstrated that students in a flipped course attained higher average scores compared to those in a non-flipped course (as cited in Al-Samarraie et al., 2020). Furthermore, the study revealed that this approach fostered closer and more spontaneous

relationships between students and professors (Durrani et al., 2022), and it enhanced students' critical thinking and problem-solving skills (as cited in Väisänen & Hirsto, 2020). When students can solve problems before class, they become more task-oriented, which helps them solve complex problems later (Al-Samarraie et al., 2020). This also fosters positive perceptions about learning, increasing motivation to engage with instructors and deeply understand learning materials. Martínez-Jiménez and Ruiz-Jiménez (2020) discovered that students' satisfaction and learning outcomes improved when the FL methodology was used (as cited in Durrani et al., 2022).

3. Data and method

This study has been carried out in the National School of Business and Management, Cadi University, Marrakech. This particular institution was selected because of my current position as a professor there, making it easier for me to gather the necessary data due to my familiarity with the environment. To ensure a comprehensive analysis, I gathered data from a total of 574 respondents who willingly participated in my study. By concentrating on two groups of students, I was able to gain deeper insights into the specific challenges and experiences they encounter, allowing me to generate more meaningful conclusions and insights.

For my research project, I distributed a comprehensive questionnaire to two groups of participants aged 19 to 21. My objective was to explore the factors contributing to declining levels of student engagement in academic environments. To gather data for my study, I devised a questionnaire consisting of various inquiries pertaining to the flipped classrooms teaching approach. The questions aimed to capture students' perceptions and experiences with this method to discern its effectiveness and identify potential factors impeding student engagement.

To assess the effectiveness of the flipped classroom approach, I proposed a hypothesis to identify the influencing factors that may hinder or improve students' engagement in the classroom. I used the bivariate analysis and chi-square tests to examine the association between the flipped classrooms approach and students' participation in class activities. The null and alternative hypotheses of interest are:

H_0: There is no positive association between the flipped classroom and students' engagement in class activities

H_1: There is a positive association between the flipped classroom and students' engagement in class activities

4. Results and discussion

To investigate the potential correlation between flipped classrooms and student engagement, I conducted a survey to gather information about participants' experiences with flipped classrooms. It is worth noting that the survey sample was comprised of 574 students from the same academic institution. I tabulated the data and created tables to visually represent the frequency and percentage of students from two distinct class levels.

Table 1 Class 1: The frequency and percentage of students in group 1

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent

Students_engagment * Pre_class_prepartion_flipped_ classrooms_approach	289	100,0%	0	0,0%	289	100,0%

Table 2 Class 2: The frequency and percentage of students in group 2

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Students_engagement * Pre_class_preparation_flipped_classrooms_approach	285	100,0%	0	0,0%	285	100,0%

The following bivariate tables display the percentage distribution of students based on their participation or non-participation in class, categorized by their pre-class preparation. The information provided in the tables pertains to distinct classes. It is important to note that each table corresponds to the results of a separate class.

Table 3 The percentage distribution of students who participate or do not participate in class 1 by pre-class preparation

			Pre_class_prepartion_flipped_classrooms_approach		
			Digital students who review pre-class materials	Digital students who do not review pre-class materials	Total
Students_engagment	participate in class activities	Count	63	3	66
		% within Pre_class_prepartion_flipped_classrooms_approach	64,3%	1,6%	22,8%
		% of Total	21,8%	1,0%	22,8%
	do not participate in class activities	Count	35	188	223
		% within Pre_class_prepartion_flipped_classrooms_approach	35,7%	98,4%	77,2%
		% of Total	12,1%	65,1%	77,2%
Total		Count	98	191	289
		% within Pre_class_prepartion_flipped_classrooms_approach	100,0%	100,0%	100,0%
		% of Total	33,9%	66,1%	100,0%

Table 4 Class 1: The percentage distribution of students who participate or do not participate in class 2 by pre-class preparation

			Pre_class_preparation_flipped_classrooms_approach		
			Digital students who review pre-class materials	Digital students who do not review pre-class materials	Total
Students_engagement	participate in class activities	Count	57	2	59
		% within Pre_class_preparation_flipped_classrooms_approach	66,3%	1,0%	20,7%
		% of Total	20,0%	0,7%	20,7%
	do not participate in class activities	Count	29	197	226
		% within Pre_class_preparation_flipped_classrooms_approach	33,7%	99,0%	79,3%
		% of Total	10,2%	69,1%	79,3%
Total		Count	86	199	285
		% within Pre_class_preparation_flipped_classrooms_approach	100,0%	100,0%	100,0%
		% of Total	30,2%	69,8%	100,0%

The data provided in the aforementioned tables demonstrates consistent results, providing valuable and informative perspectives on student behaviour in flipped classroom environments.

According to Table 3, the data indicates that 33.9% of digital students review pre-class materials such as readings, videos, and audio recordings of authentic interviews. On the other hand, the majority, comprising 66.1%, do not engage in this pre-class preparation. This substantial contrast underscores a potential gap in study habits that may impact their understanding and performance in class, as reflected in the percentages of class participation. Of the students who review their pre-class materials, 64.3% actively participate in class activities, while 35.7% do not. Students who refrain from participating attributed their reticence to shyness and fear of being ridiculed. These students, who are sensitive to rejection, tend to avoid active participation in class. Among digital students who do not review pre-class materials, a significant 98.4% do not engage in class activities, while 1.6% are inclined to take risks despite not being well-versed in the course content. Consequently, as shown in Table 1, only a mere 22.8% of digital students actively participate in class, while a vast majority of 77.2% do not participate at all.

The results in Table 4 also demonstrate similar findings. It shows that only 30.2% of digital learners invest time in preparatory work, while a substantial majority of over two-thirds (69.8%) fail to complete assigned readings or engage with recorded materials outside of class. This points to a concerning lack of engagement with the learning process. Among students who do not review course materials outside of class, a mere 1.0% of them who are risk takers actively participate in classroom activities, while the remaining 99.0% choose not to engage. This can be attributed to their lack of familiarity with course content; they overlook readings and neglect to review recorded materials at home. Conversely, among digital students who do review their pre-class materials, 66.3% actively participate in class activities, while 33.7% refrain from doing so due to fear of judgment from their peers or instructors. As a result, the data from Table 2 indicates that only 20.7% of digital students engage in active participation in class, while a significant majority of 79.3% do not participate at all. This sheds light on the importance of addressing factors such as fear of judgment and lack of preparation in promoting greater classroom engagement among digital learners.

The results of the study underscore the significance of providing pre-class materials to enhance student participation in the classroom. Neglecting this aspect could potentially impede collaborative learning opportunities and knowledge retention.

Upon examining the results of the chi-square tests in the two tables below, it is evident that there exists a statistically significant association between the implementation of the flipped classroom approach and students' participation in class. The chi-square test tables reveal a p-value of 0 (p=0.000). Given that the p-value (0.000) is lower than the significance level (0.05), we are compelled to reject the null hypothesis. Consequently, we can confidently conclude that there exists a strong relationship between the flipped classrooms approach and the engagement of students in class activities.

Table 5 Chi-square Tests

	Value		Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	144,561[a]	1	,000		
Continuity Correction[b]	141,024	1	,000		
Likelihood Ratio	151,943	1	,000		
Fisher's Exact Test				,000	,000
Linear-by-Linear Association	144,061	1	,000		
N of Valid Cases	289				
a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 22,38.					
b. Computed only for a 2x2 table					

Table 6 Chi-square Tests

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	155,854[a]	1	,000		
Continuity Correction[b]	151,903	1	,000		

Likelihood Ratio	158,370	1	,000		
Fisher's Exact Test				,000	,000
Linear-by-Linear Association	155,307	1	,000		
N of Valid Cases	285				
a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 17,80.					
b. Computed only for a 2x2 table					

When students take the time to acquire knowledge about the lesson material before the class begins, they are better prepared to actively engage in the learning process. This preparation allows them to ask insightful questions, participate in higher-level thinking activities, and contribute meaningfully to class discussions. Active participation is crucial for successful learning, and not engaging in this way can significantly impact the learning experience for both the individual student and the class as a whole.

5. Conclusions

The research findings underscore the significance of implementing the flipped classroom teaching method as a means to enhance student engagement during class. By adopting this approach, educators can create an environment conducive to active learning within the classroom, consequently leading to heightened student involvement and, ultimately, improved academic performance. It is worth noting, however, that the successful implementation of this teaching approach is contingent upon digital learners making necessary adjustments to their study habits. It has been observed that a significant number of digital learners neglect to review course materials outside of the classroom, thereby diminishing the effectiveness of pre-class preparation. This trend may be attributed to the pervasive digital habits exhibited by contemporary students, who often display a greater preference for engaging with their mobile devices and computers rather than dedicating time to a comprehensive review of readings, videos, or audio recordings at home. Consequently, it is evident that a minority of students actively participate in classroom discussions due to these distractions.

The data presented suggests that taking the time to thoroughly review course materials before attending class can have a significant impact on students' learning and participation. It emphasizes the importance of encouraging students to engage in independent study, as doing so can lead to a deeper understanding of the content and more meaningful contributions to class discussions. These findings also raise questions about the efficacy of current teaching methods in capturing students' interest and involvement. As a result, it is essential for educators to explore new and creative approaches to increase student motivation and engagement in the learning process. This could involve incorporating interactive activities such as case studies, group discussions, problem-based learning, and project-based assignments to promote collaborative learning among peers.

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