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FLIPPED CLASSROOMS AS A STUDENT-CENTERED LEARNING APPROACH: BENEFITS AND CHALLENGES

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ABSTRACT

The 'Flipped Classroom' is an innovative, student-centered teaching method in which the initial study of course material takes place outside the classroom, while class time is dedicated to active, collaborative, and problem-based learning activities. The objective of this study was to analyse the benefits and challenges of the flipped classroom and evaluate its effectiveness as a student-centred pedagogical approach. The study examined the method's impact on student participation and learning outcomes, its core components, implementation challenges, and strategies to address those challenges. The study was conducted using a 'Systematic Literature Review' (SLR) methodology and relied entirely on secondary data. The findings indicate that the flipped classroom fosters active participation, collaborative learning, and self-regulated learning among students, thereby enhancing their engagement and learning outcomes. However, technical limitations, inadequate student preparation, and excessive teacher workload were identified as major challenges to its implementation. The study further reveals that these challenges can be mitigated through proper planning, institutional support, technology accessibility, and teacher training. Thus, it can be concluded that, when implemented effectively, the flipped classroom is an efficient, flexible, and promising student-centered teaching method.

KEY WORDS*: Flipped Classrooms, Student-Centered Learning Approach, Flipped Classrooms Benefits & Challenges.*

1. INTRODUCTION

The Fourth Industrial Revolution (*Industry 4.0*) has brought about significant changes in the education sector. Rapid technological advancements have led to the emergence of new concepts and methods in the teaching-learning process. The integration of technology in education has expanded online learning and played a pivotal role in developing innovative teaching strategies to enhance student learning (*Stöhr et al., 2020; Wei et al., 2020*). It is anticipated that the effective and modern use of technological resources, combined with a dynamic educational system, will foster the development of students' innovative thinking and creativity (*Choudhury & Pattnaik, 2020; Fidan et al., 2024*). Currently, the integration of modern technology into the teaching-learning process is rapidly increasing. Digital transformation is helping to make the education system more effective, efficient, and advanced. Through this, the presentation of subject matter, learning methods, and instructional activities is becoming simpler, more engaging, and more productive (*Sousa & Rocha, 2019; Fletcher & Griffiths, 2020; Jackson, 2019*). In the era of the Fourth Industrial Revolution, primary school teachers can adopt the 'Flipped Classroom' approach to modernise and enhance the effectiveness of teaching methods. This approach leverages technology to create opportunities for students to engage in active, practical, and innovative learning. Furthermore, it facilitates and improves the teaching-learning process for both teachers and students (*Bergmann & Sams, 2012; Abeysekera & Dawson, 2015; Academy of Active Learning Arts and Sciences, 2018; Strelan, Osborn, & Palmer, 2020*).

The 'Flipped Classroom' is a teaching method that prioritises the individual learning pace and needs of each student (*Cheng, Ritzhaupt, & Antonenko, 2019*). In this approach, students prepare by studying the subject matter and watching educational videos before class. Consequently, discussion, participation, and interaction between teachers and students are enhanced during class sessions (*Mustafa, M., 2022*). Its primary objective is to make students more active in the learning process and to assist them in developing higher-order skills such as analysis, evaluation, and creative thinking (*Ruiz Jimenez et al., 2022*).

In the 'flipped classroom' approach, students come to class having prepared in advance, and the use of technology plays a pivotal role in the teaching-learning process. Consequently, students remain more active and gain a better understanding of the subject matter (*Bequette, 2018; Chou et al., 2020*). This method differs from traditional teaching approaches because learning activities take place both before and during the class. Before class, students acquire an understanding of the content through videos and online discussions, while in the classroom, they engage in discussions, problem-solving, and activities

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designed to foster higher-order thinking skills (*Anderson, 2001; Nja et al., 2022*).

2. REVIEW OF RELATED LITERATURE

Hava, K. (*2020*), conducted a study involving 97 first-year students in Turkey, found that, compared to traditional methods, the 'flipped classroom' approach is more effective in enhancing students' deep learning strategies as well as their cognitive and emotional engagement.

Aidoo, B., Tsyawo, J., Quansah, F and Boateng, S, K. (*2022*). Research indicates that undergraduate students hold a positive attitude towards the 'flipped classroom' approach and consider it effective and worthy of recommendation to others in terms of participation, efficacy, and satisfaction.

Oya, A., Parmiti, D, P, Jampel, I, N., Candiasa, I, M. and Susilawati, A. (*2024*). Research shows that students learning languages other than English hold a highly positive attitude towards the video-based 'flipped learning' approach and experience a high level of enjoyment and engagement within its interactive environment.

Eltahir, M E. and Alsalhi, N R. (2025). This study, conducted on 71 students at Ajman University in the United Arab Emirates, found that students following the 'flipped classroom' method achieved significantly better results in terms of knowledge, skills, motivation, and participation compared to those taught using traditional methods.

Masruddin, Hartina, Arifin, M A. and Langaji, A. (*2024*). A comparison between two groups of 26 students in this study revealed that the 'flipped learning' method enhances students' emotional, cognitive, and behavioural engagement. Furthermore, this approach fosters more positive, collaborative relationships between students and lecturers, while also increasing their interest in learning and active participation.

3. OBJECTIVES OF THE STUDY

The purpose of this study was to examine the flipped classroom as a student-centered learning approach and to explore its benefits and challenges in the teaching-learning process. The specific objectives of the study were to:

- Determine the impact of the flipped classroom on students' engagement in education;
- Examine the benefits of the flipped classroom on students' learning outcomes;
- Explore the fundamental elements of the flipped classroom approach;
- Identify the challenges associated with the implementation of the flipped classroom; and
- Examine possible strategies for overcoming the challenges of the flipped classroom.

4. METHODOLOGY OF THE STUDY

In conducting this research, the researcher used the Systematic Literature Review. The study's primary data source is secondary data. Without conducting any empirical research, the research is done through a review of the literature. A significant amount of written content was used, including books, magazine articles, journals, and online databases.

5. THEORETICAL FOUNDATIONS OF FLIPPED LEARNING

Brame (*2013*) presents a theoretical framework for evaluating student experiences in a 'flipped learning' environment. According to him, an effective flipped classroom approach should comprise four key elements: **Exposure to content, Incentives, Assessment, and**

Various Learning Activities.

In the 'exposure' or topic-familiarisation phase, students gain an understanding of the subject matter before class, which allows them to learn independently and at their own pace (*Fortsch et al., 2002; Davis, Dean, & Ball, 2013*). In the 'flipped classroom' approach, students master the subject matter before class so that they can actively participate in classroom discussions and activities; therefore, motivational strategies are crucial to enhancing their interest and participation. The 'flipped classroom' approach identifies students' learning progress and weaknesses through various assessments and pre-class activities, providing effective feedback to both teachers and students. In the 'Activities' section, students gain a deep understanding of previously learned concepts and acquire the skills to apply them in real-life situations through classroom discussions, role-playing, and simulation-based exercises. Content introduction, motivation, assessment, and activities; these four elements play a crucial role in determining lesson plans and learning activities for the 'flipped classroom' approach (*Phillips et al., 2010; Brem, 2013*).

6. CONCEPTUAL FRAMEWORK

- **Flipped classroom-** In the 'Flipped Classroom' approach, students learn the subject matter beforehand at their own convenience using videos, reading materials, or other digital resources. Consequently, instead of lengthy lectures, the classroom environment prioritises discussions, group work, problem-solving, and various practical activities (*Chen, Wang, Kinshuk, & Chen, 2014; Lai & Hwang, 2016*). This method enables students to play a more active role in the learning process, while the teacher primarily acts as a facilitator and guide. Furthermore, the flipped classroom fosters self-regulated learning, collaborative learning, critical thinking, and higher-order thinking skills, all of which align with the demands of 21st-century education. According to Kong (*2014, 2015*), the three main stages of the 'flipped classroom' approach are: pre-class preparation, in-class learning activities, and post-class reinforcement. In this model, students learn the subject matter beforehand and actively participate in discussions, problem-solving, and other interactive activities during class (*Estes, Ingram, & Liu, 2014; Tucker, 2012*). Classroom-based practice helps students gain a deep understanding of the subject matter. At this stage, they have the opportunity to apply the knowledge they have acquired,

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collaborate with peers, and receive necessary feedback and guidance from teachers (*Warter-Perez & Dong, 2012*).

- **Student Engagement-** Student engagement is a multidimensional concept referring to students' participation in curricular and extracurricular activities, as well as their interest in and attention to these activities (*Willms, 2003*). According to Fredricks, Blumenfeld, and Paris (*2004*), student engagement comprises three main dimensions: behavioural engagement, cognitive engagement, and emotional engagement. Behavioural engagement primarily relates to student participation and encompasses their active involvement in academic, social, and co-curricular activities (*Fredricks et al., 2004*). Key indicators of cognitive engagement include recognizing the importance of learning, the capacity for independent learning, and a focus on achieving personal educational goals (*Appleton, Christenson, & Furlong, 2008; Steen-Utheim & Foldnes, 2018*). On the other hand, emotional engagement refers to students' interest, enthusiasm, and curiosity or sometimes negative feelings and reactions towards lessons, teachers, and peers (*Fredricks et al., 2004*).
- **Learning outcomes-** The 'Flipped Classroom' approach fosters self-regulated learning, critical thinking, and active participation among students. In this model, students act not merely as passive recipients of information but as active participants in the learning process. Through a participatory and interactive learning environment, they gain the opportunity to apply theoretical knowledge to real-world situations (*Neo & Neo, 2001*). The 'flipped classroom' approach helps students develop problem-solving, collaboration, decision-making, and higher-order thinking skills, while ensuring meaningful learning experiences. This method is particularly effective in enhancing students' academic success, engagement, and problem-solving abilities in STEM education (*Kay & Dermott, 2018*). Furthermore, it helps foster critical thinking, collaborative work, and the ability to apply knowledge to solve real-world problems.

7. THEMATIC DISCUSSION

❖ **Thematic Discussion: Impact of Flipped Classroom on Students' Engagement in Education-**

- **Conceptual Understanding of Flipped Classroom:** A flipped classroom is a teaching method where students learn the basics of a subject outside of the classroom through online videos, textbooks, or other digital materials. As a result, classroom time is used for discussion, collaborative work, problem solving and various participatory activities rather than lecture-based teaching (*Bergmann & Sams, 2012*).
- **Dimensions of Student Engagement:** Student engagement is typically discussed across three interconnected domains:
  - **Behavioural Engagement** – active participation in academic and co-curricular activities.
  - **Emotional Engagement** – positive attitudes, interest, and motivation toward learning.
  - **Cognitive Engagement** – investment in learning, deep understanding, and willingness to exert effort (*Fredricks, Blumenfeld, & Paris, 2004*).
- **Enhancement of Behavioural Engagement:** In the 'flipped classroom' approach, students study the subject matter before class; consequently, they have the opportunity to actively participate in discussions, group work, problem-solving, and practical exercises during class time, leading to increased behavioural engagement (*Abeysekera & Dawson, 2015*). As a result, students no longer merely listen passively to the teacher; instead, they become active participants in the learning process.
- **Improvement in Emotional Engagement:** Compared to traditional lecture-based teaching methods, students in a 'flipped classroom' generally express greater interest, enjoyment, and satisfaction regarding their learning (*Lo & Hew, 2017*). This approach allows students to study course materials at their own convenience and pace, giving them a greater sense of control over the learning process. Consequently, learning-related anxiety decreases, self-confidence rises, and intrinsic motivation is strengthened.
- **Strengthening of Cognitive Engagement:** The 'Flipped Classroom' approach provides students with opportunities to apply theoretical knowledge practically through classroom activities, thereby fostering the development of higher-order thinking skills (*Thai, De Wever, & Valcke, 2017*). Participants actively engage in analyzing, evaluating, and applying logical reasoning and creative synthesis through methods such as problem-based learning, case studies, discussions, and peer instruction.

❖ **Thematic Discussion: Benefit of Flipped Classroom on Students' Learning Outcomes**

- **Introduction to Flipped Classroom and Learning Outcomes:** In the 'Flipped Classroom' approach, students acquire foundational concepts of the subject matter before class through videos, reading materials, or other digital resources, while classroom time is dedicated to discussion, problem-solving, group work, and other active, collaborative activities (*Bergmann & Sams, 2012*). On the other hand, 'Learning Outcomes' refer to the measurable knowledge, skills, values, and attitudes that students acquire through the educational process (*Biggs & Tang, 2011*). The primary objective of this method is to enhance students' deep understanding of the subject matter, higher-order thinking skills, critical analysis capabilities, and the ability to apply knowledge.
- **Improvement in Academic Performance:** Multiple studies have shown that the 'flipped classroom' approach improves students' academic success and learning outcomes compared to traditional lecture-based methods, as it allows class time to be dedicated to higher-order

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learning activities such as application, analysis, problem-solving, and critical thinking (*Thai, De Wever, & Valcke, 2017*). As a result, students gain a deeper understanding of the subject matter, learn to apply acquired knowledge in real-world contexts, and are better able to retain what they have learned over the long term.

- **Development of Higher-Order Thinking Skills:** A significant advantage of the 'flipped model' is its alignment with Bloom's Revised Taxonomy. In this approach, students acquire foundational knowledge of the subject matter before class and, upon attending the session, deepen their understanding by applying, analysing, and evaluating that knowledge (*Anderson & Krathwohl, 2001*). Consequently, classroom time can be dedicated to higher-order thinking activities.
- **Enhancement of Self-Directed Learning Skills:** The 'Flipped Classroom' approach encourages students' self-reliance and autonomy, as they can set their own learning pace, review course material as needed, and take responsibility for their own learning (*Lo & Hew, 2017*). This in turn enhances students' self-regulation, time management and independent learning skills. This self-regulated learning approach not only helps in achieving immediate educational goals but also inculcates a lifelong learning mindset in students.
- **Positive Impact on Retention and Long-Term Understanding:** Incorporating active learning methods into the classroom enables students to better understand, master, and retain subject matter over the long term (*Chen, Wang, & Chen, 2014*). Through discussions, question-and-answer sessions, and various participatory activities, students become actively engaged in the learning process. Consequently, they receive immediate feedback and guidance, gain a clear understanding of the material, and can easily rectify misconceptions.

❖ Fundamental Elements of Flipped Classroom

- **Pre-Class Content Delivery:** In the flipped classroom model, students gain a preliminary understanding of the subject matter through videos, podcasts, reading materials, and other multimedia resources before attending class (*Bergmann & Sams, 2012*). This asynchronous learning method allows students to learn at their own pace and convenience.
- **Active In-Class Learning:** After students arrive in class, the time is utilised for various active learning strategies such as collaborative problem-solving, discussions and debates, simulations, role-playing, and peer instruction (*Prince, 2004*). These activities help students apply previously learned concepts in practical settings and gain a deeper understanding of the material.
- **Student-Centered Pedagogy:** The 'flipped' approach is grounded in constructivist learning theory, which emphasises students' active participation, self-reliance, and the construction of knowledge through experience (Abeysekera & Dawson, 2015). In this method, students actively participate in the learning process to construct new knowledge, while the teacher acts as a facilitator rather than a mere provider of information, offering guidance and assistance with discussions and problem-solving.
- **Integration of Technology:** Technology plays a crucial role in the flipped classroom approach by facilitating the delivery of learning materials to students prior to class and enabling participatory activities within the classroom. Learning Management Systems (*LMS*), video-sharing platforms, and interactive tools such as Kahoot! Mentimeter and Padlet assist students in pre-class preparation, content review, and active classroom participation (*Lo & Hew, 2017*).
- **Feedback and Formative Assessment:** Regular and timely feedback helps students grasp subject matter accurately and correct misconceptions; therefore, formative assessment activities such as online quizzes, self-assessments, and brief exercises are incorporated into the 'flipped classroom' model (*Bishop & Verleger, 2013*). Additionally, teachers can provide immediate feedback to students through classroom discussions, question-and-answer sessions, and various participatory activities.

❖ Challenges of Flipped Classroom

- **Student Preparedness and Compliance:** Ensuring the effective implementation of the 'flipped classroom' model is crucial (*Bishop & Verleger, 2013*). If students do not come to class prepared, their ability to engage in classroom discussions, problem-solving, and other participatory activities is compromised, thereby undermining the core objective and effectiveness of the flipped model.
- **Digital Divide and Access to Technology:** The 'flipped' teaching method relies on digital devices and the internet; however, unequal access to these resources, particularly for rural and disadvantaged students, can create disparities in learning opportunities (*Lo & Hew, 2017*). The digital divide can negatively impact academic performance and outcomes. Furthermore, the 'flipped classroom' approach requires teachers to invest time and effort in effective instruction (*Abeysekera & Dawson, 2015*).
- **Resistance to Change in Teaching and Learning Culture:** Both students and teachers may show reluctance to adopt the 'flipped model' due to their familiarity with traditional lecture-based instruction; students feel comfortable receiving lessons passively, while some teachers feel uncomfortable adapting to the role of a facilitator (*Herreid & Schiller, 2013*).
- **Quality of Instructional Materials:** Issues such as lengthy pre-class instructional videos and a lack of sufficient interactive elements can lead students to view the content and the concept of active learning itself negatively (*Gilboy, Heinerichs, & Pazzaglia, 2015*).

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Consequently, students may fail to prepare adequately before class or participate actively in classroom activities.

- **Classroom Management in Active Learning Environments:** The 'Flipped Classroom' approach places significant emphasis on group work, discussion, and collaborative learning among peers. However, managing the classroom during such activities can present challenges, such as excessive noise, limited participation by some students, dominance by others, and off-task behaviour (*Prince, 2004)*

❖ **Strategies to Overcome the Challenges of Flipped Classroom**

- **Ensuring Student Preparedness and Accountability:** One common challenge associated with the 'Flipped Learning' approach is that many students fail to complete preparatory activities before class. Consequently, they are unable to participate effectively in classroom discussions and interactive activities. To address this issue, pre-class quizzes, online discussions, brief reflective assignments, or minor tasks can be incorporated, with participation marks or grades awarded for them (*Bishop & Verleger, 2013*).
- **Bridging the Digital Divide:** Ensuring equal access to devices and reliable internet connectivity is crucial for the successful implementation of the flipped classroom approach. Educational institutions can support students who lack the necessary technological resources by lending laptops or tablets, providing offline versions of video content, and offering access to computer labs (*Abeysekera & Dawson, 2015*).
- **Reducing Teacher Workload through Resource Sharing:** The workload associated with creating materials for a 'Flipped Classroom' can be significantly reduced through collaborative material development, the use of Open Educational Resources (*OER*), and the reuse of high-quality content from online repositories (*Talbert, 2017*). Consequently, teachers are spared the need to create every resource from scratch, thereby saving both time and effort.
- **Overcoming Resistance to Change:** Implementing the 'Flipped Model' in a phased manner can significantly reduce the existing psychological or cultural barriers between teachers and students. Initially, the 'flipped' approach can be applied partially, that is, by using it for only specific lessons or subjects, thereby allowing teachers and students to gradually adapt to this new teaching method (*Herreid & Schiller, 2013*).
- **Improving Quality of Pre-Class Materials:** Pre-class learning materials should be concise, engaging, and well-structured. Short videos, specifically those lasting 6 to 10 minutes, are considered particularly effective for maintaining student attention and facilitating easier comprehension of the subject matter (*Guo, Kim, & Rubin, 2014*). Presenting content in smaller segments, rather than through long and complex presentations, allows students to learn at their own pace and revisit the material as needed.

8. SCOPE FOR FUTURE STUDIES

Based on the discussion regarding the advantages and challenges of the 'flipped classroom' as a student-centered learning approach, future research could be conducted on the following topics:

- Assessing the effectiveness of the flipped classroom in primary and secondary education
- Analyzing the Impact of the Flipped Classroom across Different Subjects and Its Long-Term Effects on Student Engagement and Motivation
- Role of the Flipped Classroom in Developing Self-Directed and Lifelong Learning Skills and the Influence of the Digital Divide and Technological Facilities
- Comparative Analysis of Flipped Classroom Implementation in Rural and Urban Educational Institutions and Its Effectiveness for Students with Special Needs
- Role of Teachers' Professional Preparedness and Enhancement of Assessment Methods and Alternative Strategies
- Long-term Educational Impact of Flipped Classrooms & Role of Policy and Institutional Support

9. CONCLUSION

The 'Flipped Classroom' is a significant and innovative teaching method in modern education that adds a new dimension to the roles of both teachers and students. In this approach, direct instruction or content delivery takes place before class via videos, reading materials, or other digital resources, while classroom time is dedicated to discussions, problem-solving, group work, and other participatory activities. Consequently, students engage more actively in the learning process and are encouraged to take ownership of their own learning. Research indicates that the flipped classroom helps improve students' academic performance, fosters a deeper understanding of the subject matter, and aids in the long-term retention of knowledge (*Cheng, Ritzhaupt, & Antonenko, 2019; Foldnes, 2016; van Alten, Phielix, Janssen, & Kester, 2019*).

However, the success of the 'Flipped Classroom' approach largely depends on well-structured lesson planning, high-quality pre-class learning materials, and consistent guidance and feedback for students. A lack of proper integration among these elements can lead to students losing interest in learning, developing an aversion to the method, and experiencing inconsistent learning outcomes (*Akçayır & Akçayır, 2018*). Therefore, when implementing the flipped classroom model, teachers should create well-organised and engaging learning materials that cater to the diverse needs and capabilities of students, incorporate formative assessments, and employ inclusive teaching strategies. Simultaneously, ensuring the necessary technical and academic support for students is crucial. In summary, through proper planning and effective implementation, the flipped classroom approach not only

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enhances student participation, learning outcomes, and academic success but also fosters self-reliance, self-regulation, adaptability, and the skills essential for lifelong learning. Consequently, it has gained significant importance as a valuable, flexible, and student-centered teaching strategy in contemporary education.

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