

Effectiveness of Using Math Kids Game Media to Improve Addition Ability in Intellectual Disability Students at SLB Negeri 2 Yogyakarta

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ABSTRACT

This study examines the effectiveness of Math Kids Game media in improving addition skills among students with intellectual disabilities at SLB Negeri 2 Yogyakarta. The research involved two participants, one male and one female, using a pre-experimental one-group pre-test post-test design. Data collection included pre- and post-test assessments analyzed through descriptive qualitative methods with narrative and graphical representation. Results indicated a significant improvement in addition skills, with pre-test scores averaging 50% and post-test scores rising to 95%. The findings highlight the potential of interactive, game-based learning tools to enhance motivation, engagement, and comprehension in special education settings. This study underscores the importance of integrating innovative media into teaching practices to create inclusive and effective learning environments, suggesting broader applications for similar tools in other academic domains.

Keywords: Game, Math Kids, Addition, Mathematics, Intellectual Disabilities

INTRODUCTION

Mathematical skills, particularly addition, constitute a fundamental component of academic development for students. However, students with intellectual disabilities (ID), such as those in SLB Negeri 2 Yogyakarta, often face significant challenges in mastering mathematical concepts. These difficulties stem from various factors, including cognitive limitations, struggles with abstract thinking, and a lack of motivation to engage in learning activities. Traditionally, mathematics instruction for fourth- and fifth-grade students with ID in this school has relied on conventional media, such as concrete objects for manual counting. While effective to some extent, this approach is monotonous, limiting active student participation and often leading to boredom.

The limitations of conventional methods highlight the need for innovative instructional media that can better engage students and enhance their learning outcomes. One such alternative is the Math Kids Game, a digital learning tool designed to facilitate mathematics education. Accessible via mobile devices, and adaptable for classroom use through laptops and projectors, this game-based media introduces a dynamic and interactive approach to learning addition. Its playful and visually stimulating design captures students' attention and fosters active engagement, making it a promising solution for addressing the aforementioned challenges (Badiah, L. I., & Kurniawan, A. 2022).

Integrating Math Kids Game into mathematics instruction offers several advantages. By leveraging the interactive and gamified features of this tool, students are more likely to find the learning process enjoyable, reducing boredom and increasing motivation. Furthermore, the digital nature of the game provides flexibility, allowing students to practice addition skills both at school and at home. This expanded accessibility supports the continuous reinforcement of learning, thereby improving the students' ability to grasp and apply mathematical concepts (Jauhari, M. N., et al. 2022). Additionally, the tool offers teachers a versatile and practical medium to introduce variations in teaching methods, which can better cater to the diverse needs of students with ID.

The adoption of the Math Kids Game in SLB Negeri 2 Yogyakarta represents a strategic step toward enhancing the addition skills of students with intellectual disabilities. By combining engaging, game-based learning with the flexibility of digital media, this approach addresses the limitations of traditional teaching methods while fostering an environment of active participation and sustained interest (Kurniawan, A., & Badiah, L. I. 2021). With its potential to positively impact both in-class learning and independent practice, this innovative media is poised to significantly contribute to the academic development of students with ID, offering a scalable and sustainable model for mathematics education in special schools (Purwasih, S. 2022).

METHOD

The subjects of this research comprised two students with intellectual disabilities at SLB Negeri 2 Yogyakarta, including one male and one female participant. The focus of the study was the implementation of Math Kids Game as an instructional medium. The research adopted a quantitative methodology, employing a pre-experimental design characterized by a one-group pre-test and post-test approach. In this design, assessments were conducted twice: initially as a pre-test prior to the intervention and subsequently as a post-test following the intervention. The framework of the one-group pre-test post-test design served as the foundation for evaluating the outcomes.

The data analysis utilized in this study combined descriptive qualitative techniques with assessments presented in narrative and graphical formats. The results obtained from these assessments were analyzed through an inductive process, aimed at deriving general conclusions from specific observations. This inductive reasoning involved interpreting data trends using graphs and tables, which were then synthesized into comprehensive narratives. Data collection relied on observations and test results, providing a robust basis for evaluating the effectiveness of the Math Kids Game in enhancing mathematical addition skills among the participants.

RESULT

The results of the study revealed a significant improvement in the mathematical addition skills of both participants following the intervention with the Math Kids Game. Before the treatment, both students, HK and FA, scored 50% on the pre-test, reflecting moderate proficiency in addition skills. However, after the intervention, their post-test scores demonstrated remarkable progress. HK achieved a score of 90%, while FA achieved a perfect score of 100%, indicating a substantial enhancement in their abilities. This improvement underscores the effectiveness of the Math Kids Game as a learning tool in supporting students with intellectual disabilities.

On average, the pre-test scores for the group were 50%, whereas the post-test average increased dramatically to 95%, representing an overall improvement of 45 percentage points. This significant rise in the average score highlights the potential of interactive, game-based media to enhance engagement and comprehension among students with intellectual disabilities. The findings suggest that employing innovative and interactive methods, such as the Math Kids Game, can greatly contribute to the development of core academic skills in special education settings.

Table 1. pre-test and post-test results

No	Name	Percentage of Result	
		Pre-Test	Post-Test
1.	HK	50%	90%
2.	FA	50%	100%
Average		50%	95%

The findings of this study demonstrate that the Math Kids Game media is highly effective in improving addition skills among students with intellectual disabilities. The pre-test and post-test results indicate a significant improvement in both individual and group performance, with scores increasing from an average of 50% to 95%. This improvement reflects the ability of interactive and engaging tools to address the unique learning needs of these students, particularly in overcoming cognitive barriers and sustaining their attention. The game-based format of the Math Kids Game appears to provide an enjoyable learning experience, thereby fostering motivation and reducing the monotony associated with conventional teaching methods.

Interactive learning tools like Math Kids Game hold immense potential in special education settings. Unlike traditional methods that rely heavily on repetitive counting of physical objects, digital media engages multiple senses and encourages active participation. The significant increase in students' post-test scores highlights the impact of integrating such tools into teaching practices. The adaptive features of the Math Kids Game, including visual stimuli, interactive challenges, and immediate feedback, cater specifically to the learning preferences of students with intellectual disabilities. Moreover, the ability to use this tool both in the classroom and at home enables continuous learning, reinforcing concepts beyond the structured school environment (Purwasih, S. 2021).

The success of Math Kids Game in this study underscores the need for educators to adopt innovative teaching strategies tailored to the needs of students with intellectual disabilities. By incorporating gamified and technology-based interventions, teachers can create more inclusive and effective learning environments. Additionally, the significant improvement in performance suggests that similar tools can be applied to other areas of learning, such as subtraction, multiplication, and division. These findings encourage further research into the broader application of digital learning tools in special education and emphasize the importance of integrating technology to enhance the academic development of students with diverse abilities (Rafikayati, A., et al. 2024).

CONCLUSION

This study concludes that the Math Kids Game media is an effective tool for improving addition skills in students with intellectual disabilities. The significant increase in scores from the pre-test to the post-test, with an average improvement from 50% to 95%, highlights the potential of interactive, game-based learning tools to address the unique challenges faced by these students. By fostering engagement, enhancing motivation, and providing a dynamic learning experience, Math Kids Game successfully supports the development of foundational mathematical skills.

The findings emphasize the importance of incorporating innovative teaching methods in special education settings. The adaptability and accessibility of the Math Kids Game allow for its application both within and beyond the classroom, enabling continuous learning. This underscores the value of integrating technology into teaching practices to create inclusive, effective, and engaging learning environments for students with intellectual disabilities.

Overall, this research supports the broader adoption of interactive media as a strategy for improving educational outcomes in special education. Future studies should explore the application of similar tools in other academic areas to further enhance the learning experiences and achievements of students with diverse abilities.

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