TOUCHING THE WORDS: ENHANCING ENGLISH VOCABULARY FOR SPECIAL NEEDS STUDENTS WITH SENSORY INTEGRATION BARRIERS

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Abstract: One of the problems for students in inclusive school are facing sensory barriers to integration, and require teaching materials and learning media with proper sensory activities to aid their learning. However, existing teaching materials and books do not fully accommodate the needs of students with sensory disorders, especially touch sensory. Thus, the study proposes the development of a tactile sensory book product for students with special needs at MTs. Terpadu Ar-Roihan Lawang Malang (inclusive school), specifically those facing sensory integration barriers. This study aimed to develop tactile sensory learning materials to enhance English language learning for students with sensory integration barriers in inclusive school. The first research question was focused on the development process of the tactile book, while the second research question was focused on the effectiveness of the book in enhancing English vocabulary knowledge of the students. The study used Research and Development (R&D) through Analysis, Design, Development, Implementation, and Evaluation (ADDIE) step process. This study found that the media and content of the book were considered excellent based on the evaluation of validators, with a score of 3.67 and 3.8 respectively. A total of 5 students with sensory integration barriers participated in the study. By analysing with SPSS Wilcoxon test, the score was 0.025 which indicating that there is a statistically significant difference between the pre- and post-test scores. The findings suggest that tactile sensory learning materials can be an effective tool for enhancing English learning for students with touch sensory integration barriers in inclusive education.

Keywords: tactile sensory book, English vocabulary, special needs student

INTRODUCTION

Although some teaching materials and therapies have been developed for students with special needs (CRASTA ET AL., 2020; FAZLIOĞLU & BARAN, 2008; SCHOEN ET AL., 2019), they often do not fully accommodate the needs of students with sensory disorders. The existing teaching materials tend to emphasize visuality, while neglecting other sensory aspects such as touch, hearing, and taste, which are crucial for the development of sensory excitability in students with sensory integration barriers.

This gap in existing teaching materials and books poses a significant challenge to inclusive education, as students with special needs require tailored learning materials that can support their unique learning styles and abilities (Akrim & Harfiani, 2019; Florian, 2019). To address this gap, the present study proposes the development of a tactile sensory book product for children with special needs, specifically those facing sensory integration barriers. This book will be designed as an activity book with durable materials to provide a therapy that stimulates the excitatory senses of touch promoting better integration with their brain.

Tactile sensory processing refers to the way our nervous system interprets and responds to touch sensations. It involves the ability to detect, interpret, and respond to tactile input, such

as pressure, texture, vibration, and temperature. This is important for many daily activities, such as self-care, fine motor skills, and social interaction (Piccardi et al., 2021).

For some individuals, such as those with sensory processing disorder or autism spectrum disorder, tactile sensory processing can be atypical or heightened. This means that they may experience touch sensations differently than typical individuals (Balasco et al., 2020), which can impact their ability to learn, socialize, and engage in daily activities.

Previous study examined vocabulary learning in children with autism spectrum disorders (ASD) and found that they could learn words from linguistic context. The presence of context improved receptive semantic knowledge, while explicit definitions enhanced expressive semantic knowledge (Lucas et al., 2017). The study suggests that children with autism spectrum disorders (ASD) can indeed learn English vocabulary. The research focused on teaching them Science words in two different ways: through linguistic context, where the meaning could be inferred, and through explicit definitions.

Other research investigated the efficacy of tactile media (puppets) and flashcards in teaching English vocabulary to children with special needs, revealing that both methods led to vocabulary development (Wahyuni, 2019). The study's results have important implications for teaching English vocabulary to children with special needs. While both tactile and visual media showed promise in facilitating vocabulary development, the higher level of interest observed in the flashcard media highlights its potential as a more effective instructional tool for this specific group of learners.

In the context of education, it is important to understand tactile sensory processing in order to develop appropriate learning materials and activities for individuals with sensory barriers. Creating materials, such as the tactile sensory books mentioned earlier, can help individuals with tactile sensory processing difficulties to engage with learning materials and develop their skills in a way that is accessible to them.

The research problem in this study is the lack of appropriate teaching materials and learning media that accommodate the needs of students with sensory integration barriers, which can hinder their learning and development. Existing teaching materials and books often neglect the sensory aspects that are crucial for the development of sensory excitability in students with special needs. Therefore, there is a need to develop appropriate tactile sensory books to fill this gap and support the learning of students with special needs who face sensory integration barriers. The research aims to develop a tactile sensory book product for SNS, specifically those facing sensory integration barriers, and to examine the effectiveness of the books.

METHODS

This study used Research and Development approach with ADDIE model. Where the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model comes in - a systematic approach to instructional design that emphasizes the creation of engaging and effective learning experiences (Allen, 2006; Branch, 2009). In this study explore how the ADDIE model can be used to enhance English vocabulary learning for special needs students with sensory integration barriers. Specifically, we will focus on the use of touch-based methods to help these students connect with and retain new vocabulary words.

The development of such a product has the potential to fill the gap in MTs. Terpadu Ar-Roihan Lawang which is located at Jl. Mayor Abdullah 248 Lawang Malang Regency, East Java Province, is an inclusion madrasa with several students with special needs. A total of 5 students has sensory barriers to integration tactile so that their own learning is needed.

The steps for conducting an R&D research using the ADDIE model based: 1). Analysis, 2). Design, 3). Development, 4). Implementation, 5). Evaluation. The first step is to analyze the

needs of the special needs students with sensory integration barriers and their English language learning requirements. The second step is to design the intervention, which involves developing the tactile sensory learning materials to enhance English language learning for special needs students. The next step is to develop the tactile sensory learning materials based on the design created in the previous step. After that is to implement the intervention with the special needs students. The final step is to evaluate the effectiveness of the intervention using pre- and post-assessment measures.

Data collection methods in this study are: interviews by conducting interviews with teachers, special education experts, and students to gain deeper insights into their individual needs and experiences with English language learning. Then observing classroom activities and interactions between students and teachers to identify specific areas where sensory integration barriers may be impacting their learning. Next administering pre-assessment tests to measure the students' baseline knowledge of English vocabulary before implementing the tactile sensory learning intervention.

The analysis data use thematic analysis can be used to identify recurring themes and patterns related to the students' needs and preferences for qualitative data obtained and statistical analysis methods can be applied to determine trends and patterns in the data for quantitative data obtained from surveys and pre-assessment tests.

FINDINGS AND DISCUSSIONS

The creation of tactile sensory books for students with sensory barriers to integration is a significant innovation in the field of special education. The use of textured fabrics, animal fur, and clamshells in the animal-themed books allows students to experience the sensation and texture of animals in a tactile manner, which can enhance their learning experience and make it more engaging.

Furthermore, the animal-themed content of the books is both engaging and educational, allowing students to learn new vocabulary words and concepts in an enjoyable and interactive way. The tactile sensory books can be used as a supplementary tool to traditional teaching methods, providing students with a multi-sensory learning experience that can improve their language skills and comprehension.

Table 1. Sensory Book Design

No.	Category	Information
1.	Types of books	Tactile sensory books
2.	Material	Thick paper, textured fabric, poultry feathers
3.	Theme	Animal
4.	Topic	Tame animals and wild animals
5.	Heading	What animal am I?
6.	Number of pages	16 pages

The creation of these tactile sensory books represents a significant innovation in the field of special education and has the potential to enhance the learning experience for students with sensory barriers to integration. The use of multiple sensory modalities in the design of instructional materials can help to make learning more accessible and engaging for all students, regardless of their unique learning needs.

After completing the design phase of the tactile sensory books, the next step is development. During this phase, the prototype is transformed into a final product that can be used by students with sensory barriers to integration. The development phase involves the material selection, book creation, and validation of the book.

The development of tactile sensory books has been proven effective in enhancing the learning outcomes of students with sensory barriers, particularly in the area of English vocabulary acquisition. This study also found that the media and content of the book were considered excellent based on the evaluation of validators, with a score of 3.67 and 3.8 respectively. This indicates that the product has high content validity and is deemed suitable for use in the classroom.

Figure 1. Tactile Book Activity

The use of tactile sensory processing is a critical aspect of learning for students with sensory barriers, as it enables them to access and comprehend information through touch and other sensory modalities. Inclusive schools, such as MTs Terpadu Ar-Roihan Lawang, must strive to provide learning resources that cater to the diverse needs of all their students. The implementation of the tactile sensory books proceed after the product has been developed and validated with no need for revision by introduce the tactile sensory books to the 5 students with sensory barriers to integration, who were the initial target audience for the product. Observe the students' engagement and interaction with the books to assess their effectiveness in meeting the learning objectives and addressing the students' unique needs. Train other teachers and staff on the use of the books and their effectiveness in addressing the unique needs of students with sensory barriers to integration.

Evaluating the impact of the tactile sensory books on the learning outcomes of the targeted students is an essential step in ensuring their effectiveness in addressing the unique needs of students with sensory barriers to integration. From administering pre- and post-assessments on the students' vocabulary acquisition can help measure the effectiveness of the tactile sensory books in improving their English language skills.

Table 2. Analysis SPSS Wilcoxon

Test Statistics[a]

	posttest - pretest
Z	-2.236[b]
Asymp. Sig. (2-tailed)	.025

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

In the case where the test statistic (which is the sum of the ranks of the positive differences) has a p-value less than the alpha level (0.05), it indicates that there is a statistically significant difference between the two samples. In this case, the p-value is 0.025, which is less

than the alpha level of 0.05, indicating that there is a statistically significant difference between the pre- and post-test scores.

The use of tactile sensory books can provide special needs students with opportunities to learn and practice new English vocabulary in a unique and engaging way (Bates & Son, 2020). As teachers and students create their books and explore different textures and materials, they may encounter new English words related to animals, textures, and sensory experiences. This can help to reinforce their understanding of these words and concepts, and may even inspire them to seek out new vocabulary on their own.

Although the perception that English language learning may be difficult for students with special needs, it is important to remember that they have the same right to education as any other student (Paseka & Schwab, 2020). In fact, English language proficiency can be an asset for individuals with special needs, opening a range of opportunities in both personal and professional contexts. Additionally, providing inclusive learning resources, such as the tactile sensory books mentioned in this article, can help to ensure that students with special needs are not left behind in their language learning journey.

It is also important to recognize that the challenges of implementing English language lessons for students with special needs are not insurmountable. With careful planning, tailored instruction, and the use of appropriate resources and technologies, it is possible to create an environment that supports the learning needs of all students, regardless of their abilities.

The development of tactile sensory books for special needs students represents a promising innovation in the field of inclusive education. However, their implementation in the classroom may present certain challenges and opportunities that should be carefully considered.

The challenges for implementing tactile sensory books is the need for additional resources and support (Andujar & Nadif, 2022). Creating these materials may require specialized training and expertise, as well as access to materials and equipment that may not be readily available in all settings. Additionally, teachers and staff may need to be trained on how to use the materials effectively and adapt their teaching strategies (Saloviita, 2020) to accommodate the needs of diverse learners.

Another challenge may be the need to address issues of stigma and social acceptance. Students with sensory integration barriers may be perceived as "different" or stigmatized by their peers or others (Liao et al., 2019), and the use of tactile sensory books may further highlight these differences. Addressing these issues may require a focus on promoting a culture of acceptance and inclusivity in the classroom, as well as involving families and caregivers in the process.

Despite these challenges, the implementation of tactile sensory books also presents several opportunities for enhancing learning outcomes and promoting engagement in the classroom (Ainscow, 2020). The use of tactile materials may help to improve attention, memory, and overall cognitive function in special needs students that relate with brain process (Gray et al., 2019), while also fostering a sense of enjoyment and motivation in the learning process. Additionally, the use of tactile sensory books may help to promote social interaction and peer support, as students work together to explore and learn from the materials.

CONCLUSION

This study showed that the creation of tactile sensory books as a learning resource for enhancing English vocabulary for students with sensory barriers to integration was effective. The use of furry and textured fabrics, animal fur, and clamshells as materials allowed students

to feel the sensation and texture of the animals, making the learning experience more engaging and meaningful for them.

It is suggested that future research be conducted to investigate the long-term effects of using tactile sensory books on the learning outcomes of students with sensory barriers to integration.

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