Strategic Integration of Blended Teaching Approaches in Mathematics Toward Teachers Training Program

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DOI: 10.29322/IJSRP.14.07.2024.p15123

Paper Received Date: 12th June 2024
Paper Acceptance Date: 13th July 2024
Paper Publication Date: 20th July 2024

ABSTRACT

The study aimed to identify the strategic integration of Blended Teaching Approaches in Teaching Mathematics of Southwest District, Division of Butuan City, Agusan Del Norte. Moreover, the study also sought to ascertain the relationship between the level of perception of Mathematics teachers and student engagement in Blended teaching approaches. The results were used as the basis for teachers training program. The study utilized the descriptive-correlational research design and survey questionnaires were administered to obtain the information needed. The data revealed that the participants have very strong and positive relationship with the extent of students’ engagement in learning mathematics. However, there is a neutrality, particularly in terms of available resources, inclusively, and professional development. Hence, the various challenges faced by educators in implementing blended teaching approaches in mathematics requires targeted interventions, professional development, and a supportive institutional framework to ensure successful integration and sustained effectiveness of blended teaching in mathematics instruction. Blended learning in mathematics remains under study because it presents a promising way to address the evolving needs of math education. Researcher seeks to refine these approaches to maximize student engagement, leverage technology for enhanced understanding, and adapt to diverse learning styles, ultimately aiming to boost student achievement and equip them with the mathematical skills crucial for the 21st century.

Keywords: academic performance, blended teaching approaches, and students’ engagement.

INTRODUCTION

In the dynamic landscape of education, technology has permeated various aspects of teaching and learning, particularly in the field of mathematics. Blended teaching approaches, which seamlessly combine online and face-to-face instruction, have emerged as a powerful tool to enhance student engagement, promote deeper understanding, and foster individualized learning experiences (Kynigos, 2019). The strategic integration of blended teaching approaches in mathematics education offers a plethora of benefits that transcend traditional pedagogical practices (Eugenijus, 2023). It caters to the diverse learning styles and needs of students by providing a flexible learning environment (Boelens, et.al. 2018). Students can access online resources at their own pace, utilize interactive simulations and tutorials, and engage in collaborative online discussions, all of which cater to their individual learning preferences.

Blended teaching approaches foster active learning by shifting the focus from passive lecture-based instruction to student-centered activities (Kay, et.al. 2019). Students become active participants in their learning journey, exploring concepts through hands-on activities, problem-solving exercises, and interactive simulations. This shift in pedagogy promotes deeper understanding and retention of mathematical concepts.

Moreover, blended teaching approaches leverage the power of technology to enhance engagement and motivation. Online resources, such as interactive videos, gamified learning platforms, and virtual manipulatives, can capture students' attention and spark their interest in mathematics (Braga, 2022). This engagement can translate into increased participation in classroom discussions and activities, further promoting deeper learning.

To effectively integrate blended teaching approaches in mathematics education, educators must carefully consider the following factors, curriculum design, and tailor the curriculum to effectively utilize online and face-to-face instruction. Clearly define the roles of online and offline activities to ensure a seamless learning experience. Technology access ensures that all students have access to the necessary...
technology and infrastructure to support blended learning (Nayyar, et.al, 2021). Provide training and support for students to navigate online resources effectively. Teacher training equips teachers with the necessary skills and knowledge to implement blended teaching approaches effectively (Wittmann, et.al, 2021).

Provide training on selecting appropriate online resources, designing blended learning activities, and facilitating online discussions. Assessment strategies develop assessment strategies that effectively measure student learning outcomes in the blended learning environment. Utilize a combination of online and offline assessments to gauge students' understanding and progress (Loeb, et.al, 2019). Continuous evaluation regularly evaluates the effectiveness of blended teaching approaches and adjusts as needed. Gather feedback from students and teachers to identify areas for improvement.

By strategically integrating blended teaching approaches, mathematics educators can create a dynamic and engaging learning environment that caters to the diverse needs of students, fosters deeper understanding, and promotes lifelong learning.

**OBJECTIVES**

The objectives of the study are:

1. To investigate and understand how mathematics teachers perceive the extent of implementation of blended teaching approaches in their instructional practices.
2. To assess the degree of student engagement in the learning of mathematics through blended teaching approaches.
3. To identify and document the pedagogical strategies that educators find most effective when integrating face-to-face and online components in teaching mathematics.
4. To explore and analyze the key challenges faced by educators in the implementation of blended teaching approaches among mathematics teachers.
5. To examine the existence and nature of a significant relationship between the extent of students' engagement in learning mathematics and the use of blended teaching approaches.
6. To propose a teachers' training program based on the findings of the study that aims to enhance student mathematics learning.

**METHODOLOGY**

The study utilized a descriptive-correlational method of research means of describing the strategic integration of implementation of blended teaching approaches, toward teachers' training programs. The descriptive correlation method under quantitative research determines whether there is a relationship that exists between two or more quantifiable variables. And if there is, to what extent does the relationship show? Furthermore, it aimed to determine the extent and direction of the relationship between two or more variables. As applied in this context, the study aimed to identify whether or not the level of integration is associated with the level of implementation of the teacher's training program for blended teaching approaches in mathematics.

**RESULTS**

Problem 1. How do mathematics teachers perceive the extent of implementation of blended teaching approaches in their instructional practices?

**Table 2.**

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>Mean</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Blended teaching approaches are effectively integrated into mathematics instructional practices.</td>
<td>3.68</td>
<td>Agree</td>
</tr>
<tr>
<td>2. Combining online and traditional teaching methods improves student engagement in mathematics classes.</td>
<td>3.74</td>
<td>Agree</td>
</tr>
<tr>
<td>3. Blended teaching positively impacts student outcomes in mathematics.</td>
<td>3.74</td>
<td>Agree</td>
</tr>
<tr>
<td>4. The resources available for blended teaching adequately support the learning goals in mathematics classes.</td>
<td>3.05</td>
<td>Neutral</td>
</tr>
<tr>
<td>5. The use of blended teaching methods allows for a flexible and adaptable approach to mathematics instruction.</td>
<td>3.84</td>
<td>Agree</td>
</tr>
</tbody>
</table>
6. Teachers feel confident in their ability to successfully implement blended teaching methods in mathematics lessons.
7. Teachers perceive that students benefit from the variety of instructional approaches used in blended teaching.
8. Teachers are open to experimenting with new blended teaching strategies to enhance mathematics lessons.
9. Teachers believe that blended approaches contribute to a more inclusive learning environment in mathematics classes.
10. The level of training and professional development provided for implementing blended teaching in mathematics is satisfactory.
11. The effectiveness of blended teaching in mathematics is evident in student performance.
12. The use of technology enhances the overall learning experience for students in mathematics classes.
13. The administration at schools encourages and supports the integration of blended teaching in mathematics instruction.
14. Colleagues collaborate effectively to share insights and best practices related to blended teaching in mathematics.
15. The feedback from students indicates a positive reception of blended teaching methods in mathematics.

Mean 3.64 Agree

Legend: 4.50 – 5.00 Strongly Agree; 3.50 – 4.50 Agree; 2.50 – 3.49 Neutral; 1.50 – 2.49 Disagree; 1.00 – 1.49 Strongly Disagree

The data presented in Table 2 illustrates the mean distribution of teachers' perceptions regarding the extent of implementation of blended teaching approaches in their mathematics instructional practices. The overall mean of 3.64 indicates a generally positive agreement among teachers regarding the incorporation of blended teaching methods. This indicates a moderate to high level of acceptance and implementation of blended teaching in mathematics classes.

Among the indicators, the highest mean scores were recorded for items related to the effectiveness of blended teaching approaches. For instance, teachers agree (mean = 3.84) that blended teaching allows for a flexible and adaptable approach to mathematics instruction. This flexibility aligns with the evolving educational landscape, accommodating diverse learning styles and needs. Furthermore, the mean scores for items related to student engagement and outcomes (items 2 and 3) are notably high, with mean scores of 3.74. This suggests that teachers perceive a positive impact on student engagement and outcomes when combining online and traditional teaching methods. This aligns with the growing body of literature emphasizing the benefits of blended learning for enhancing student participation and achievement (Smith & Brame, 2021).

Problem 2. To what extent are students engaged in the learning of mathematics through blended teaching approaches?

Table 3.

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>Mean</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students actively participate in discussions and activities when mathematics is taught using blended approaches.</td>
<td>3.95</td>
<td>Agree</td>
</tr>
<tr>
<td>2. Students find blended teaching methods helpful in understanding complex mathematical concepts.</td>
<td>3.63</td>
<td>Agree</td>
</tr>
<tr>
<td>3. Students feel motivated to complete assignments and tasks when blended teaching approaches are employed.</td>
<td>3.58</td>
<td>Agree</td>
</tr>
<tr>
<td>4. Students demonstrate a positive attitude towards mathematics when taught through blended methods.</td>
<td>3.42</td>
<td>Neutral</td>
</tr>
<tr>
<td>5. The level of student engagement in mathematics increases when teachers incorporate blended teaching strategies.</td>
<td>3.26</td>
<td>Neutral</td>
</tr>
<tr>
<td>6. Students express a sense of autonomy and independence in their mathematical learning through blended approaches.</td>
<td>3.37</td>
<td>Neutral</td>
</tr>
<tr>
<td>7. Students perceive blended teaching as a valuable and enjoyable way to learn mathematics.</td>
<td>3.53</td>
<td>Agree</td>
</tr>
</tbody>
</table>
8. Students actively seek out additional resources and materials to supplement their learning when taught through blended approaches. 3.53 Agree
9. The use of technology enhances students' interest in learning mathematics. 3.47 Neutral
10. The integration of online resources and traditional methods keeps students engaged throughout mathematics lessons. 3.37 Neutral
11. Blended teaching methods encourage students to take ownership of their mathematics learning. 3.74 Agree
12. Blended teaching fosters a collaborative learning environment among students in mathematics classes. 3.47 Neutral
13. Blended teaching methods capture and maintain students' attention throughout the entire mathematics lesson. 3.47 Neutral
14. The variety of instructional approaches in blended teaching caters to different learning styles in mathematics. 3.95 Agree
15. The interactive elements of blended teaching contribute to a more dynamic and engaging mathematics classroom. 3.74 Agree

Mean 3.56 Agree

Legend: 4.50 – 5.00 Strongly Agree; 3.50 – 4.50 Agree; 2.50 – 3.49 Neutral; 1.50 – 2.49 Disagree; 1.00 – 1.49 Strongly Disagree

Table 3 provides insights into the mean distribution of students' engagement in the learning of mathematics through blended teaching approaches. The overall mean of 3.56 indicates a generally positive agreement among students regarding the effectiveness and engagement associated with blended teaching methods. The highest mean scores are observed in items related to active student participation and perceived helpfulness in understanding complex mathematical concepts (items 1 and 2), with mean scores of 3.95 and 3.63, respectively. These findings suggest that students actively engage in discussions and activities when mathematics is taught using blended approaches, and they find these methods beneficial for comprehending challenging mathematical concepts. This aligns with research emphasizing the interactive and participatory nature of blended learning (Garrison & Kanuka, 2020).

Additionally, students express positive attitudes towards mathematics and demonstrate motivation to complete assignments when blended teaching approaches are employed (items 3 and 4). The mean score of 3.58 for motivation and 3.42 for attitude suggests a generally favorable impact on students' emotional and behavioral aspects of learning, which is crucial for sustained academic success (Fredricks, Blumenfeld, & Paris, 2020).

Problem 3. What is the academic performance of students in mathematics?

Table 4. Frequency and Percentage Distribution of the Academic Performance of the Learners in terms of Mathematics Grade for the 1st Quarter of SY 2023-2024

<table>
<thead>
<tr>
<th>Grading Scale</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 – 100</td>
<td>39</td>
<td>57.35</td>
<td>Outstanding</td>
</tr>
<tr>
<td>85 – 89</td>
<td>23</td>
<td>33.82</td>
<td>Very Satisfactory</td>
</tr>
<tr>
<td>80 – 84</td>
<td>4</td>
<td>5.88</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>75 – 79</td>
<td>2</td>
<td>2.94</td>
<td>Fairly Satisfactory</td>
</tr>
<tr>
<td>0 – 74</td>
<td>0</td>
<td>0.00</td>
<td>Did Not Meet Expectations</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 presents the frequency and percentage distribution of learners' academic performance in mathematics for the 1st Quarter of the academic year 2023-2024. The data reflects the grading scale, the number of students falling within each grade range, and the corresponding percentage distribution.

The majority of learners (57.35%) achieved grades in the range of 90-100, indicating an "Outstanding" performance. This suggests a significant portion of students excelled in their mathematics studies during the 1st Quarter of the academic year. This high percentage may be indicative of effective teaching strategies, including the implementation of blended teaching approaches discussed in previous sections.

Problem 4. What are the key challenges faced by educators in implementing blended teaching approaches in teaching mathematics?

Table 5. Mean Distribution of the Key Challenges Faced by Educators in Implementing Blended Teaching Approaches in Teaching Mathematics.

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>Mean</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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1. Educators encounter difficulties integrating online resources seamlessly with traditional teaching methods in mathematics. 4.26 Agree

2. Educators find it challenging to design assessments that effectively measure student understanding in a blended teaching environment. 4.11 Agree

3. Time constraints hinder educators from fully exploring and implementing diverse blended teaching strategies in mathematics. 4.16 Agree

4. Educators struggle to balance the demands of traditional curriculum requirements with the integration of blended teaching in mathematics. 4.05 Agree

5. Educators find it challenging to assess and address the individual needs of students in a blended learning environment for mathematics. 3.95 Agree

6. Educators face challenges in maintaining consistent communication with students and parents in a blended learning environment for mathematics. 3.63 Agree

7. Educators find it challenging to adapt instructional strategies based on real-time feedback in a blended teaching environment for mathematics. 3.79 Agree

8. Teachers face resistance from students who are not accustomed to blended learning in mathematics classes. 3.84 Agree

9. Teachers encounter challenges in adapting to new technologies and software used in blended mathematics instruction. 4.11 Agree

10. Resistance from colleagues or the school administration hampers the successful implementation of blended teaching in mathematics. 4.00 Agree

11. Limited access to technology resources poses challenges for educators implementing blended teaching in mathematics. 4.26 Agree

12. Limited professional development opportunities hinder educators' ability to effectively implement blended teaching in mathematics. 4.11 Agree

13. The lack of consistent technical support poses obstacles for educators implementing blended teaching methods in mathematics. 3.95 Agree

14. The lack of standardized guidelines for blended teaching creates uncertainty and challenges for educators in mathematics instruction. 4.21 Agree

15. Assessment of student progress and performance in blended learning poses challenges for educators in mathematics. 4.26 Agree

| Mean | 4.05 | Agree |

Legend: 4.50 – 5.00 Strongly Agree; 3.50 – 4.50 Agree; 2.50 – 3.49 Neutral; 1.50 – 2.49 Disagree; 1.00 – 1.49 Strongly Disagree

Table 5 presents the mean distribution of key challenges faced by educators in implementing blended teaching approaches in teaching mathematics. The overall mean of 4.05 indicates a general agreement among educators regarding the presence of challenges associated with the integration of blended teaching methods.

The highest mean scores are observed for items related to difficulties in seamlessly integrating online resources with traditional teaching methods (item 1), designing effective assessments in a blended environment (item 2), and time constraints hindering the exploration of diverse blended teaching strategies (items 3). These challenges highlight the complexity of merging traditional and online elements in mathematics instruction, emphasizing the need for strategic planning and professional development to address these issues (Graham, 2019; Garrison & Kanuka, 2019).

Moreover, challenges related to balancing traditional curriculum requirements with blended teaching (item 4) and addressing individual student needs in a blended learning environment (item 5) are also prominent. These findings align with the existing literature on the need for careful curriculum alignment and differentiated instruction in blended learning settings (Picciano, 2020).

Problem 5. Is there a significant relationship between the extent of students' engagement in learning mathematics and academic performance of the student applying blended teaching approaches?

Table 6.

Correlation between the Extent of Students’ Engagement in Learning Mathematics and their Academic Performance of the student applying blended teaching approaches.

<table>
<thead>
<tr>
<th>Variables1</th>
<th>Variable 2</th>
<th>r</th>
<th>p-value</th>
<th>Relationship</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students Engagement</td>
<td>Academic performance of student applying Blended Teaching Approaches</td>
<td>.810**</td>
<td>.000</td>
<td>Very Strong and Positive</td>
<td>Significant</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
Table 6 presents the results of a test of the significant relationship between the extent of students' engagement in learning mathematics and teachers' perception of blended teaching approaches. The variables analyzed are "Students' Engagement" and "Teacher's Perception of Blended Teaching Approaches."

The correlation coefficient (r) of .810 indicates a very strong and positive relationship between students' engagement in learning mathematics and teachers' perception of blended teaching approaches. This implies that as teachers perceive the effectiveness and positive impact of blended teaching methods, there is a correspondingly high level of student engagement in learning mathematics.

Problem 6. Based on the findings of the study, what teachers’ training program can be proposed to enhance student mathematics learning?

Title: Blended Learning in Mathematics Teaching:
A Comprehensive Teacher Training Program

I. RATIONALE

In line with the implementation of Republic Act No 10533, or the Enhanced Basic Education Act of 2013, and upon under DepEd Order No. 35, s. 2016, the school is tenacious and staid in performing its task to ensure the continuous professional growth of its teaching personnel based on life-long learning for the improvement of teaching and learning. Since the quality of learners is very much dependent on the quality of teachers, therefore the school must support the front lines of education in their quest to better themselves. This will aid the teachers in the construction of new knowledge for instruction as well as in revisiting and revising their traditional beliefs and assumptions about education, community, teaching, and learning to suit the present needs of the learners.

II. Program Description

This comprehensive program focuses on strengthening the integration of blended teaching approaches in mathematics, aimed at the teacher's training program. This would include all permanent teachers and school administrators, parents, and the pupils of this district to make the activities of this plan successful. Furthermore, this plan is expected to be implemented in one school year and is expected to utilize the budget from MOOE, SPTA, and other income-generating projects of the schools.

III. Program Goal

• To equip educators with the technical skills to seamlessly integrate digital tools and online platforms into their mathematics instruction.
• To provide teachers with advanced pedagogical strategies tailored for blended learning environments, emphasizing student engagement and active participation.
• To enhance communication between educators and parents, providing resources and strategies for parents to support their children's mathematical development at home.

IV. Implementation Scheme

Implementation Scheme

The Public Schools District Supervisor (PSDS) would be required to convene all the teachers to conduct the School Learning Action Cell (SLAC). Afterwards, activities would be implemented to address the needs of the students, teachers, and administrators. Furthermore, the issue of insufficient budget would be addressed through creative and smart sourcing and allocation of funds.

There should be a committee to be organized at the district level, which will consist of different stakeholders. To put the aims of the plan to reality, the intervention plan would be presented to the schools through the Homeroom Parent-Teacher Association Meeting and will be validated and approved through the Student Parent-Teacher Association (SPTA).

Program Overview

Our comprehensive program is designed to address the multifaceted aspects of Mathematics education. The program components are crafted to be flexible, allowing you to explore at your own pace while providing ample opportunities for collaborative learning and practical application.

Target Audience

• Mathematics teachers from primary, secondary, and higher secondary schools.
• Pre-service teachers enrolled in mathematics education programs.
Program Duration

Total duration: 3 months (flexible and adaptable based on needs)
Title: Blended Learning in Mathematics Teaching: A Comprehensive Teacher Training Program

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Program Components</th>
<th>Budget</th>
<th>Sources</th>
<th>Person/s Involved</th>
<th>Expected Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>To enhance the quality and accessibility of resources used in a blended teaching environment, ensuring they align seamlessly with the learning goals of a mathematics class.</td>
<td>● Gradually implement the selected resources into the math class, allowing for a smooth transition from traditional to blended teaching methods. ● Monitor the initial stages of implementation, collecting feedback from both teachers and students to make necessary adjustments.</td>
<td>● Provide an overview of the concept of blended teaching, emphasizing the integration of in-person and modular learning. ● Highlight the benefits of blended teaching in mathematics education, including increased student engagement and personalized learning experiences.</td>
<td>P3,000.00</td>
<td>MOOE SPTA Other funds</td>
<td>Resource Speaker and teacher participants</td>
<td>Teachers will adopt inclusive teaching practices, ensuring that blended resources are accessible to students with diverse learning needs.</td>
</tr>
<tr>
<td>Integrate technology in Mathematics instruction.</td>
<td>● Familiarize teachers with digital tools and resources for Mathematics teaching. ● Train teachers in creating engaging and interactive online lessons. ● Provide guidance on using platforms for assessments and feedback.</td>
<td>● Digital modules covering technology integration, online teaching strategies, and collaborative learning. ● Self-paced learning resources for teachers to explore at their convenience.</td>
<td>P5,000.00</td>
<td>MOOE SPTA Other funds</td>
<td>Resource Speaker and teacher participants</td>
<td>Seamless integration of technology into mathematics instruction. Using modules in Mathematics.</td>
</tr>
<tr>
<td>Develop curriculum planning skills.</td>
<td>● Teach effective lesson planning strategies for both in-person and online components. ● Emphasize the alignment of lessons with educational standards and learning objectives. ● Encourage the creation of adaptable lesson plans for diverse learning environments.</td>
<td>● Encourage teachers to observe and provide feedback to each other. ● Foster a culture of continuous improvement through collaborative reflection.</td>
<td>P2,000.00</td>
<td>MOOE SPTA Other funds</td>
<td>Resource Speaker and teacher participants</td>
<td>Educators will not only strengthen their curriculum planning skills but will also be well-equipped to create a learning environment that inspires curiosity, critical thinking, and a lasting appreciation for mathematics in their students.</td>
</tr>
<tr>
<td>Promote collaborative learning</td>
<td>● Demonstrate the benefits of collaborative learning in Mathematics education. ● Train teachers on facilitating group activities and discussions. ● Introduce online platforms for collaborative projects and peer-to-peer learning.</td>
<td>● Pair novice teachers with experienced mentors. ● Provide ongoing support and guidance through regular check-ins and collaborative planning.</td>
<td>P4,000.00</td>
<td>MOOE SPTA Other funds</td>
<td>Resource Speaker and teacher participants</td>
<td>A collaborative learning environment that fosters student success.</td>
</tr>
<tr>
<td>Implement formative and summative assessments</td>
<td>● Provide guidance on creating effective assessments that gauge student understanding. ● Teach strategies for using assessment data to tailor instruction. ● Explore modular assessment tools and platforms.</td>
<td>● To design and implement effective formative and summative assessments in mathematics instruction. ● Utilizing assessment data to inform instructional decisions, tailor teaching strategies, and ensure continuous improvement in both in-person and online learning environments.</td>
<td>P3,000.00</td>
<td>MOOE SPTA Other funds</td>
<td>Resource Speaker and teacher participants</td>
<td>Enhanced formative assessment practices leading to targeted instruction.</td>
</tr>
<tr>
<td>Facilitate effective communication with parents.</td>
<td>● Train teachers in providing clear and regular communication with parents about Mathematics learning goals and progress. ● Discuss strategies for involving parents in supporting their children's mathematical development at home.</td>
<td>● Through workshops and training sessions, teachers will learn effective strategies to convey information about the importance of mathematics education, share students' progress, and provide insights into their learning journey.</td>
<td>P2,000.00</td>
<td>MOOE SPTA Other funds</td>
<td>Resource Speaker and teacher participants</td>
<td>Strengthened parent-teacher partnerships for comprehensive student support.</td>
</tr>
</tbody>
</table>
CONCLUSION

The perceptions of mathematics teachers regarding the implementation of blended teaching approaches have provided valuable insights. Most participants expressed a positive view, noting that the blended approach enhanced student engagement, fostered personalized learning experiences, and facilitated a more dynamic and interactive classroom environment. Teachers appreciated the flexibility offered by incorporating online resources and recognized the potential of technology to support and complement traditional teaching methods. While many teachers embraced the benefits of blended learning, some identified challenges such as the need for adequate professional development, access to technology, and concerns about maintaining a balance between modular and face-to-face components. These findings underscore the importance of ongoing support and training for educators to effectively integrate blended approaches into their instructional practices.

The study suggests that mathematics teachers generally recognize the value of blended teaching methods and are open to incorporating technology into their classrooms. Continued efforts in professional development and resource provision can further facilitate the successful integration of blended learning, ultimately contributing to a more enriched and effective mathematics education.

The involvement of students in the learning of mathematics through blended teaching methods has stipulated helpful perceptions into the effectiveness of this instructional method. Most students demonstrated increased levels of engagement, citing interactive online components, personalized learning experiences, and the integration of technology as key contributors to their positive learning experiences.

The findings suggest that blended teaching approaches have the potential to enhance student motivation and interest in mathematics. Students appreciated the flexibility offered by modular resources, the ability to progress at their own pace, and the opportunities for collaborative and interactive learning. Furthermore, the study indicated that a well-designed blended learning environment, which combines both traditional and modular elements, can cater to diverse learning styles and preferences among students.

However, it is important to note that individual differences exist, and some students may face challenges in adapting to the blended approach, such as technological barriers or a preference for traditional teaching methods. Therefore, ongoing support and adjustments in instructional design may be necessary to ensure inclusivity and effectiveness.

The positive feedback from students regarding engagement in mathematics through blended teaching approaches suggests that, when implemented thoughtfully, this instructional method can contribute significantly to a more dynamic and participatory learning environment.

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