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RESEARCH ARTICLE

Active Learning Through the Flipped Classroom: Strategies to Improve Students' Learning and Performance

Vikram Jeet[1], Pankaj Sahotra[2]

[1]Assistant Professor, Department of Business Administration, College of Business, University of Jeddah, Saudi Arabia

[2] Assistant professor, College of Business Administration IH Group of Institutions Punjab, India

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***Corresponding Author:**

vjram@uj.edu.sa

ABSTRACT

The flipped classroom model is increasingly popular in business education and other academic disciplines, promoting active learning through web-based lectures, pre-recorded lectures, and interactive instructional approaches. This reversal of the conventional classroom allows students to study at their own pace, take ownership of their academic development, and participate in active learning exercises like problem-based learning and group work. The study investigates undergraduate students' perceptions and experiences of learning in a flipped classroom setting. In the present study, four different sections were selected as experiment groups, to analyse the outcome of flipped classroom methodologies. The study examines student perspectives on educational interventions and courses, particularly online components. It found that students were more satisfied with online lectures and quizzes, as they could access them at their own pace. The study also found that students' overall understanding of course material was above average, and their preparation for class problems and projects was also above average. The study also highlighted the importance of the teacher's role in classroom teaching, highlighting the blended learning experience. Overall, both online and in-class experiences were beneficial.

BACKGROUND

The flipped classroom model is gaining acceptance in business education (Senali, et al. 2022), and other academic disciplines (Thai et al., 2017; Yough et al., 2019; Cho et al. 2021). The characteristics of the flipped classroom that promote active learning have been the subject of several investigations (Thai et al., 2017; Velegol et al., 2015). The term "flipped classroom" refers to a pedagogical approach in which students are expected to prepare for classroom activities outside of class time. Students can therefore arrive to class with a head start on the day's primary topic and more pressing difficulties. Debates, exercises, experimental techniques, and expanded discussions on major implications of theoretical issues related to course content all take place in the classroom. This necessitates more participation on the part of students and a more demanding role for instructors. This reversal of the conventional classroom has been linked to student-mobilized learning practices, which allow them to study at their own pace, take notes and make revisions as they see fit, and take greater ownership over their academic development and final grades (Kay and Kletskin, 2012).

To begin, a flipped classroom uses web-based and pre-recorded lectures to supplement face-to-face time in the classroom lecture environment (Thai et al., 2017), and it enables learners to study difficult ideas and make up for missed lessons (Johnston et al., 2013). Second, since the course contents are delivered online prior to the in-class time, students can have more face-to-face interactions with the instructor or peers and receive more individualized feedback during classroom activities (Zappe et al., 2009; Gilboy et al., 2015). Instead of passively listening to didactic lectures, students are more likely to actively participate in course activities. Furthermore, the flipped classroom enables teachers to use a variety of interactive instructional approaches (Lage et al., 2000; Zappe et al., 2009). As a result, flipped classrooms provide a platform for students to participate in active learning exercises such as problem-based learning and group work in class. The flipped classroom used to create effective teaching environments in academics is the best paradigm for using technology in education. Numerous studies focused on various disciplines have published research on the flipped classroom and highlights its' influences on students learning behaviour, such as, information systems (Davies, et al 2014), engineering, sociology, and the humanities (Kim, et al 2014), mathematics education (Zengin, 2017).

Flip classroom in higher education

Traditional transmittal models of education have their limitations, and there has been pressure on higher education to move away from them and towards active, student-centered, adaptable, and successful teaching practices (Nouri, J. (2016). The flipped classroom concept has been proposed to facilitate this change specially in higher educations. Over the past 30 years, university education, particularly traditional lectures, has faced significant criticism. Critics argue that traditional lectures lack intellectual engagement mechanisms, quickly lose students' attention, are not paced for all learners, and are not suitable for teaching higher-order skills like application and analysis (Huxham, 2005; Young, et al. 2009). Technology-driven demands on higher education have led to a shift toward flexible blended student-centered learning solutions to overcome transmittal model restrictions. Academics and educators are pushing flipped classrooms in higher education, as student-centered learning grows. Theory and practical studies show that the flipped classroom paradigm improves lecturing and encourages active learning (Betihavas et al., 2015).

The difficulty of assuming the growth of blended learning in higher education is not new, but it is not widely acknowledged either. Institutions of higher education have attempted, with varying degrees of success, to reform and optimize university teaching through a mixed teaching approach that incorporates the use of technological devices throughout the past few decades. For example, the COVID-19 crisis highlighted the need for teacher and student training in the effective use of information and communication technologies in the classroom, as well as the need to ensure that all necessary technological resources are readily available.

Flipped classroom is a hybrid approach to education that takes advantage of both in-person and digital learning environments. Researchers agree that flipped classroom is a form of instruction that does the following five things well: (1) encourages students to become more involved in their own education; (2) uses technology to speed up the learning process; (3) tailors lessons to each student; (4) encourages students to become more independent in their work and study; and (5) positions the teacher as a facilitator of the development of original ideas and insights. Flipped classroom has gained popularity, since it facilitates rapid adjustments to the instructional approach. The flipped classroom describes a new approach to higher education that turns the classroom on its head. Students in higher education are responsible for learning the material outside of class. In class, they focus on more hands-on applications of the material and receive more individualized instruction from the instructor on how to apply the theory they have learned. The latter allows students to prepare for lectures at their own speed by distributing information and study materials in advance. Making the lecture more engaging and interactive by freeing up class time for active and meaningful

learning situations such as student participation, questioning and active discussion, problem solving, the application of ideas, experiments, and evidence-based learning, among others.

1. REVIEW OF LITERATURE

"Flipped classrooms" had already garnered significant attention in educational research. In order to emphasize the pivotal connection between regular and flipped class, the term "flipped classroom" has been coined. McLaughlin et al. (2014) found that pharmacy students prefer pre-class learning and applied learning and feel more engaged in flipped classrooms compared to traditional courses. Davies, et al (2013) found that students in a flipped classroom course were more satisfied with the learning environment in comparison of other traditional teaching methodologies.

Researcher argued and proposed their finding in two dimensions. One, the satisfaction level of the students with modern approach of flipped classroom and second the outcomes of flipped classroom in terms of knowledge retention and application. Several studies (Davies et al., 2013; McLaughlin et al., 2014; Gilboy et al., 2015) have found that students are enthusiastic about the chance to learn at their own speed and show a preference for flipped classrooms over traditional teaching methods. In a study conducted by Hew and Lo (2014), it was demonstrated that students who used a flipped classroom approach achieved higher exam grades compared to those who utilized traditional learning methods. On the contrary, Findlay and Mombourquette (2014) discovered that there were no substantial alterations in the academic results when comparing the conventional teaching methods with the flipped classroom approach. The students in the flipped classroom were found more likely to actively participate in the learning process and liked communicating with instructors and fellow students throughout class hours (Gilboy et al., 2015)

The flipped classroom is acknowledged as a pedagogical method that aims to enhance student learning and performance by shifting the traditional model of instruction (Rotellar & Cain, 2016). Instead of delivering lectures in the classroom, instructional content is delivered to students outside of class through recorded videos or other online resources (Elazab & Alazab, 2015). The flipped classroom approach allows for a more interactive and engaging in-class experience, as students come prepared with foundational knowledge and can engage in activities that further reinforce their understanding of the material. This shift in the traditional model also promotes a student-centered learning environment, where educators can devote more time to addressing individual student needs and facilitating deeper discussions (Schreurs & Dumbraveanu 2014). This approach not only empowers students to take ownership of their learning but also enables educators to tailor their teaching to the specific needs and learning styles of their students (Basye, 2018). By providing pre-recorded lectures and resources outside of the classroom, students have the flexibility to learn at their own pace, revisit challenging concepts, and engage in active learning strategies that promote deeper understanding (Varao-Sousa & Kingstone, 2015).

Not only does it allow for a deeper understanding in the content being studied but the flipped classroom also promotes collaboration and interaction among peers. Students arrive to class already exposed to the instruction, enabling them to participate in group discussions, problem-solving activities, and peer teaching so that meaningful interaction with peers further cements their understanding of the material (Bishop & Verleger, 2013). Additionally, the flipped classroom format has been demonstrated to enhance students' motivation and engagement since they are provided with active learning experiences in a more interactive and stimulating learning environment (Rotellar & Cain, 2016, Jensen et al., 2015). Hence with some of the strategies and outcomes related to flipped classroom, it is clear that flipped pedagogy used in business education brings about a great improvement in student learning and performance (Zhu & Xie,2018). Video lectures and access to online resources in the flipped classroom also allow students the opportunity to learn at their own pace, review material on demand, and become less passive. The flipped classroom method of teaching in business administration was been found to be effective for student learning and performance (Zhu

& Xie, 2018). In addition, students have very good experience through the system using for video lectures and address their peers & teachers (Asef-Vaziri, 2015). With large benefits, the flipped classroom paradigm in business administration has provided diverse positive whole experiences supportive for active learning, stronger student engagement and motivation, peer interaction and collaboration. Research has shown the positive connections that exist between, for example, student satisfaction with the flipped classroom and perceptions of video as a learning tool, student motivation, and engagement (Ying et al., 2018).

The literature on the flipped classroom approach in higher education consistently highlights the advantages of this pedagogical method (Giannakos et al., 2014). Flipped classroom approaches have been found to promote deeper understanding of material, as students are able to engage with instructional content before coming to class. This pre-class exposure allows students to familiarize themselves with the material, come prepared with questions, and be ready for in-depth discussions and activities during class time (Al-Samarraie et al., 2019). Additionally, the flipped classroom approach has been shown to improve critical thinking and problem-solving skills. Students can apply their knowledge and actively participate in class activities, leading to a deeper understanding of concepts (Giannakos et al., 2014). The use of technology, specifically video lectures and online resources, has been a key component of the flipped classroom approach. These resources provide students with flexibility and accessibility, allowing them to review content as needed and learn at their own pace. Moreover, the flipped classroom model in business administration has been found to enhance student engagement and motivation. The flipped classroom approach has been a game-changer in business education, revolutionizing the way students engage with instructional content and interact with their peers. The outcomes associated with the flipped classroom approach, uncover a myriad of benefits that extend beyond the traditional boundaries of education. These benefits include improved student performance and achievement, increased retention of material, enhanced critical thinking and problem-solving skills, and the development of lifelong learning habits (Al-Samarraie et al., 2019). The utilization of the flipped classroom in business administration has been found to have numerous positive impacts on student learning and performance.

Problem statement and research objectives.

The principal aim of the study is to examine a diverse range of methodologies and strategies that may be employed to augment the technical proficiencies and performance of pupils. In the contemporary educational landscape, where students necessitate ongoing learning materials and heightened classroom engagement, flipped classrooms may prove to be an advantageous instrument for augmenting student productivity. While traditional classroom strategies do possess certain merits, students must have access to more contemporary learning materials in the current educational environment. The early stage of development of the benefits of flip classroom strategies can be attributed to a dearth of information and comprehension. The primary objective of the present study is to look at the relationship between the flipped classroom model and students' learning results, as well as how students view this new classroom format.

2. METHODOLOGY

This research examines the perceptions and experiences of undergraduate students regarding learning in a flipped classroom setting. The study employs a quantitative analysis of data collected through a closed questionnaire. The proposed flipped classroom methodologies were tested on a target set of students enrolled in a specific course (Principle and Practice of Management) business administration department at a University of Jeddah, during the Fall 2023. Four different sections were selected as experiment groups to analyse the outcome of flipped classroom methodologies. Total 178 students were enrolled in four different sections. On three sections (142 students), we have applied flipped classroom strategies, (named as: ‘Group A’- 45 students, ‘Group B’- 49 students,

'Group C'- 48 students), and in the fourth section (36 students), traditional methods of teaching were applied (named as: 'Group D' -36 student).

The research utilized a mixed-methods approach. The quantitative data comprised an end-of-semester survey along with student course grades. The qualitative data comprised insights gathered from focus-group interviews conducted with students. A structured questionnaire that examined students' perspectives on the flipped classroom component (Karabulut-Ilgu, et al 2018) was employed in the study. A survey was conducted in the final week of the semester to gather feedback from students on different elements of the course. Students were invited to participate in an interview conducted by a focus group. The focus interviews were carried out to obtain deeper insights into the flipped course and to address concerns that were not covered in the survey questions.

3. RESULTS AND DISCUSSION

Table 1: Student Perspectives on the Online Component of the Course

	Group A n=45		**Group B n=49**		**Group C n=48**		**Total (A+B+C) n=142**	
	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd
1. I liked being able to watch the lectures at my own time	4.10	1.26	4.12	1.25	4.08	1.22	4.10	1.24
2. I liked being able to pause, rewind, or fast-forward the videos	4.10	1.33	4.12	1.32	4.10	1.28	4.11	1.31
3. Online lectures increased my overall understanding of the material for this course	3.90	1.29	3.91	1.29	3.88	1.26	3.89	1.28
4. The quizzes ensured that I understood the material for this course	4.15	1.28	4.16	1.27	4.13	1.22	4.15	1.26
5. Online lectures prepared me for the in-class problems and projects	3.75	1.39	3.77	1.38	3.76	1.34	3.76	1.37

The evaluation of educational interventions and courses should primarily focus on the degree to which students are satisfied with the learning experience. In the present study, surveys and interviews with focus groups provided the opportunity to the students to assert their thoughts and feelings about the class (Karabulut-Ilgu, et al 2018). Table 1 highlights the student perspectives on the online component of the course. As the experiment group student enrolled in the course were provided with the pre-recorded lectures, detailed lecture notes in easy-to-understand language, along with the content of the chapters, before the schedule class. It has been observed that students of experiment group are more satisfised with this approach, as results indicated that students were being able to watch the lectures at their own time (mean 4.10, sd:1.24), they can learn as per their own speed (mean 4.11, sd:1.31), and ensure learning for the short quizzes (mean 4.15, sd:1.26).

> Student 1: When I watch online lectures, I tried to write down short notes on everything. The best part was it allowed me to pause it, rewind it, and play it as many times as I want until I can't understand all the important parts. Further, during the class doubt can be sort out while discussion with the teacher.

> Student 2: Online lectures assisted me in translating the difficult words and clarifying my doubts, as I often struggled to understand the topic in class due to my hesitation to ask simple questions. I have gone through all important topic of the course with my own learning speed.

In flipped classes, online quizzes assess understanding of the students and making them accountable for the learning. The results also confirms that students' overall response with online lessons help them in preparation for the short quiz, midterm and final examination. The students were found more comfortable to provide the solutions for the short quizzes.

> Student 3: I feel more comfortable in preparation of short quizzes, which enables me to score good grades in the quiz.

Students' satisfaction with overall understanding of the course with online line lectures stood above the average at (mean 3.89, sd:1.28), and at same time the responses related to the preparation for in class problem and projects also above the average (mean 3.76, sd:1.37). It can be taken as reference from the results that only online content of the lecture to the students helping them to learn at their own time and speed, which supplements with overall good understanding of the course and in-class problems.

> Student 4: No doubt, online lessons and study material help me a lot during the entire course, but still the role of teacher in the classroom is still important. Here I will say, the blend of classroom teaching equipped with online support help me a lot in my learning process.

Table 2: Student Perspectives on the In-Class Component of the Course

	Group A n=45		**Group B n=49**		**Group C n=48**		**Total (A+B+C) n=142**	
	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd
1. I had sufficient time during class to individually interact with my instructor (e.g., asking questions, clarifying confusing concepts) in this course.	4.13	1.28	4.14	1.27	4.12	1.26	4.13	1.27
2. I had sufficient time during class to interact with my peers and work collaboratively in this course.	4.03	1.31	4.05	1.30	4.02	1.27	4.03	1.29
3. I liked being able to work in a team in this course.	3.94	1.33	3.97	1.32	3.93	1.32	3.95	1.32
4. Working in a team increased my overall understanding of the material in this course.	3.96	1.34	3.98	1.33	3.95	1.29	3.96	1.32
5. The class time was more beneficial to my learning than a typical lecture format	3.92	1.32	3.94	1.32	3.91	1.27	3.92	1.31
6. I worked on managerial problems and projects in this course that I can directly apply in my future profession.	4.00	1.30	4.02	1.30	3.99	1.24	4.00	1.28

7. Working in a team motivated me to work harder in this course.	3.94	1.31	3.97	1.31	3.92	1.31	3.94	1.31

Student perspectives on the in-class component of the course has been analysed in the table 2. The fundamental idea underlying the design of flipped courses is to make use of the time that students typically spend in class for activities that are more difficult and interesting. During these activities, students engage in meaningful interactions with both the instructor and with one another, rather than simply listening to the instructor. The results of the study suggested that students were able to discuss and interact with my instructor more during class for clarifying the questions and concepts in this course, as the mean score (m=4.13, sd 1.27) represents an ideal response toward the in-class component of the course. The students had also got sufficient time to interact with other students to work together and collaborate for group discussions during the class timings (m=4.03, sd 1.29). The students' responses also confirmed these finding during the interview session as:

> Student 5: In my opinion, we were having sufficient time to discuss and interact with you (Faculty member). This approach helped me to discuss and clarify my course related problems and doubts. It was beneficial to answer the discussion questions and assignments.
>
> Student 6: If I will compare my learning as individual or working in a group, there is a huge difference in understanding level. It helped me to make me better in communication as well. It enhances my confidence level.

The results also indicated that the students were actively working on to apply the managerial concepts to resolve the relevant problems and projects (m=4.00, sd 1.28). Students' perspective on in-class activities related to the working in team (m=3.95, sd 1.32), overall understanding of the course content while working in team (m=3.96, sd 1.32), and effective use of class timing (m=3.92, sd 1.31), also found at above the average level. While, at individual level students were also shown above the average response to get motivated to work hard while working with the team (m=3.94, sd 1.31). The finding of the results also reflected in the students' responses as:

> Student 7: I was not preferred to work in a team, but once I got opportunity to solve the problem in group it embraced me with the shared knowledges and skills. It improved quality of our solution to given research problem and discussion questions.
>
> Student 8. The group performance depends upon the team members and their participation as active team member. Here, I want to highlight the importance of selecting right team members for group projects.
>
> Student 9: While working in team, I have realised that my conceptual clarity has been improved. I felt more comfortable while discussing the problem and utilized the class timing in more productive ways.

Table 3: Student Perspectives on Overall Course Satisfaction.

	Group A n=45		**Group B n=49**		**Group C n=48**		**Total (A+B+C) n=142**	
	Sd	Mean	Sd	Mean	Sd	Mean	Sd	Mean
1. I will be able to retain what I learned in this flipped course	3.99	1.29	4.01	1.29	3.96	1.27	3.99	1.28

2. I would like to see more flipped classrooms in my other courses	3.96	1.30	3.98	1.30	3.94	1.27	3.96	1.29
3. Online video lectures increased my overall understanding of the material for this course	4.01	1.37	4.03	1.36	4.00	1.34	4.01	1.36

Table 3 analyzed the results for the overall course satisfaction level of the students. It has been measured with three short questions. As shown in the results students' responses towards retaining the learning for the long has been more than average (m=3.99 sd 1.28), which signifies the success of flip classroom methodologies. Further, their willingness to flip classroom methods in other courses was also shown to be above the average level (m=3.96 sd 1.29). The online content of the course was found as a main attraction for the students which enable them more satisfied with the flip classroom methodologies (m=4.01 sd 1.36). As it has been reflected from the above finding students were shown a significantly good response with the flip classroom methodologies which also illuminated through students' responses as:

> Student 9: This was a new experience for me in this class. Overall, I feel more comfortable in learning, sharing, discussing, and experiencing the course content than in the traditional classroom. I wish I could learn in this way in the future as well.

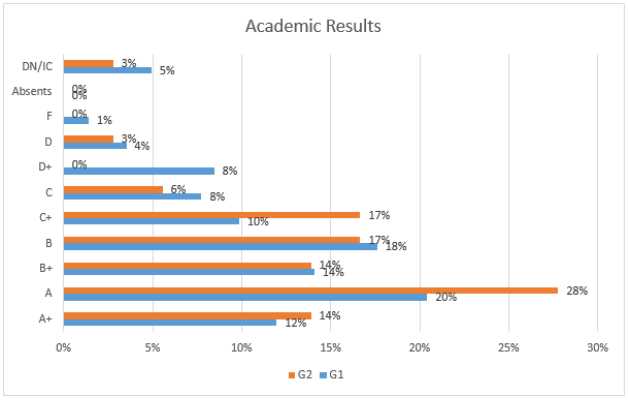

Figure 1: Academic results of the Group I (Controlled Group) and Group 2.

To analyze the "Academic Results" chart, we have examined the distribution of grades for two groups, G1 and G2, across different academic performance categories. The data includes grades from A+ to F, as well as special categories for absences and incomplete courses (DN/IC). We have categorised the results in three broad categories such as: High-Performing Grades (A+, A, B+), Mid-Range Grades (B, C+, C) and Low-Performing Grades (D+, D, F). This analysis highlighted the importance of evaluating academic outcomes through a multifaceted lens, considering both high achievers and those in mid-to-lower performance ranges (e.g., Shepard, 2000).

High-Performing Grades (A+, A, B+): The results indicates that the performance of the students of controlled group is as like group 2 students. As there was a great difference in the number of students in both groups, therefore we compare the results on the bases of percentages of number of students. It has been observed that group 2 students' notable surpass the group 1 with 28% achieving 'A+' grades in comparison of 20% in the group 1, which implies a significant different in achievement level. Further, Group 1 students hold a slight high over Group 2 for scoring 'A' grades, by notching 14% against 12%. In case of grades B+, both group signified a comparable level of proficiency at 14%.

Mid-Range Grades (B, C+, C): The cohorts demonstrated a similar performances for scoring 'B' grades with the 18% for experiment group and 17% for group 2. But in case of 'C+', a dramatic difference has been observed as 17% for group 2 in comparison of a mere 10% for Group 1. Further for 'C' grades, groups 1 and 2 deadlock at 8% apiece for grades.

Low-Performing Grades (D+, D, F): D+: The experimental group 1 has only 8% of students in the 'D+' category, whereas in group 2 there was no students, signified that group 1 has a small proportion of students those who are struggling academically at this level. For the grade's 'D', group 2 has shown a higher percentage (3%) in the category than group 1 (1%). There were no students receiving an F grade in both groups, which may indicate the overall success in reaching minimum academic standards. There was another category of the as 'DN/IC', these were students who did not appeared for the exams with some reasons. Group 1 has 5% in this category, while group 2 has 3%. This percentage of the students reflected that there is still good number of students who faced some issue while completing their course.

4. CONCLUSION

The study focuses on student perspectives on educational interventions and courses, specifically online components. The experiment group obtained pre-recorded lectures, comprehensive lecture notes, and content well prior to the scheduled course date, leading to greater satisfaction with this approach. It allowed students to view lectures at their own time, learn at their own pace, and prepare for short quizzes full of content. The online lectures assisted students in simplifying complex terms and resolving their doubts on various topics, allowing them to revisit key topics at their own pace of learning. Students also participated in online quizzes, which assessed their understanding and held them responsible for their own education. The results showed that the students' overall understanding of the course material through online lectures was above average, and their preparation for tackling problems and projects in class also demonstrated above-average responses. The flipped classroom provided empirical support for the relative importance of the teacher's role in classroom teaching (blended quality) when combined with online support, thereby enhancing the blended learning experience through the implementation of best practices. In conclusion, although online lessons and study materials provide valuable assistance to students during the course, a teacher's role remains indispensable.

The study examined student reflections about how they experienced the in-class portion of a course, with an emphasis on flipped course design. Students' statements of experiences about the in-class part of the course showed that meaningful interactions with the instructor and classmates increased their knowledge and confidence. Students applied managerial concepts to solve relevant problems and projects, resulting in above-average ratings for class activities that involved teamwork, overall perceptions of the course content, and efficient use of class time.

The students also showed overall course satisfaction levels above average; more than average responses were made towards retaining learning for long; and they were more willing to use flipped classroom methods in other courses. They even found the online content of the course to be a main attraction. In general, students were at ease with learning, sharing, discussing, and experiencing the course content more than in a traditional classroom setting, and also showed willingness to learn this way in the future. The findings turn out to be quite successful with regard to flipped classroom methodologies and the selection of appropriate members in teams for project work.

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