

Studying the Effectiveness of the Flipped Classroom Teaching Method for Promoting Education Students' Academic Performance and Learning Outcomes in Saudi Universities (A Comparative Study)

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Abstract:

The study examines whether the flipped classroom teaching method effectively improves the academic performance and learning skills of education students in Saudi universities, unlike traditional lecture-based pedagogies. Guided by constructivist learning theory, the research employs an autoethnographic methodology based on the experiences of the author as a student and educator in Saudi Arabia and Australia. This study examines how flipped classrooms integrate technology, student autonomy, responsibility for learning, engagement, and satisfaction. therefore, the flipped classroom is an educational approach that delivers theoretical content to students via videos or online learning materials to be studied at home. In classroom sessions, it focuses on practical activities, discussions, and problem solving, which enhances understanding and practical application of concepts, and increases student engagement. Results from this study indicated positive effects on the student's academic achievements and involving them in more interactive learning. This study suggests that adopting the flipped classroom method could result in relatively better academic preparation for modern educational challenges in Saudi higher education. A future empirical research that examines the effectiveness of the flipped classroom method on education students in Saudi universities is recommended. In order to make generalizations based on the findings, non-probabilistic sampling must be applied.

Keywords: Flipped Classroom Teaching Method, Academic Performance, Higher Education in Saudi Arabia, Autoethnography.

1. Introduction:

Higher education is regarded as one of the fundamental elements of societal change and future development (Alamri, 2019; Elfaki et al., 2019). In recent years, the educational system has noticeably changed due to students' demography, existing economic circumstances and improvements in technology (Alamri, 2019; Rotellar & Cain, 2016). For example, the digital revolution has changed how individuals acquire information via the Internet, where more information is available than anyone could ever obtain, allowing the occurrence of many learning environments such as Blended Learning, known as hybrid courses, Flipped Classrooms, and Online Learning, which is known as distance education (Delgado et al., 2015). These developments have led to a noticeable departure from the educational environment that existed in previous decades (Alamri, 2019; Rotellar & Cain, 2016). As a result, many educators are examining modern teaching methods in order to foster well-equipped graduates who possess the necessary skills and knowledge to meet the requirements of today's society, leading higher education institutions to experience significant changes in their teaching methods (Alamri, 2019; Rotellar & Cain, 2016). These educational changes have also presented challenges to higher education systems, particularly in their ability to prepare students adequately for the world of work and for further study (Alamri, 2019; Rotellar & Cain, 2016). This requirement underlines the importance of using teaching methods that boost profound and meaningful learning to fulfil the necessities of this era of students, positively impacting students' academic performance and learning outcomes because higher education is regarded as one of the fundamental elements of societal change and future development (Alamri, 2019; Elfaki et al., 2019).

Traditional teaching methods focus more on lectures, readings and other forms of passive learning that may be less effective in helping students apply what they have learned (Raja & Najmonnisa, 2018). Lecturing is the most commonly used teaching approach in higher education, and it is popular due to its affordability and practicality for conveying information to large groups of students (Hadie et al., 2018). This traditional method is one-way teaching, in which teachers transfer information to passive consumers (Hadie et al., 2018). Traditional teaching methods also view learning as a process of accumulating knowledge that can be used later when needed, where information is deposited and stored until it is needed as a 'savings bank' (Raja & Najmonnisa, 2018). As a result, these traditional methods often fail to stimulate students' interest or develop their values towards the subject (Hadie et al., 2018). Furthermore, this teaching method is ineffective in helping students apply their knowledge in problem-solving scenarios because while

students may have learned the information, they also need to learn how to use it in real-world situations (Raja & Najmonnisa, 2018). This can be a significant limitation, especially in fields such as education, where practical communication skills are essential between teachers and learners.

In this era's fast-paced and technology-driven societies, educational institutions face a crucial challenge of nurturing students' higher-level thinking abilities. Over-relying on traditional lecture-based teaching methods could hinder the development of these capabilities, which are vital for students' future success (Alamri, 2019; Hadie et al., 2018). Consequently, the effectiveness of lectures in higher education contexts has long been debated in terms of promoting students' learning outcomes and academic achievements (Vlachopoulos & Jan, 2020). In contrast, the flipped classroom teaching method has gained popularity as a new instructional model in which students review the lesson materials before their classes (Akçayır & Akçayır, 2018). The teacher's role in this method is to help and guide their students rather than merely deliver information, so students are responsible for their learning process at their own pace (Akçayır & Akçayır, 2018). Despite the broad adoption of technology in various settings, there are concerns in higher education institutions in Saudi Arabia about the continued dependence on traditional lecture-based teaching methods (Alamri, 2019). Therefore, this study strove to answer the following research question using a self-reflective approach: How effective is the flipped classroom teaching method for educating students in higher education institutions in Saudi Arabia compared to the traditional method for promoting students' academic performance, achievements and learning outcomes?

The constructivism learning theory guided this study's theoretical framework. Constructivists believe that learners construct knowledge in their minds and do not just mirror and reflect knowledge; they also construct their own understanding (Bodner, 1986). Vygotsky's (1978) theory is one of the foundations of constructivism. He argues that learners bring past experience to a present situation, and each learner has a distinct understanding and building of the knowledge. He asserts that learning occurs in The Zone of Proximal Development (ZPD), which he defines as the zone between what a student can perform under guidance and assistance from a teacher and what they can perform without guidance. The constructivist model, therefore, requires teachers to shift from merely imparting information to facilitating learning (Bodner, 1986). It also requires a shift to teaching by negotiation instead of teaching by imposition so that students have an active role in the learning process (Bodner, 1986). Accordingly, this theory aligns with the flipped classroom method, in which students build knowledge and create their own meaning and understanding before the class, and teachers become facilitators during the class to direct and guide their students' learning where students need assistance.

2. Literature Review

To comprehend the flipped classroom method, it is necessary to delve into its underlying principles and instructional approach. Rotellar and Cain (2016) state that the flipped classroom is characterised by a reversal of the conventional sequence of information delivery, specifically lectures followed by homework assignments. The flipped classroom concept refers to a teaching style in which activities that previously occurred within the confines of the classroom are now conducted outside it, while activities typically conducted outside the classroom are now carried out within it. The simplest description is that what is supposed to be done at school is done at home, and what is done at home is finished in class. Ozdamli and Asiksoy (2016) note that the flipped classroom method is widely recognised as the most popular and dynamic approach and is a distinct form of blended learning, which combines a hybrid of online learning materials with traditional classroom face-to-face learning. The main purpose of this teaching method is to promote students' readiness for the subject matter before class time and to enhance the quality of in-person instruction by implementing various activities. Mok (2014) outlined the difference between the traditional method and the flipped classroom. In a standard classroom, the teacher leads the class and gives the students work to do after class. In a flipped classroom, things are done the other way around. Teachers deliver lectures through videos that were recorded before the class, and then the teachers spend the class time working with their students on tasks that require them to work together and talk to each other. Passive ways of learning, such as one-way talks, are moved outside class time and replaced with active ways of learning in class. Consequently, this study conducted a review of existing literature to ascertain the potential contributions of the flipped classroom approach within the realm of higher education on students' academic achievements and learning outcomes for education students in Saudi Arabia.

In higher education, the implementation of the flipped classroom has frequently been undertaken with the aim of promoting students' involvement in their learning, enhancing their overall learning experience and ultimately improving learning outcomes (Chiang, 2017). A mixed-methods study in Australia by Awidi and Paynter (2019) examined the impact of the flipped classroom on the educational outcomes of undergraduate biology students. The objective of their study was to optimise students' attendance and participation while enhancing the course management efficiency. Furthermore, they aimed to ascertain the distinct elements of the instructional framework that correlated with students' self-assurance, motivation and active engagement.

The efficacy of the flipped classroom was assessed by collecting input from both the course coordinators and the students regarding its influence on their learning experiences. The study's findings suggest that the student learning method used in the research correlated favourably with student confidence, motivation and engagement. A further significant discovery was that the students demonstrated a heightened level of satisfaction in relation to the flipped classroom. Despite some limitations, such as the narrow focus on biology students, this study underscores the possibility of the flipped classroom positively influencing academic performance and achievements.

Låg and Sæle's (2019) quantitative study in Norway using systematic review and metaanalysis of research compared the effectiveness of the flipped classroom method with the traditional lecture-based teaching method. The researchers aimed to evaluate and assess the flipped classroom's impact on students' learning performance over time. Their evaluation was evidence-based and focused on various indicators, including students' grades and test scores, the number of students who completed a course and their feedback about the quality of education they received.

The researchers also strived to ensure the comprehensive retrieval of a variety of relevant research using various research methods on primary, secondary and higher education and a wide range of academic areas, including physics, mathematics, humanities and social sciences. The methods used in the studies analysed were experimental, quasi-experimental and correlational. The findings of this study demonstrate that the flipped classroom method has higher effectiveness in promoting students' learning in comparison to the traditional lecturebased method. Moreover, the researchers found a slight rise in the probability of students passing their courses in flipped classrooms compared to traditional classroom classes. Ultimately, the flipped classroom demonstrated a modestly favourable influence on students' overall satisfaction. Nevertheless, the researchers acknowledge that there was considerable variation among the research studies, showing the uncertainty of what method performs more effectively than the other. They also suggested that there is a need to investigate the reasons for the optimal performance of the flipped classroom method when applied in specific contexts, while its effectiveness may be limited in other contexts. One additional limitation of this study is its limited temporal scope, as it was conducted in 2019; therefore, the findings of more recent studies might differ from this study. Consequently, the potential for changed outcomes must be acknowledged.

A qualitative study from Hong Kong by Ha et al. (2019) that focused on an Asian higher education institution in Hong Kong aimed to examine the impact of the flipped classroom on the teaching and learning experience of learners and educators.

The researchers were motivated by the growing popularity of flipped classrooms in Asia and the positive feedback they have received. This study investigated five courses offered by faculties of education. The results indicated that most of the students and teachers involved in the research had a favourable impression of the flipped classroom. The findings also indicate that the flipped classroom holds significant potential among education students in higher education for meeting their three fundamental cognitive needs: autonomy, competence and relatedness. This research indicates that addressing the cognitive requirements of university students pursuing a degree in education also enhances their sense of achievement in the learning process and fosters stronger connections with their peers and instructors, thus strengthening their levels of motivation, engagement and satisfaction.

In Turkey, Debağ and Yıldız (2021) conducted a mixed-methods research study to investigate the impact of the flipped classroom on the academic performance and levels of motivation of preservice teachers in a course designed for anyone pursuing further education who desires to develop the necessary skills and knowledge for a future career in teaching.

Based on the results of their study, it was determined that the preservice teachers who utilised the flipped classroom showed considerably higher levels of academic accomplishment and motivation than the traditional classrooms. Furthermore, implementing the flipped classroom method provided the students with the opportunity to apply what they had learned in a practical manner, to enhance their teaching skills and actively improve their focus and participation in the learning session. This study verifies the effectiveness of the flipped classroom as an instructional method, as it enhanced the students' academic performance and educational outcomes within the context of education majors. This is also consistent with the research conducted by Peterson (2016) in the US, which demonstrated that student performance and satisfaction are much greater in flipped classrooms compared to traditional lecture-based classes.

In quantitative research in China and the US, Zhang et al. (2021) provided a comprehensive analysis of the impact of the flipped classroom on the academic achievements of university students. It is argued that this method has experienced notable growth in popularity in recent years. The researchers examined 20 experimental investigations in a metaanalysis to determine the overall efficacy of the flipped classroom on students' academic performance and identify any variations in effect sizes dependent on subject and class size. The implementation of a meta-analysis allowed the researchers to successfully conduct an in-depth and quantitative examination of the effects of the flipped classroom across many studies.

The findings of this study indicate that implementing this teaching method yielded better learning outcomes and academic achievement among higher education students, including those studying science, liberal arts and engineering. However, it was found that the flipped classroom method also had a slightly different effect on the development of two types of knowledge: theoretical and practical. Students in practical knowledge learning classes showed better results than those who were mainly in theoretical knowledge learning classes. The influence of the flipped classroom on various subjects did not show substantial differences, indicating the efficacy of this teaching method, regardless of the subject being taught. Lastly, the flipped classroom substantially influenced different class sizes, with the most noticeable impacts observed in medium-sized classes.

In their quantitative study in also Turkey, Polat and Karabatak (2022) highlighted the impact of the flipped classroom on academic achievement, satisfaction and a sense of belonging among students. The primary objective of their study was to assess the efficacy of a teaching method that emphasises student-centred learning. The findings clearly demonstrate that the flipped classroom yielded a more positive impact on the students, resulting in enhanced academic performance, increased academic satisfaction and a greater sense of belonging among students compared to the other teaching methods employed in the study. However, there are certain limitations associated with this research. The research is situated in Turkey, which may limit its generalisability. Also, the students who participated in this study were volunteers, which may have introduced self-selection bias, and the study specifically focused on students who already possessed a high level of proficiency. Regardless, Polat and Karabatak assert that the integration of technology and education in the flipped classroom results in increased academic performance, increased satisfaction with the learning process and a greater sense of belonging among students compared to traditional methods of teaching.

To sum up this section, the literature on the flipped classroom method indicates that this teaching method has a positive impact on higher education students' academic achievement, learning outcomes and satisfaction. Despite some limitations in the literature reviewed, such as the different contexts and the types of courses the students studied, the aim was to examine the effectiveness of the method in the literature, regardless of the limitations. Therefore, to examine the effectiveness of the flipped classroom method for education students in higher education institutions in Saudi Arabia, the method used in this research was designed accordingly.

3. Methodology

In order to examine the effectiveness of the flipped classroom method in comparison to traditional methods for education students in higher education institutions in Saudi Arabia, this study utilised autoethnography as its methodological approach. Autoethnography is a contemporary research method that combines autobiography and ethnography and is considered suitable for gaining self-understanding and establishing connections between personal stories and sociocultural contexts (Pretorius & Cutri, 2019). When writing their autobiography, the author selects and reflects on their past experiences (Ellis et al., 2011). These experiences are not necessarily lived for the purpose of creating a published work but instead assembled using hindsight (Ellis et al., 2011). The reason for using autoethnography in this study is to examine the author's personal experiences relating to his academic achievements and learning outcomes. Specifically, it analyses the author's educational journey under two distinct teaching methods: the traditional teaching method and the flipped classroom method.

The author completed a bachelor's degree in education at King Saud University in Saudi Arabia. Throughout the four-year program, which took place from 2014 to 2017, the lecturers employed a traditional lecture-based teaching method. Subsequently, the author was afforded the chance to undertake a two-year coursework master's program in education from 2022 to 2023 at Monash University in Australia, where the flipped classroom teaching method was implemented. The utilisation of an autoethnographic methodology enabled the author to critically evaluate the efficacy of these two methods based on his own perspective. This evaluation aims to inform the author's decision-making process on the adoption and implementation of one of these methods within his teaching classes at a higher education institution in Saudi Arabia in a faculty of education where the author has an academic position.

Utilisation of the autoethnographic methodology aligns with the study's primary objective, which is to compare the flipped classroom and traditional methods using a selfreflective approach (Chakma et al., 2021). The application of alternative quantitative and qualitative methodologies within the context of this research poses challenges.

Autoethnographic stories allow the inclusion the author's voice as a student, which is often ignored in academic contexts, and this offers other stakeholders an opportunity to gain a better comprehension of the student's point of view (Ellis & Bochner, 2000). By this means, this study emphasises both a graduate's and an educator's voice to investigate how effective the flipped classroom is. Additionally, autoethnography enables those in disadvantaged positions and offers a valuable opportunity to channel the author's voice (Li et al., 2023).

for instance, the author is from Saudi Arabia and is currently attending his last semester of a master's of education in Australia, which makes him unable to conduct a quantitative or qualitative method in his context in a short period of time.

The data in this study were collected through personal retrospective narratives and self-observations of the author's learning experiences, feelings and influences during his Bachelor of Education and Master of Education. The author wrote these data in the form of a journal to allow him to quote the material when needed. The narratives were created in response to a set of specific questions:

1. What did the author experience from these teaching methods during his studies?
2. How did the changes in teaching methods affect the author's learning process and academic performance?
3. How did the changes in teaching methods impact the author's classroom engagement and motivation?

The author created a preliminary autoethnographic narrative based on the use of these prompts for the two teaching methods he experienced. The narrative was then read and examined for a second time, allowing the addition of more details and explanations of feelings and events. In two rounds of data collection, the author gathered detailed descriptions and analysis of his experiences and personal knowledge. The author conducted a detailed data analysis that involved preparing the data, moving more in depth into understanding the data and interpreting the larger meaning of the data (Creswell, 2009). The process also involved continuous reflection on the data, posing analytical questions and writing memos throughout (Creswell, 2009). This self-reflective analysis, as well as self-evaluation, was used during the recording of the outcomes (Chang, 2008). That said, it must be acknowledged that this method's reliance on remembering and recalling events from the past was challenging and time-consuming. The following section categorises, connects and analyses the main themes that emerged from the author's experience with the two teaching methods through cultural themes to organise the mass of information, following Chang (2008).

4. Results and Discussion

The main objective of this research was to examine the effectiveness of the flipped classroom method compared with the traditional lecture-based teaching method in the context of educating students in Saudi universities. In this section, I will analyse, critique and evaluate both methods based on my experience as a bachelor's and master's education student who was taught using these methods in two different contexts, Saudi Arabia and Australia.

• Role of Technology in Education Classes

During my bachelor's degree in Saudi Arabia between 2014 and 2017, the use of technology in the teaching and learning process was limited because the lecturers used the traditional lecture-based method in their classes. For example, they mostly relied solely on whiteboards to explain concepts, with limited use of multimedia presentations and interactive slides. Also, instead of distributing digital copies of readings or assignments, each lecturer asked the students to purchase physical textbooks, and each unit had only one large textbook. Moreover, the lecturers in many classes restricted us from using and typing on our digital devices during classes because those devices were seen as distractions. In addition, there were no recordings of the lectures, which means we could not review the lecture later. Furthermore, when I had to miss a class, I would lose the chance to make reparations, and I would lose a vital amount of vital information because the dependency was only on the lecture as the first source of knowledge. All these limitations were linked to the teaching method used, which limited the acquisition of knowledge. In one of my memos, I wrote: *'I wish that we had more time in class or at least one more class each week so that I can use the help of the lecturer to deliver more explanation and details of the lessons'*.

On the other hand, because the flipped classroom method relies on technology, the experience I had of this method was totally opposite to the traditional method. For instance, all the lecturers competently used technology in each class by using PowerPoint slides and livestreaming videos for students participating online *"I do not recall a class at Monash University where a tutor did not use the technology, presentation slides and online learning materials"*. The lecturers also distributed various readings and resources one week before each class, which benefited me because I had the opportunity to expand my knowledge of different types of materials. These materials could be found on Moodle, which is an online platform Monash University uses to allow lecturers to publish those materials and students to access them. Consequently, I could review and revise the materials an infinite number of times before and after the classes. As a result, I had a better understanding and acquisition of knowledge through this teaching method than the traditional method, which directly and positively impacted my grades and academic achievements. These academic achievements boosted my confidence in my capabilities, leading to my overall satisfaction with the course and the flipped classroom method.

These findings align with the findings by Låg and Sæle (2019), who indicated that the flipped classroom has a higher effectiveness in fostering and promoting student learning compared to the traditional lecture-based method. Additionally, the results of the studies by Ha et al. (2019), Låg

and Sæle (2019) and Polat and Karabatak (2022) indicate that most of the students involved in their research had a favourable impression and were satisfied with the flipped classroom, which aligns with my overall satisfaction with this method because of its positive impact on academic achievement and performance. These findings are also confirmed in the studies by Debbağ and Yıldız (2021), Zhang et al. (2021) and Polat and Karabatak (2022).

- **Experiencing Autonomy and Responsibility**

During my bachelor's degree, I experienced a lack of autonomy and responsibility for my learning due to my belief that lecturers are responsible for delivering knowledge, and I am responsible for absorbing it. This belief was shaped and constructed by the traditional teaching method employed, which emphasised only my teachers' role in the classrooms, resulting in my passive engagement as a student. In contrast, the flipped classroom method made me responsible for my learning because it allowed me access to the class materials and required a comprehensive review before each class. The more effort I dedicated to reviewing the materials, the more I engaged during the class. As a result, I would also receive positive feedback from my teachers about my engagement and contribution, which boosted my motivation to attend all the classes regardless of any circumstances and my willingness to devote more time and effort to my studies. After benefiting from the flipped classroom method, I felt a sense of belonging that ultimately improved my connections with both my teachers and peers.

These findings are consistent with Awidi and Paynter's (2019) study, which revealed that the flipped classroom method optimises students' attendance, engagement and motivation. The findings are also compatible with Ha et al.'s (2019) study, which demonstrated that using the flipped classroom method fulfils cognitive needs. These needs are autonomy and a sense of independence, a feeling of competence and accomplishment and a feeling of relatedness and connection with peers and teachers. Finally, the sense of belonging I felt in this method is also confirmed by Polat and Karabatak's (2022) study, where the flipped classroom yielded a greater sense of belonging in the experimental group that used this method.

5. Conclusion

The flipped classroom method has become increasingly popular and has received more positive feedback than traditional lecture-based teaching in higher education. Therefore, it is necessary to examine whether the flipped classroom effectively enables students to enhance their academic achievement and learning outcomes. It is evident from the literature that the flipped classroom method has a positive impact on students compared to traditional methods.

This research aimed to fill the gap and examine the effectiveness of this method for educating students in higher education institutions in Saudi Arabia using an autoethnographic research method. Although this study clearly shows that the benefits of the flipped classroom method outweigh those of the traditional teaching method, the findings lack generalisability due to the limitations of the research method used. Therefore, future action research employing research methods that yield more accurate and precise findings is recommended in this context.

6. Limitations and Recommendations

Autoethnography as a research methodology for this study has limitations. First, it is impossible to recall or report events in a way that exactly represents how those events were experienced or felt due to the fallibility of memory (Tullis Owen et al., 2009). When individuals experience the same event, they often have different perspectives and tell varying stories about what occurred, which might affect the accuracy of the information (Tullis Owen et al., 2009). In addition, autoethnography is often dismissed for lacking rigour, theory and analysis and being too aesthetic, emotional and therapeutic in nature, so this study might be considered as such (Ellis et al., 2011). Moreover, this study had limited fieldwork engagement, insufficient observation of context participants and inadequate time spent with diverse participants, which are considered criticisms of the autoethnography method (Ellis et al., 2011). Another limitation is that the experiences in this research are personal, so there is a chance of emotional intensity, which could confuse the distinction between academic and personal representation (Ellis et al., 2011). Finally, the findings of this study might have been affected by the author's bias because of his academic achievements and satisfaction with the flipped classroom method. As a result, it is a challenge to generalise the findings of this study to broader populations and contexts. Therefore, future empirical research that examines the effectiveness of the flipped classroom method on education students in Saudi universities is recommended. In order to make generalizations based on the findings, non-probabilistic sampling must be applied.

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