

Mathematics Teachers Perceptions in Action research: Functionality in Flipped Classroom Approach

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Abstract: The flipped classroom approach represents a blended learning model that emphasizes the cultivation of 21st-century skills. This study was initiated to explore mathematics teachers' perceptions regarding the functionality of the flipped classroom within the Sri Lankan context. Additionally, it aims to identify the challenges faced by mathematics teachers in implementing the flipped classroom methodology, with the goal of enhancing their instructional experiences. The functionality of the flipped classroom is analyzed through four key dimensions: Flexible Environment, Learning Culture, Intentional Content, and Professional Educator. A mixed-methods research design was employed in this study, utilizing a Likert scale questionnaire distributed to a randomly selected sample of 244 mathematics teachers from schools within the Galle education division of Sri Lanka. Additionally, face-to-face interviews were conducted with 10 randomly selected mathematics teachers from the same sample to facilitate data triangulation. The quantitative data were analyzed using SPSS software (Version 25). The study results reveal that mathematics teachers are highly aware of the importance of using the flipped classroom approach. They express a perception that students in the Sri Lankan context lack access to flexible environments for learning mathematics. However, it emerged that these mathematics teachers maintain positive perceptions regarding the effectiveness of integrating learning culture and professional educator dimensions within the flipped classroom model. Nonetheless, 69.0% of mathematics teachers expressed the belief that the flipped classroom model imposes a significant workload on educators. Additionally, several factors were identified as obstacles to implementing this approach effectively in Sri Lanka, including insufficient technological resources at both schools and homes, inadequate internet connectivity in rural areas, and students' continued reliance on teachers for learning mathematics.

Key words: Dimensions of Flipped Classroom, Mathematics teacher Perceptions

I. INTRODUCTION

A recent transformation in educational practices has emerged due to the introduction of a new instructional approach triggered by technological advancements. Among these, the flipped classroom approach stands out as a blended learning strategy that leverages technology to enrich classroom experiences. As technology continues to evolve, educators are convinced that the flipped classroom approach is steering students' learning towards gaining 21st-century skills. According to the Bergmann and Sams (2012), the flipped classroom approach is facilitating self-directed learning experiences through technology outside the classroom, while allowing for further discussions with the teacher during class time. Mustafa and Argün (2017) emphasized its goal of promoting autonomous learning skills necessary for the 21st century. This approach comprises two main components: engaging interactive learning activities during lessons and individual study utilizing computers and technology outside of class. It is characterized as a model where students

access online videos, lecture notes, images, and other resources uploaded by the teacher prior to class. Subsequently, classroom time is dedicated to meaningful practice and discussions (Hughes, 2016; Fauth, 2015). In this setting, the teacher's role shifts to that of a supporter in the construction of knowledge, as well as a facilitator and collaborator in student learning. Consequently, the flipped classroom is recognized as a student-centered learning method aligned with constructivist theory, transforming teachers' roles into transactional facilitators.

According to the Flipped Learning Network (FLN), the subject-object relationships within the four pillars of the flipped learning approach are represented by various tools, which are illustrated in Figure 1 in the context of this study.

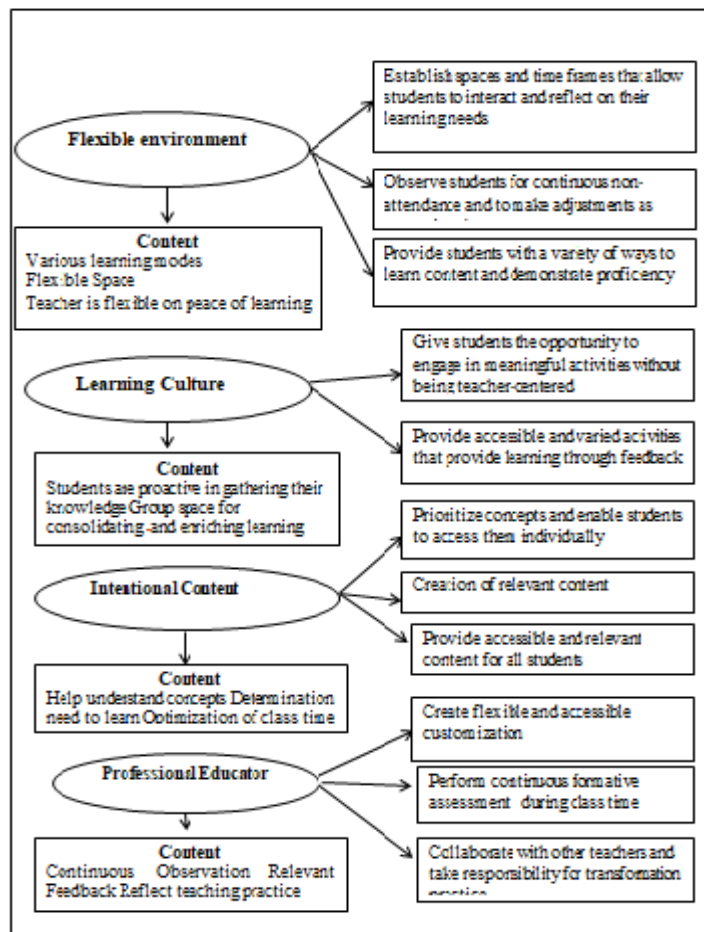


Fig.1: Relationship of four pillars of flipped learning approach

The Flipped Learning Network (2014) outlined four fundamental pillars that facilitate "flip" learning, illustrating the concept of the inverted learning approach. Seasoned educators in the field have recognized the essential characteristics of these pillars as: Flexible Environment, Learning Culture, Intentional Content and the Professional Educator. Many researchers have emphatically recommended for the implementation of the flipped classroom approach in mathematics education, particularly in light of the rapid technological advancements in educational practices within a constructivist learning environment (Overmyer, 2014; Ramakrishnan and Johnsi, 2016; Domingo and Martín, 2020). They revealed that it provides positive results in understanding the concepts of

mathematics at expected levels. Some educators have recommended the inclusion of flipped classroom approach as a teaching method in the mathematics curriculum of teacher training programs (Umam and Mulyono, 2019).

The literature indicates that many educators have effectively adopted the flipped classroom approach in a transactional role, aiming to transform their instructional methods in mathematics education. In this context, it is a timely to investigate how mathematics teachers in Sri Lanka are utilizing the flipped classroom approach in teaching learning process. Therefore, the main purpose of this research is to explore the perceptions of Sri Lankan mathematics teachers regarding the functionality of the flipped classroom approach.

Specific objectives

This study aims to:

1. Find out the mathematic teacher's perceptions of implementation of the flipped classroom approach.
- 2 Identify the challengers faced by mathematics teachers in applying the flipped classroom approach to improve the learning experience.

Scope and Significance of the Study

This research focuses on examining mathematics teachers' perceptions of the flipped classroom approach and identifying the challenges they encounter in its application. The findings point out that teachers' perceptions indicate a crucial role in enabling and enhancing the adoption of innovative teaching methodology within mathematics education. As such, mathematics teachers are a primary group that stands to benefit significantly from the insights gained through this research.

Additionally, the Higher Education Institutes and Ministry of Education can leverage these findings to create and organize specialized training programs and workshops focused on increasing awareness of the flipped classroom approach's effectiveness. These insights serve as essential guidance for developing professional development initiatives that not only advocate for the approach but also empower educators with the competencies and knowledge required for successful implementation. Consequently, this research has the potential to contribute to a broader dissemination of the flipped classroom model, ultimately fostering more effective teaching practices in mathematics education.

II. THEORETICAL FRAMEWORK AND RESEARCH DESIGN

The flipped classroom approach encourages a shift from traditional practices by fostering the cognitive skills outlined in Bloom's taxonomy, promoting creative development: project-based learning, group work, multimedia presentation and peer teaching. As a result, the concept of flipped classrooms needs teachers to shift from the conventional practice of knowledge transmission to constructivist teaching, in which students are encouraged to generate information autonomously through inquiry-based learning. Following exploring the flipped classroom paradigm, it becomes evident that it physically weaves together the majority of the learning concepts. The model's most significant value is that it allows students to think about and reconstruct their knowledge of assisted learning both outside and inside of the classroom.

The rationale for justification for the flipped classroom approach closely aligns with the principles of a student-centered approach to education. This approach emphasizes active learning and places students at the forefront of their educational experience, allowing them to take greater responsibility for their own learning. According to Magro (2018), teachers play a pivotal role in shaping various educational methodologies, particularly within the frameworks of constructivist, socio-constructivist, and reflective approaches that characterize student-centered pedagogy. These approaches encourage students to engage actively with the material, collaborate with peers, and reflect on their learning processes. By facilitating environments where students can explore concepts in depth and apply their knowledge, teachers can significantly influence the effectiveness of these pedagogical strategies. In this context, the flipped classroom model serves as a powerful tool for enhancing student engagement and promoting deeper understanding. It allows students to learn foundational content at their own pace outside of class, freeing up valuable in-class time for interactive activities that foster collaboration, critical thinking, and creativity. In this way, the flipped classroom not only supports but also enriches the student-centered approach to learning by creating more opportunities for personalized and meaningful educational experiences.

Constructivism theory of teaching mathematics is a philosophical theory concerning how students can enhance skills and grasp mathematical concepts (epistemology). According to most educationists, constructivism has been utilized as a framework to develop a cognitive theory which aims to explain the process of understanding concepts by which students acquire skills and knowledge. The primary principle of constructivist theories is that the individual constructs all knowledge. This is immediately relevant to flipped classroom approach which leads to autonomous learning of students.

Constructivism is an argument that does not concern itself with teaching, but with knowledge and learning. According to Terhart (2003), constructivism is not a recent theory that tries to explain how people learn. This theory has been examined by Piaget (1955); Bruner (1966); Vygotsky (1978) in depth. However, constructivism as a theory was generally recognized in the early 1990s. Basically constructivist learning theory essentially promotes the concept that knowledge is constructed from existing or pioneering knowledge. Constructivists' view of learning is that the students use their models of knowledge construct new knowledge of the things they learn. They build new knowledge on their existing knowledge. According to William & Burden (1997), the primary principle of constructivism is that individuals should be free to interpret the theories and concepts that are offered in ways that are unique to them.

This observation seems to emphasize one important aspect of learning, that is, various people construct understanding and knowledge in different ways. This scenario may be connected to the techniques for learning that students engage in flipped classes. Hence, it can be decided that constructivism theory can be utilized to explain the mechanism for flipped classroom instruction. Therefore, the Vygotskian socio-cultural learning theory is chosen as the theoretical framework for the research.

III. DATA COLLECTION AND ANALYSIS

The research utilized a mixed-methods design to comprehensively explore mathematics teachers' perceptions on the flipped classroom approach. Data were gathered through a combination of a structured questionnaire and in-depth face-to-face interviews, allowing for a well-rounded and

detailed analysis. A Likert-scale questionnaire, which demonstrated a strong reliability coefficient of 0.911, was distributed to a randomly chosen sample of 244 mathematics teachers. These teachers had received prior training in the flipped classroom approach and represented 141 schools across various school types in the Galle Education Division, Sri Lanka.

The questionnaire included twelve items organized into four key dimensions of the flipped classroom approach, divided into sections A through D. Section A addressed the effectiveness of the flipped classroom in creating a flexible learning environment, emphasizing its capacity to meet diverse learning needs and foster adaptability. Section B investigated its impact on cultivating a positive learning culture, highlighting aspects such as collaboration, student engagement, and active participation. Section C focused on the flipped classroom's role in delivering content intentionally, ensuring that instructional materials are aligned with both learning objectives and the specific needs of students. Section D assessed how the approach enhances the effectiveness of professional educators, particularly regarding their instructional strategies, facilitation skills, and ability to offer personalized support.

Face-to-face interviews were conducted with 10 mathematics teachers randomly selected from the questionnaire sample to complement the quantitative data and provide a deeper understanding. This qualitative approach facilitated data triangulation, enhancing the reliability and credibility of the findings by incorporating diverse perspectives. Using SPSS (Version 25) software, quantitative data were analyzed to uncover patterns, trends, and relationships within the responses. By integrating both qualitative and quantitative methods, the study offered a comprehensive view of teachers' experiences and perceptions, resulting in insights that are not only statistically sound but also rich in context.

Table 1: Sample of the teachers

| Type of school | Number of teachers | | Total |
|----------------|--------------------|------------|------------|
| | Male | Female | |
| 1AB | 31 | 97 | 128 |
| 1C | 22 | 48 | 70 |
| Type 2 | 31 | 15 | 46 |
| Total | 84 | 160 | 244 |

XI. DISCUSSION

The key findings of this study align with two main aspects: the perceptions of mathematics teachers regarding the functionality of the flipped classroom within the Sri Lankan context and the challenges they face in implementing this approach to enhance their teaching experiences. The functionality of the flipped classroom was examined through four distinct dimensions.

Mathematics teachers' perceptions of the flipped classroom approach in relation to towards a flexible learning environment.

Table 2: Teachers' perceptions regarding the role of functionality within the flipped classroom: A Flexible Environment.

| Items | Agreed Frequency | Percentages (%) | Means | S.D. |
|---|------------------|-----------------|-------|------|
| Flipped classroom approach leads to independent learning | 94 | 38.5 | .39 | .488 |
| The flipped classroom approach hinders the creation of a democratic learning environment for students in mathematics. | 38 | 15.6 | .16 | .365 |
| There are opportunities for students to offers varies learning methods in the he flipped classroom | 236 | 96.7 | .97 | .168 |

A significant minority of teachers, specifically 38.5%, indicated that the flipped approach leads to autonomous learning atmospheres among students within the Sri Lankan context. Additionally, only 15.6% of teachers agreed that flipped classroom approach hinders the creation of a democratic flexible learning environment for students in mathematics. But the result showed that the 96.7% of teachers indicated there are opportunities for students to explore various learning methods in the flipped classroom. Furthermore, it was revealed from interviews with teachers that there was a prevalent tendency among Sri Lankan students to depend heavily on teacher guidance during the teaching-learning process, consequently diminishing their propensity for self-directed learning within the framework of the flipped classroom pedagogy.

Table 3: Teachers' perceptions on the role of the functionality in the flipped classroom: Learning Culture

| Items | Agreed Frequency | Percentage (%) | Means | S.D. |
|--|------------------|----------------|-------|-------|
| Do you think the teacher at the flipped classroom (FC) approach performs on the students' prior knowledge? | 187 | 76.6 | 0.77 | 0.424 |
| Do you think the teacher creates a conducive learning environment in the flipped classroom approach? | 221 | 90.6 | 0.91 | 0.293 |
| Do you think the flipped classroom increased students' higher order thinking? | 216 | 88.5 | 0.89 | 0.319 |

It is evidenced from Table 3 that 76.6% of the mathematics teachers indicated the flipped classroom approach performs on the prior knowledge of students. Furthermore, 88.5% of teachers stated that flipped classroom approach can increase students' higher-order thinking, and it creates a conducive learning environment for students. Additionally, 90.6% of the respondents agreed that teachers foster a conducive learning environment in the flipped classroom approach. This indicates that a significant majority viewed the functionality of the flipped classroom as a means of enhancing the learning culture.

Table 4: Teachers' perceptions on the role of the functionality in the flipped classroom: Intentional Content

| Items | Agreed Frequency | Percentages (%) | Means | S.D. |
|--|------------------|-----------------|-------|------|
| The teacher creates a logical learning environment within the flipped classroom | 217 | 89.0 | .89 | .301 |
| I believe that the flipped classroom enhances interactions between students and teachers | 219 | 89.8 | .90 | .304 |
| I think the flipped classroom approach will increase ability to do inquiry-based activities in mathematics | 223 | 91.4 | .91 | .281 |

A significant 89% of the teachers highlighted that this teaching approach fosters a structured and engaging environment conducive to deeper understanding. Furthermore, 89.8% of respondents emphasized that the flipped classroom approach significantly enhances interactions between students and teachers. This increased interaction allows for more dynamic and personalized learning experiences, enabling educators to deal with individual student needs more effectively. Additionally, 91.4% of the teachers agreed that this approach promotes inquiry-based activities, particularly in mathematics. The flipped classroom approach provides students with the opportunity to explore mathematical concepts actively, encouraging curiosity and critical thinking. By engaging with pre-class content and utilizing class time for hands-on problem-solving, students can develop a stronger grasp of mathematical concepts and their applications.

These findings clearly illustrate that teachers perceive the intentional content design in the flipped classroom approach as highly effective. By enabling active participation, fostering collaboration, and supporting inquiry-based learning, this teaching method aligns with modern educational goals of developing critical thinkers and independent learners. The overwhelmingly positive perceptions among teachers enhance the potential of the flipped classroom to transform traditional learning environments into dynamic and exploration.

Table 5: Teachers' perceptions on the role of the functionality in the flipped classroom: Professional Educator

| Items | Agreed Frequency | Percentages (%) | Means | S.D. |
|-------|------------------|-----------------|-------|------|
|-------|------------------|-----------------|-------|------|

| | | | | |
|--|-----|------|-----|------|
| I think the flipped classroom approach make a heavy workload load on mathematics teachers. | 168 | 69.0 | .16 | .167 |
| I think the flipped classroom can increase your efficiency as a mathematics teacher. | 237 | 97.1 | .97 | .167 |
| I think the flipped classroom promotes teachers' computer literacy skills. | 234 | 95.9 | .96 | .199 |

It is evidenced from Table 5, 95.9% of teachers agreed that the flipped classroom approach enhances their computer literacy skills. This finding highlights the potential of the flipped classroom as a professional development tool, promoting effective technology integration in teachers' instructional practices. The increased use of digital platforms for delivering content, designing activities, and assessing student progress allows educators to build confidence and proficiency in using technological tools.

When inquired about teacher's role as professional educators, 97.1% of teachers stated that the flipped classroom significantly enhances their efficiency as mathematics teachers. This improvement in efficiency likely stems from the ability to use class time more strategically for hands-on learning, personalized instruction, and addressing students' individual challenges. These results reflect a strong positive perception among teachers regarding the suitability of the flipped classroom for advancing their professional competencies and maximizing their impact in the classroom.

However, the flipped classroom approach does come with its challenges. A notable 69.0% of mathematics teachers indicated that implementing this approach results in a heavier workload. This increased workload can be attributed to the time and effort required to create high-quality pre-class materials, such as videos and interactive content, as well as the additional preparation needed to facilitate meaningful in-class activities. Despite these challenges, the overall positive attitudes towards the flipped classroom approach suggest that many teachers view the benefits for both their students and their professional growth—as outweighing the drawbacks. These findings revealed that the dual impact of the flipped classroom: while it places greater demands on teachers, it also empowers them with new skills and strategies that can enhance their teaching effectiveness and professional development.

Statistically Significant Variations in Teachers' Perceptions of Functionality in the Flipped Classroom Approach

The study identified statistically significant variations in teachers' perceptions of the flipped classroom's functionality, influenced by two key factors: gender and the current workplace environment. These results indicate that both gender and the specific context of teachers' workplaces can affect their views on the effectiveness of the flipped classroom approach. This aligns with research by Gasparc et al., (2024), which also emphasized the impact of demographic and workplace factors on teachers' attitudes toward innovative teaching methods.

Significant Differences by Current Workplace

The results of the statistical ANOVA test reveal that there are significant differences in the perceptions of mathematics teachers regarding the functionality of the flipped classroom approach, based on the type of school where they currently work. This is illustrated in Table 6, with $F = 3.409$ and $p = .010$, which is less than $.05$.

Table 6: ANOVA- Test of Mathematics teachers’ perceptions on functionality in the flipped classroom approach based on school type

| | Sum of Squares | Df | Mean Square | F | Sig. |
|----------------|----------------|-----|-------------|-------|------|
| Between Groups | .145 | 2 | .076 | 3.309 | .010 |
| Within Groups | 40.113 | 241 | .1667 | | |
| Total | 40.361 | 243 | | | |

The results highlight the considerable impact and significant influence of the educational environment on teachers’ perceptions, stressing how the institutional context affects their readiness to embrace innovative teaching methods like the flipped classroom (FC) approach. This observation is consistent with earlier studies, including those by Johnson et al. (2016). which underscores how workplace settings and institutional support impact educators' readiness to embrace technology integration and digital literacy initiatives. Interviews with teachers further revealed that the unequal provision of technical facilities and equipment across schools in Sri Lanka, influenced by school classification, poses a major challenge to the effective implementation of the flipped classroom approach. Teachers from less-equipped schools expressed concerns about the lack of resources necessary to support this pedagogical approach, thereby limiting its functionality and effectiveness. Moreover, the study revealed statistically significant differences in teachers' perceptions of the flipped classroom approach based on gender. Female teachers, in particular, cited inadequate training in the use of technological tools as a barrier, further underscoring the need for equitable resource distribution and targeted professional development programs to bridge these gaps and promote the successful adoption of the flipped classroom methodology.

Statistically Significant Differences by Gender

The quantitative findings from the independent samples t-test, detailed in Table 3, indicate a statistically significant difference in mathematics teachers’ perceptions regarding the effectiveness of the flipped classroom (FC) approach, differentiated by gender. The two-tailed significance value of 0.000 is below the 0.05 threshold, suggesting that gender significantly influences teachers’ views on delivering digital literacy skills through the flipped classroom approach.

Table 7: T-Test Results for Independent Samples Examining Gender Differences in Mathematics Teachers' Perceptions of the Flipped Classroom Approach

| <i>Teachers' Perceptions Towards Flipped Classroom (FC)</i> | Gender | N | Mean | S. D | T | Sig.* |
|---|--------|-----|--------|--------|-------|-------|
| Total | Male | 84 | 2.3866 | .41894 | 4.320 | .000 |
| | Female | 160 | 2.1590 | .37477 | | |

The comparison of means and standard deviations reveals significant differences in perceptions of the functionality of the flipped classroom approach between male and female teachers. Male teachers exhibited a higher mean perception (M = 2.3866, SD = 0.41894) than female teachers (M = 2.1590, SD = 0.37477). This disparity, supported by a p-value of 0.000, indicates a statistically significant difference in perceptions between the two groups.

The qualitative findings from interviews with female teachers provide further context to these results. Many female participants identified inadequate training in the use of technological tools as a key challenge affecting their ability to effectively implement the flipped classroom approach. They highlighted that the lack of technical proficiency and support hinders the seamless integration of digital tools into their teaching practices, thereby impacting the functionality of the flipped classroom model.

Common Challenges in Adopting the Flipped Classroom Approach

The main challenges identified in the study were the need for target professional development for gender-specific barriers and the disparity in technical resources available under school classification.

Implementing the flipped classroom approach faces significant challenges in Sri Lanka, particularly when addressing gender barriers among teachers and the disparities in technical resources across different school classifications. Gender-based biases and stereotypes can influence how teachers adopt and adapt to technology-based teaching methods, with women in some contexts facing societal or institutional constraints that limit their access to training and resources. These barriers may stem from preconceived notions about technological proficiency or unequal opportunities for professional development, leading to hesitation or lack of confidence in utilizing flipped classroom techniques. Furthermore, disparities in technical resources available under school classifications exacerbate the challenges of adopting this approach. Schools in urban areas are often better equipped with advanced infrastructure, such as reliable internet, modern devices, and adequate technical support, making it easier to implement technology-driven educational models. In contrast, under-resourced schools, particularly those in rural or economically disadvantaged regions, may lack basic technological necessities, creating a significant digital divide.

This discrepancy has a direct effect on the extent to which the flipped classroom approach functions since teachers and students in economically disadvantaged schools face difficulties accessing pre-class materials, such as videos or interactive content, which are critical to the approach.

Challenges in implementing the flipped classroom approach to improve the experience of mathematics teachers

This study identified several challenges impacting teachers' experiences in implementing the flipped classroom approach in Sri Lanka. Key challengers include negative attitudes among teachers, principals, and administrative staff; the heavy workloads carried by educators; and cultural issues within schools that discourage innovation. Additionally, the lack of adequate technological resources for both teachers and students, especially at home, coupled with poor internet connectivity in rural areas, presents significant barriers. Many students still depend on traditional teacher-led instruction to learn mathematics heavily, further hindering the adoption of the flipped classroom approach because of its autonomous learning modal. Furthermore, interview results also revealed that teachers are often uninterested in using this method due to a lack of motivation and support from school administrations. School administrations do little to encourage alternative teaching methods beyond the standard methods introduced in professional development workshops conducted by the Ministry of Education or outlined in the teacher's guidelines for teaching mathematics. Without institutional support and a cultural shift within schools, teachers were not motivated to explore innovative strategies as the flipped classroom.

XII. CONCLUSION

To conclude, this study provides light on mathematics teachers' perceptions of the effectiveness of the flipped classroom approach, offering valuable insights into its functionality. The findings reveal that the mathematics teachers in the sample recognized the significance and potential of this approach. However, they identified significant barriers to creating a flexible learning environment for students within the Sri Lankan context. Despite these challenges, the study revealed that mathematics teachers hold positive perceptions of the role of a supportive learning culture and professional educator development in enhancing the potential of the flipped classroom approach. The study also found statistically significant differences ($\alpha \leq 0.05$) in teachers' perceptions of the functionality of the flipped classroom based on gender and the type of school where they currently work. The study also identified statistically significant differences ($\alpha \leq 0.05$) in teachers' perceptions of the effectiveness of the flipped classroom, influenced by their gender and the type of school where they currently work.

The differences highlight the impact of contextual and demographic factors on teachers' experiences and attitudes. On the other hand, several challenges were identified as obstacles to fully implementing the flipped classroom approach. These include negative attitudes among teachers, insufficient teacher training and refresher courses, heavy workloads for both teachers and principals, and school cultural issues that resist innovation. Additionally, the lack of adequate technological resources at schools and in homes, coupled with poor internet connectivity in rural areas, further hinders the adoption of this method. Another critical challenge is the persistent dependency of students on teacher-led instruction to learn mathematics, which limits the flexibility and autonomy that the flipped classroom aims to promote.

The findings highlight the necessity for targeted interventions to address these challenges and improve the implementation of the flipped classroom approach in mathematics education. Ensuring access to sufficient technical resources, enhancing internet connectivity, providing consistent teacher training programs, and cultivating a supportive school environment are crucial steps to overcoming these challenges. These interventions could not only improve teachers' experiences but also enable students to benefit from the innovative and flexible learning

opportunities in the flipped classroom approach.

XIII. RECOMMENDATIONS

Consequently, practice-based strategies should be employed to enhance the implementation of mathematics teaching in Sri Lanka. Based on the results of this study, the researcher recommends the following:

Changing teachers' perceptions is critical to addressing concerns about the lack of advanced technology for implementing the flipped classroom approach. By reorienting these concerns, educators can focus on utilizing simpler, more accessible tools to facilitate learning. For instance, basic learning management systems (LMS), worksheets aligned with textbook content, or structured study guides can be introduced as effective alternatives for delivering pre-class materials and supporting student engagement. These cost-effective solutions can bridge the gap until more advanced technological resources become available, enabling a gradual transition toward fully leveraging the flipped classroom approach. Developing appropriate and comprehensive strategies to develop teacher training workshop in the flipped classroom approach is essential for its success in Sri Lanka. Training programs should prioritize equipping teachers with the knowledge and competences necessary to create engaging pre-class materials, effectively oversee in-class activities, and make the best use of available technology. These programs should also emphasize the basic pedagogical principles underlying the flipped classroom to ensure teachers understand how to adapt the method to their specific teaching contexts. Additionally, refresher courses and continuous professional development opportunities should be provided to help teachers stay updated on new techniques, and best practices in flipped classroom implementation.

State policies should be established to promote the equitable distribution of technological resources among schools. These policies could mandate the direct sharing of resources between technologically enriched schools and under-resourced ones, fostering collaboration and resource optimization. For example, schools with advanced infrastructure could share digital tools, online content, or even host joint training sessions for teachers in nearby schools. Partnerships between schools, supported by government initiatives, can help reduce the digital divide and ensure that all students, regardless of their school's classification or location, have access to the resources needed for a successful flipped classroom experience. By addressing resource disparities through policy-driven collaboration, Sri Lanka can create a more equitable and supportive environment for implementing innovative teaching approaches. Encouraging teachers to conduct action research studies is vital for examining the impact and functionality of the flipped classroom approach. By engaging in such research, teachers can explore the practical application of this method in their specific educational contexts, gather evidence on its effectiveness, and identify areas for improvement. Action research enables educators to systematically evaluate the impact of the flipped classroom approach on student engagement, classroom dynamics and overall learning outcomes.

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