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MAXIMIZING THE EFFICACY OF KOOBITS: FOSTERING COLLABORATIVE LEARNING ENVIRONMENTS AND FACILITATING TEACHERS' TECHNOLOGY INTEGRATION IN EDUCATION

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Abstract

This study investigates how well the digital learning platform KooBits works to improve collaborative learning in arithmetic classes in primary schools in the Philippines' Siargao division. The study uses a qualitative research approach and conducts a thematic analysis using data from focus groups, interviews, and classroom observations. The dynamics, difficulties, and advantages of using KooBits in teaching methods are revealed by this analysis. The results show that KooBits dramatically increases student zeal and engagement, turning disengaged pupils into engaged learners. This shift fosters a lifelong passion for learning in addition to improving academic performance. Moreover, KooBits fosters student collaboration by motivating even the most introverted kids to participate and communicate in the classroom. This change fosters critical abilities like communication, teamwork, and conflict resolution in a more dynamic and inclusive learning environment. The study does, however, also point out several serious difficulties, chief among them being the scarcity of essential digital tools and dependable internet connectivity. Due to the learning challenges caused by the digital divide, students may feel unfairly treated and excluded. The study also reveals a growing gap between the requirements of modern students—who are more receptive to interactive and technologically assisted instructional approaches—and traditional lecture-based methods. In summary, although KooBits successfully alters the dynamics of the classroom and student involvement, it also emphasizes the necessity of fair access to digital resources and a change to more interactive teaching approaches to meet the changing needs of today's students.

Keyword: *KooBits, Collaborative Learning, Mathematics Intervention, Digital Divide, Educational Achievement*

A. INTRODUCTION

In the dynamic realm of Philippines education, the pursuit of improving learning experiences and results is an ongoing undertaking. In the field of mathematics education, like in any other field, educators from around the world are constantly looking for new and creative tools and strategies to include students and create productive learning environments. Collaborative learning has become increasingly popular as an educational method that encourages active engagement, analytical thinking, and the exchange of knowledge among

students. In response to this change in teaching methods, digital technology has become a significant asset, providing flexible tools to improve cooperation and participation in the classroom hence, an example of a tool that has attracted notice in recent years is KooBits (KooBits, 2021).

Moreover, the importance of collaborative learning in mathematics is immense. Mathematics is commonly regarded as an individual discipline, where students engage in independent problem-solving to tackle intricate problems (Schwarz et. al., 2021). Nevertheless, this educational research emphasizes the significance of cooperative learning in mathematics classrooms. Thus, collaborative learning environments have been shown to enhance students' mathematical proficiency while also fostering vital life skills such as teamwork, communication, and problem-solving capabilities. These talents are extremely essential in equipping pupils for the difficulties of the 21st century.

Schools Division of Siargao is an educational institution that prioritizes academic achievement and is leading the way in implementing novel teaching tactics to improve the academic performance of students in mathematics programs. Thus, the SDO- Siargao acknowledges the capacity of digital tools such as KooBits to revolutionize conventional teaching approaches by fostering collaborative, interactive, and captivating learning experiences. This study initiative was launched to evaluate the efficacy of KooBits in promoting collaborative learning settings in the field of mathematics education (KooBits, 2018).

The objective of this study is to investigate and assess the influence of KooBits on collaborative learning settings in students in mathematics classes at public elementary schools of Siargao Division, Philippines, based on the lived experiences of the teachers. Through an examination of the incorporation of this digital platform in the educational setting, our objective is to acquire a deeper understanding of its possible advantages and difficulties in fostering cooperative learning among students. Furthermore, this study aims to ascertain any alterations in student attitudes, performance, and overall learning experiences that arise from the integration of KooBits into the curriculum.

To provide context for this research, it is crucial to emphasize the fundamental characteristics and functionalities of KooBits. With this regard, KooBits is an educational technology platform that provides a variety of tools and materials specifically geared to assist mathematics educators and students. These encompass interactive activities, collaborative problem-solving chances, and real-time feedback methods. KooBits offers a platform that enables teachers to oversee student advancement, customize classes according to individual

requirements, and foster collaborative discussions (KooBits Philippines, 2014). This study aims to evaluate the efficacy of this dynamic digital environment as a stimulus for collaborative learning in mathematics. Although this study primarily examines the implementation of KooBits at elementary schools, its consequences transcend the confines of this school. The results of this study can be a significant resource for mathematics instructors, educational institutions, and policymakers worldwide who are contemplating the implementation of similar digital tools to improve collaborative learning settings in mathematics classes.

Hereinafter, this study aims to elucidate the capacity of KooBits as a catalyst for change in the field of mathematics education, specifically in relation to the promotion of collaborative learning. Through our investigation of its efficacy at Elementary Schools, the objective is to provide significant contributions to the wider discussion on educational technology and its impact on cultivating interactive and cooperative learning environments. In the following sections of this study, we will explore the methodology, data collecting, analysis, and conclusions that will offer a thorough comprehension of the influence of KooBits on mathematics teaching. This project aims to facilitate the ongoing development of teaching methods, ultimately improving the educational experience and achievements of students in mathematics classrooms.

B. RESEARCH METHOD

This research project will employ a qualitative research design to evaluate the effectiveness of KooBits in fostering collaborative learning environments within elementary mathematics classes in the Schools Division of Siargao, Philippines. The primary sources of data are Mathematics teachers, selected through purposive random sampling, who will participate in in-depth interviews and focus group discussions. Data collection will be facilitated by a researcher-developed questionnaire and interview guide, designed to capture rich, qualitative insights into the teachers' lived experiences with integrating KooBits and their observations of its impact on student collaboration. The instrument's validity will be ensured through a rigorous review by experts in mathematics education and educational technology.

Data analysis will employ two primary tools. Frequency count and percentage distribution will be used to describe the demographic profile of the participating teachers. Subsequently, thematic analysis will be applied to the qualitative data gathered from interviews and focus groups. This method will be used to identify, analyze, and report recurring patterns and themes related to the core research inquiries: the observed changes in student engagement

and collaboration when using KooBits, and the challenges teachers encounter in implementing the platform, alongside potential strategies to address these challenges.

C. RESULT AND DISCUSSION

THEMATIC ANALYSIS

Theme 1: Motivational Strategy

Educators' responses suggest that the KooBits learning intervention greatly improves pupils' creative learning. KooBits effectively stimulates students to actively engage in their learning process by incorporating unique and engaging techniques. This technique not only motivates students to finish tasks and engage in activities with eagerness but also cultivates a more profound comprehension and memory of the content. KooBits offers interactive features and customized information that aim to engage students and enhance their learning experience by making it more dynamic and interesting which not only enhances their academic achievement but also cultivates a lifetime passion for acquiring knowledge.

Respondent 1: “I notice that those pupils who are often classified as destructive in class, already engage in the activities.”

Respondent 2: “I observed that learners became excited to answer their assignment, which in turn reflected on their interest to learn, and during my discussion, I observed that they developed being a good listener.”

Respondents 5: “My pupils are more motivated to listen in my discussion and eager to learn something they could with higher points in the activities in KooBits.”

Respondent 6: “My pupils became motivated to listen and engage in activities that they have been answered through KooBits, hence, those who were low in class become more attentive”

Respondent 11: “I found that students are now attentive and willing to learn and engage in the lesson and activities, I see that they feel excited to answer KooBits quizzes and activities”.

Theme 2: Promote Collaborative Learning

Teachers have noted that the KooBits intervention effectively enhances teamwork and collaboration in educational settings. This intervention is specifically designed to foster collaboration among students, utilizing their different abilities and perspectives to effectively address problems and accomplish projects thus, it fosters the development of crucial skills including communication, teamwork, and dispute resolution by promoting group activities and debates.

Respondent 3: "Pupils who are secretive become open with their peers, one factor that contributes is the limited gadget that they pursue to share with those who don't have."

Respondent 4: "Pupils have been developing confidence to ask their peers regarding their KooBits activities; hence, they develop openness with their classmates."

Respondent 6: "Pupils who prefer to do their projects and assignments alone, become more engaging and motivated to review assignments with their classmates."

Respondent 9: "Students with advanced knowledge in the discussion, guide their classmates to answer in KooBits and give those lower ones a tutorial."

Respondent 11: "Through KooBits Intervention, slow learners try to ask assistance from their classmates who have advanced access to technologies, especially does who do not possess in having gadgets."

Respondent 15: "Using KooBits Intervention, pupils become more interactive in the discussion, especially, in collaborative activities, the integration of KooBits bridges the bond between the pupils to help each other, gaining more sufficient ways in answering assignments, and achieving activities."

Theme 3: Obstacle in Conscientious Learning

Most of the teacher-respondents affirmed that the Intervention is an obstacle in learning to those conscientious students who are eager to learn but do not have gadgets and/or digital technology to access in KooBits.

Respondent 5: "Many students feel excluded from accessing KooBits because they do not have the requisite digital devices and technological infrastructure. This discrepancy not only impedes their capacity to interact with the educational platform but also affects their perception of inclusion and fairness within the academic setting. We must tackle these technological disparities to guarantee that every student feels encompassed and has equitable access to reap the advantages of digital learning tools such as KooBits."

Respondent 7: "70% of my students do not have gadgets to be used, especially since our Island is considered a remote place, thus, there is no internet connection or data connection in school and even at their residences."

Respondent 9: "Some of my pupils who have gadgets like Android cannot access the application because of a poor internet connection, especially in the remote areas in the islands of Siargao. Most of them found it hard to connect online and find a stable internet connection which limits their willingness to commit and do their assignment."

Respondent 11: "Several of my students encounter substantial difficulties in accessing online platforms for digital educational activities, despite owning smartphones or tablets. A significant obstacle for many individuals is the absence of a dependable Wi-Fi connection in their residences. This connectivity issue not only impedes their capacity to fully engage in online classes but also impacts their general ability to get educational resources and accomplish assignments that necessitate internet access. It is imperative to address this disparity in access to digital resources to ensure that all children have equal opportunities for learning."

Respondent 12: "A portion of my students feel obligated to spend additional time in internet cafés to finish their tasks, which not only exposes them to potential dangers but also imposes a financial strain on those who cannot afford consistent access. Consequently, individuals are unable to access sites such as KooBits, which hinders their capacity to fully engage in tasks. This scenario highlights the necessity for implementing more comprehensive access solutions to guarantee that all students have an equitable opportunity to engage with their educational resources securely and efficiently."

Theme 4: Teacher Experiences and Perceptions of Lecture-Discussion Pedagogical Approaches.

Teachers express a feeling of inefficacy in their existing instructional methods, observing that despite their endeavors, the anticipated educational advantages are not realized. The responses emphasize the urgent requirement for instructional tactics that are not only more captivating but also more suited to the current needs and learning preferences of students. There is a significant demand for teaching approaches that integrate interactive components, efficiently employ technology, and offer relevance to students' lives and future goals. Moreover, meeting these needs is considered crucial for promoting student engagement, improving educational outcomes, and cultivating a more inclusive and stimulating learning environment. This transition necessitates a reassessment of teaching methods to guarantee they can effectively captivate the digitally savvy generation.

Respondent 3: "A significant number of my pupils display a lack of engagement during conversations, especially when these discussions entail complex mathematical calculations. Their disengagement becomes particularly evident as their involvement decreases and the caliber of their activities declines. The lack of connection I experience makes me believe that my contributions in these conversations are not producing the desired educational advantages, emphasizing the necessity for more interactive and captivating teaching methods that may effectively catch and maintain their interest."

Respondent 7: “I have noticed that my students exhibit a contemptuous demeanor towards the conventional lecture-discussion method. They frequently find it challenging to establish a connection with the content offered during these discussions, resulting in their lack of participation. Oftentimes, rather than actively engaging or displaying curiosity, they opt to utilize their smartphones, thereby diverting their focus from the instructional material under discussion. This conduct suggests a notable disparity between the teaching approach and the student's learning preferences or requirements, indicating a necessity for more engaging or relatable educational tactics.”

Respondent 8: “Based on my observations, I have seen a significant absence of motivation among several of my students, which is particularly evident during sessions dedicated to reviewing their assignments. This lack of interest is apparent not just in their unwillingness to actively engage in these review activities, but also in their constant disregard for verifying their work. This pattern indicates a more profound problem with engagement that must be resolved to improve their learning experience and academic accountability.”

Respondent 13: “Throughout my lectures, I have observed that the pupils frequently exhibit disinterest; a significant number appear fatigued or drowsy, and their overall level of focus diminishes. When I inquire about any questions or the need for additional explanation on the subject, the kids remain silent and do not provide any comments. The absence of engagement implies that the lecture format may not be successfully captivating their attention or enabling their comprehension.”

D. CONCLUSION

The study's findings reveal that KooBits has a transformative impact on elementary mathematics education by significantly enhancing student engagement, motivation, and collaborative learning. Teachers observed that the platform’s interactive and personalized features successfully converted previously disinterested students into active participants, fostering not only improved academic comprehension but also a lasting enthusiasm for learning. Furthermore, KooBits was instrumental in creating a more dynamic and inclusive classroom environment, encouraging even introverted students to collaborate with peers. This shift has helped develop essential social skills like communication and teamwork, demonstrating the platform's effectiveness in using technology to bridge learning gaps and foster a supportive educational community.

The research also identified significant challenges that hinder the equitable implementation of KooBits, primarily the lack of digital devices and reliable internet connectivity. This digital divide creates feelings of exclusion among diligent students and forces some to resort to unsafe alternatives like internet cafés, underscoring a pressing need for systemic intervention. Additionally, the findings highlight the inadequacy of traditional lecture methods in engaging modern students, who show a clear preference for interactive, technology-driven learning. Consequently, the study recommends targeted investments in digital infrastructure, along with professional development for teachers to integrate blended learning models, ensuring that the benefits of KooBits can be realized by all students.

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