special
Special and Inclusive Education Journal
OPEN ACCESS

Improving English Reading and Writing Ability for Students with Intellectual Disabilities Through the Development of Website-Based Bright Learning Media in Special Schools

Rizqi Fajar Pradipta*, Dimas Arif Dewantoro, Wiwik Dwi Hastuti, Lilik Yulia Yasmine, Fadilah Ariani
Corresponding Author: rizqi.fajar.fip@um.ac.id
Universitas Negeri Malang, Indonesia

ABSTRACT

This study aims to develop and evaluate the effectiveness of BRIGHT, a website-based learning media designed to enhance English reading and writing skills among students with intellectual disabilities at Malang Special School. The study employs a pre-experimental method with a pre-test and post-test design involving a single group of 20 students. The findings reveal a significant improvement in students' reading and writing abilities, with the average pre-test score of 45 increasing to 75 post-treatment. These results demonstrate that technology-based learning media can be an effective tool for educating students with intellectual disabilities, enhancing their educational access, and improving their academic performance.

Keywords: Intellectual Disabilities, BRIGHT Learning Media, English Reading and Writing Ability

INTRODUCTION

English is vital in global communication as it serves as an international language. According to Saragih (2022), proficiency in foreign languages, mainly English, is crucial for a nation's progress. The growing demand for English proficiency has led many countries, including Indonesia, to emphasize mastery of the language within their education systems (Anggraini et al., 2022). As a global lingua franca, English is essential for all individuals, including students with intellectual disabilities. However, these students often face challenges in learning English due to difficulties understanding the material, lack of motivation, and less effective teaching methods (Sukmawati, 2020).

These challenges stem from the characteristics of students with intellectual disabilities, who often struggle to comprehend educational content due to below-average intelligence levels (Nafsiah et al., 2020). Such students require a different pedagogical approach from that used with typical children, as they need more time to process the material. Engaging learning media can be a solution, as appropriate media can stimulate students' enthusiasm and motivation for learning.

Digital or technology-based learning media offer viable options for teaching students with intellectual disabilities, particularly in English language instruction. The rapid development of technology has significantly impacted various aspects of human life, including education. Technology facilitates accessible learning through digital-based media (Widianto, 2021). Several initiatives have aimed at developing various technology-driven

learning media, which positively impact the efficiency of the learning process. Technology-based learning media offer easy access and flexibility for students with intellectual disabilities, utilizing features such as audio, video, and animation to present complex concepts visually and interactively. Moreover, technology allows for individualized learning, adapting content to suit each student's needs and comprehension level.

A popular form of technology-based learning is the website collection of interrelated web pages accessible via the internet containing information such as text, images, videos, or animations (B.A.K.R.I., 2023). The rapid expansion of the internet has facilitated the wide and instantaneous dissemination of information, transcending geographical and temporal boundaries. This has led to new trends in website development, including e-learning, e-banking, and e-commerce (Ersanty & Mahmudah, 2020).

Website-based learning media can support English language learning for students with intellectual disabilities, particularly in developing reading and writing skills. Johansson et al. (2021) found that web pages become more accessible for people with intellectual disabilities by incorporating images to convey core content, simple navigation, concise text, audio narration, and multimedia elements such as video and animation. This study focuses on developing BRIGHT (Learning Reading & Writing), a website-based learning medium designed to facilitate English reading and writing instruction for students with intellectual barriers. This platform aims to enhance these students' ability to grasp learning materials effectively.

English is the official language of numerous Commonwealth countries and is widely used and understood globally. It is more prevalent across nations than other languages (Zakki Munajih et al., 2023). Learning English aims to develop individuals' communicative abilities, enabling them to understand and use the language effectively.

Teaching language components is integral to language acquisition, whether it be a first, second, or foreign language. Although instruction is often integrated into practice, educators must grasp fundamental concepts related to these components, particularly those about English. Language comprises three main elements: grammar, vocabulary, and pronunciation. Four core language skills include writing, reading, listening, and speaking (Faiza et al., 2021).

Reading is a cognitive and psychological activity involving translating written symbols into verbal language. It plays a crucial role in children's cognitive development and is a fundamental means of acquiring knowledge. Reading skills constitute the third level of the hierarchical model of language development, encompassing five stages: receptive language, expressive language, reading, writing, and the practical use of language in everyday life (Khasawneh & Al-Rub, 2020). Writing, meanwhile, involves coordinated finger movements and builds upon foundational abilities such as manual and intellectual skills. Manual skills entail efficiently regulating the fine motor coordination of eye and hand movements, while intellectual skills involve conveying ideas and symbols (Adiatama et al., 2023).

Children with intellectual disabilities face intellectual functioning and adaptive behavior challenges, affecting their learning, problem-solving abilities, and social skills (Damastuti, 2020). According to Desiningrum (2017), the characteristics of mental retardation include: 1) Significantly below-average intelligence levels, requiring evidence for special education services while typically developing children have an average IQ of 100, those with intellectual disabilities often have IQ scores of 70 or below; 2) Deficiencies in adaptive behavior, where affected individuals are unable to perform tasks appropriate for their age; and 3) Mental retardation occurring during developmental stages, from

conception to 18 years. Putri (2021) classifies intellectual disabilities based on IQ levels into three categories: mild, moderate, and severe, with different learning capacities and challenges for each.

Factors contributing to intellectual disabilities include genetic abnormalities, such as Down syndrome; prenatal events like maternal alcohol consumption and birth complications; and postnatal factors, such as infections and socio-cultural influences (Amanullah, 2022). Addressing these factors through pre-marital consultation, health screenings, and preventative measures can reduce the risk of intellectual disabilities (Maranata et al., 2023).

Learning media is crucial in enhancing educational outcomes by facilitating the teacher's delivery of content and increasing student comprehension (Magdalena et al., 2021). They also foster engagement and motivation, making the learning process more dynamic (Agustin et al., 2021). Effective learning media can also reduce instructional time, as they aid in presenting new or complex concepts more clearly (Nurfadhillah et al., 2021).

Fadjarajani et al. (2020) categorize learning media into several types: 1) Based on their nature: audio (sound recordings), visual (photos, films, drawings), and audio-visual media; 2) Based on reach, which assesses the number of students and spatial requirements during learning; and 3) Based on usage techniques, such as media that require projection tools like LCDs.

In today's digital age, there is a growing need for technology-based learning media among educators and students. However, to maximize its effectiveness, proper application techniques are required (Zahwa & Syafi'i, 2022). Web-based learning media provide a flexible platform for student engagement, making learning more interactive and accessible. This digital approach can help transform student learning styles into more efficient and effective processes (Mulder et al., 2023).

Research by Maesyaroh et al. (2023) demonstrates that web-based learning media significantly improve student learning outcomes and serve as effective teaching aids. Developing web-based learning environments tailored to specific subjects can enhance classroom integration, facilitate learning targets, and improve educational outcomes (Saenab, 2023).

METHOD

The research method utilized in this study is a pre-experimental design, explicitly employing a pre-test and post-test one-group design. This approach involves assessing a single group of subjects or participants before and after administering a consistent treatment or intervention. The participants are subjected to pre- and post-assessments using a one-group format without any control or comparison group (Sugiyono, 2013).

This study aims to evaluate the effectiveness of the BRIGHT media (Learning Reading and Writing) in enhancing the English reading and writing abilities of students with intellectual disabilities. The study was conducted across special education schools in Malang, with the research subjects being students from SMPLB (Special Junior High School) with intellectual disabilities. Adnan and Latief (2020) outline the procedural steps for employing a pre-test and post-test one-group design as follows: 1) Selection of the sample group; 2) Administration of the pre-test; 3) Implementation of the intervention or treatment; 4) Administration of the post-test following the intervention; 5) Calculation of the mean and standard deviation for both the pre-test and post-test results, followed by

their comparison; 6) Application of a t-test to assess the statistical significance of the mean differences.

RESULT

This research involved 20 students with intellectual disabilities from Special Schools. The study employed a pre-experimental design with a pre-test and post-test format within a single group. Initially, a pre-test was administered to assess the students' baseline abilities in English reading and writing. Following the intervention using the BRIGHT learning media, a post-test was conducted to evaluate the student's skills after the treatment. The pre-test results indicated that most students had limited reading and writing skills, with an average score of 45. However, after implementing the BRIGHT learning media, the average post-test score improved significantly to 75.

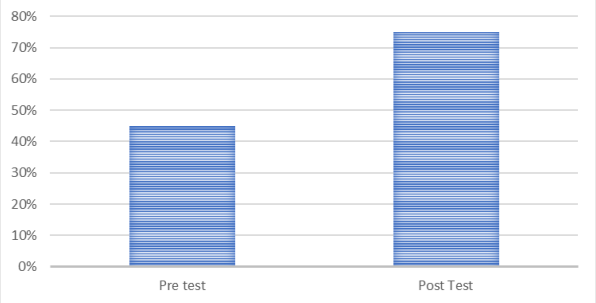

Figure 1. Pre-test and post-test

A t-test was conducted to determine whether there was a significant difference between the pre-test and post-test results. The t-test results revealed a p-value of less than 0.05, indicating a significant improvement in the student's English reading and writing abilities following the BRIGHT media intervention. The results of the statistical analysis using SPSS are as follows:

The statistical test interpretation shows that the pre-test average score was 45, while the average post-test score was 75. The standard deviation was 10 for the pre-test and 12 for the post-test. The correlation between the pre-test and post-test scores was 0.85, suggesting a strong positive relationship. The Paired Samples Test indicated an average difference of -30 between the pre-test and post-test, with a t-value of -26.79 and degrees of freedom (df) equal to 19. The significance value (Sig. 2-tailed) was 0.000, less than 0.05, confirming that the difference between the pre-test and post-test results is statistically significant.

As an international language, English is crucial for global communication and must be mastered by all individuals, including students with intellectual disabilities. Proficiency in English can allow these students to communicate globally and access a broader range of information. However, due to their intellectual and adaptive challenges, students with intellectual disabilities often encounter difficulties in learning this language.

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pre_test	45.00	20	10.00	2.24
Post_test	75.00	20	12.00	2.68

Paired Samples Correlations

	N	Correlation	Sig.
Pre_test & Post_test	20	0.85	0.001

Paired Samples Test

	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Pre_test - Post_test	-30.00	5.00	1.12	-26.79	19	0.000

Figure 2. Analysis results using SPSS

Students with intellectual disabilities often encounter various obstacles when learning English, including understanding the material, low motivation, and less effective teaching methods. These obstacles are distinct characteristics of students with intellectual disabilities, requiring a specialized learning approach. BRIGHT learning media is designed to address these challenges by incorporating technology-based features like interactive audio, video, and animation to help students grasp complex concepts. This media also offers flexible access and use, allowing it to be adapted according to students' needs and levels of understanding.

The study results indicate that BRIGHT media significantly improves students' English reading and writing abilities with intellectual disabilities, as evidenced by the increased average scores from the pre-test to the post-test. The media effectively enhanced students' motivation, making learning more engaging and interactive. Developing technology-based learning tools like BRIGHT is crucial for educating students with intellectual disabilities, as the appropriate use of technology can improve learning effectiveness and help students overcome their limitations. Thus, there is a need for further support and development of technology integration in the education of students with intellectual disabilities.

Despite the positive outcomes of this study, several limitations exist, such as the limited sample size and the absence of a control group. Future research should involve larger sample sizes and employ more complex experimental designs to reinforce these findings. Additionally, there is a need to develop other learning tools that cater specifically to the needs of students with intellectual disabilities. Besides quantitative analysis using the t-test, this study incorporated qualitative analysis through observations and interviews with teachers and students. Observations were conducted during the learning sessions, and interviews were held after the post-test.

Students appeared more active and motivated during the learning sessions using BRIGHT media. The interactive features of audio, video, and animation captured students' attention and helped them understand the material better. For instance, when learning new words, the audio feature provided correct pronunciation, while animations helped convey the meaning of the words. Teachers involved in this study responded positively to BRIGHT media, stating that it significantly improved their ability to teach students with intellectual

disabilities by providing a varied and engaging method. They also noted that students were more interested and motivated, a challenging outcome to achieve with conventional teaching methods.

Students also expressed positive feedback during the interviews, stating that learning with BRIGHT media was more enjoyable and made it easier for them to understand the material. Some students even reported feeling more confident reading and writing English after using the media.

Technology has numerous benefits in the education of students with intellectual disabilities, offering features unavailable through conventional methods, such as interactivity, visualization, and flexibility. Interactive elements like quizzes, educational games, and animated videos increase student engagement, while visualization through images and animation helps students grasp abstract concepts that might be difficult to understand through text alone. For instance, animations depicting objects help students associate words with real-world objects when learning about nouns.

BRIGHT media also offers flexibility, allowing students to learn anytime and anywhere, accommodating their pace. This is crucial for students with intellectual disabilities who may need additional time to understand the material. With BRIGHT media, they can review lessons as often as needed without feeling pressured.

However, implementing BRIGHT media presents challenges. Not all students have access to the necessary technology, such as computers or stable internet connections, which can be particularly problematic for students from disadvantaged backgrounds. Therefore, school and government support is necessary to provide adequate facilities.

Additionally, using technology in learning requires specialized training for teachers, who must utilize BRIGHT media and integrate it into the curriculum effectively. This training demands time and resources, necessitating careful planning.

Beyond its academic impact, BRIGHT media also positively affects the social and emotional development of students with intellectual disabilities. Students who successfully engage with BRIGHT media show increased confidence and feel more capable and motivated to learn English. This newfound confidence is reflected in their interactions with peers and teachers as they participate more actively in class discussions and activities. BRIGHT media also promotes social interaction, as its interactive features and educational games encourage student teamwork and communication. They learn to collaborate, share ideas, and assist each other in completing tasks.

The findings of this study have important implications for curriculum development and educational policy, particularly in the context of inclusive education. The curriculum for students with intellectual disabilities should be adapted to include technology-enhanced learning methods like BRIGHT. Integrating such media into the curriculum can provide students with more effective and engaging learning experiences. Inclusive education policies must also support technology integration, with schools and governments ensuring adequate facilities and teacher training so all students, including those with intellectual disabilities, have equal learning opportunities.

This research is a foundation for developing technology-based learning tools for students with intellectual disabilities, but further investigation is necessary. Future studies could explore other types of learning media suitable for these students, such as mobile applications, virtual reality, or educational games, each offering unique advantages and challenges that require exploration and solutions.

While this research was short-term, measuring progress before and after treatment, long-term studies observing student development over extended periods could provide deeper insights into the effectiveness of technology-based learning media. Future research could also examine how such media affects other aspects of English language learning, such as speaking and listening skills, as well as students' social and emotional development.

In summary, using BRIGHT media has proven effective in enhancing the English reading and writing skills of students with intellectual disabilities. It addresses learning challenges by offering an engaging, interactive approach tailored to their needs. The results of this research contribute significantly to developing educational tools for students with intellectual disabilities and highlight the great potential of technology in inclusive education.

CONCLUSION

This research demonstrates that website-based BRIGHT learning media significantly enhances English reading and writing abilities in students with intellectual disabilities. The average pre-test score of students was 45, which increased substantially to 75 after the intervention, underscoring the media's effectiveness in addressing the learning challenges faced by these students. With its interactive features, BRIGHT media has effectively heightened student motivation and provided a more engaging and accessible learning experience. However, specific challenges persist in its application, such as limited access to technology and the need for comprehensive teacher training. To ensure this media's successful and widespread implementation across various educational settings, further support and resources from schools and the government are essential.

ACKNOWLEDGEMENT

We thank the Institute for Research and Community Service (LPPM) at the State University of Malang for providing the necessary funding to enable our team to execute this program successfully. Additionally, we express our appreciation to the BC Kepanjen Malang Special School for their partnership and collaboration, which was instrumental in successfully implementing this service activity.

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