

ANATOMY APPLICATION FOR SPECIAL NEEDS CHILDREN IN THEMATIC LEARNING

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ABSTRAK

Pendidikan adalah hak bagi setiap individu, termasuk anak berkebutuhan khusus, sebagaimana diatur dalam Undang-Undang Nomor 20 Tahun 2003 Pasal 8 Ayat 1. Tantangan dalam pendidikan untuk anak berkebutuhan khusus terletak pada aspek kognitif serta penyesuaian pembelajaran yang sesuai dengan kemampuan dan kebutuhan mereka. Penelitian ini bertujuan untuk mengetahui implementasi aplikasi anatomi serta menganalisis pengaruh aplikasi ini terhadap anak berkebutuhan khusus dalam pembelajaran tematik pada tema 3 subtema 1. Metode penelitian yang digunakan adalah metode campuran (mixed methods) kuantitatif-kualitatif. Teknik pengumpulan data kuantitatif menggunakan desain one group pretest-posttest dan kemudian diuji validitas, reliabilitas, serta hipotesis menggunakan analisis Paired Sample T-Test. Sementara itu, teknik pengumpulan data kualitatif dilakukan melalui wawancara mendalam dengan wali kelas. Partisipan pendekatan kuantitatif adalah siswa kelas 5 yang memiliki kebutuhan khusus, seperti lamban belajar, tunagrahita, disabilitas ganda, dan ADHD di SD TS Yogyakarta. Hasil penelitian menunjukkan bahwa aplikasi anatomi dapat diimplementasikan dengan pengawasan guru. Anak-anak dapat dibagi menjadi kelompok dan mengakses aplikasi secara bergiliran. Perkembangan kognitif dan minat siswa bervariasi sesuai dengan jenis kebutuhan khusus mereka. Berdasarkan hasil analisis kuantitatif, diketahui bahwa nilai P adalah 0,020. Hal ini menunjukkan adanya perbedaan signifikan antara kelompok sebelum dan sesudah menggunakan aplikasi anatomi dalam pembelajaran tematik.

Kata Kunci: Aplikasi Anatomi, Anak Berkebutuhan Khusus, Pembelajaran Tematik

ABSTRACT

Education is something for everyone, including children with special needs as regulated in Law no. 20 of 2003 Article 8 paragraph 1. The challenge of education for children with special needs is the cognitive aspect and adapting learning to suit their abilities and needs. The aim of this research is to find out how the anatomy application is implemented and to analyze how much influence this application has on students with special needs in thematic learning in theme 3 subtheme 1. The research method used is mixed methods quantitative qualitative. The quantitative data collection technique uses one group pretest-posttest and is then tested for validity, realism and hypothesis using Paired Sample Ttest analysis. Meanwhile, qualitative data collection techniques involve in-depth interviews with homeroom teachers. Participants in the quantitative approach were grade 5 children who had special needs such as slow learners, intellectual disabilities, multiple disabilities, and ADHD at SD TS Yogyakarta. The results of this research indicate that anatomy applications can be implemented with teacher supervision. Children can be divided into groups and access the application in turn. Students' cognitive development and interests vary according to their specific types of needs. Based on the results of quantitative analysis, it is known that the P-value is 0.020. This means that there is a significant difference between the groups before and after using anatomy applications in thematic learning.

Keyword: Anatomy Application, Children with Special Needs, Thematic Learning

INTRODUCTION

Education functions as a way to provide people with knowledge and information to improve their lives (Abu & Hafidhuddin, 2020). Every citizen in Indonesia is entitled to a proper education, regardless of race, ethnicity, religion, gender, or group. As stated in Law No. 20 of 2003, education is the right of all citizens without distinguishing their origin (socio-economic status) or physical condition, including children with disabilities. Children with special needs have equal rights to education as other citizens. These rights are covered by Law No. 20 of 2003 on the National Education System, which specifically regulates the protection of children with special needs. (*UNDANG-UNDANG REPUBLIK INDONESIA*, t.t.).

Children with special needs have equal rights as other citizens, including the right to education. This equality of rights is outlined in Law No. 20 of 2003 regarding the National Education System, which specifically regulates the protection of children with special needs (*UNDANG-UNDANG REPUBLIK INDONESIA*, t.t.). Article 8 paragraph 1 of Law No. 20/2003 states that "Citizens with physical or mental disabilities have the right to receive special education." According to Article 52 of the Indonesian Law No. 23 of 2002 on Child Protection, it states that "Children with excellence are given opportunities and accessibility to obtain Special Education." This means that children with exceptional intelligence and talents also require special handling and are entitled to participate in Special Education (*UNDANG-UNDANG REPUBLIK INDONESIA*, t.t.). Furthermore, Article 5 of the Indonesian Law No. 4 of 1997 on Persons with Disabilities states that "Every person with a disability has equal rights and opportunities in all aspects of life and livelihood" (Arisanti, 2022).

In Indonesian society, children with special needs (ABK) are a minority group, which leads to their marginalization due to a lack of ability to live in society (Ahdiyana dkk., 2021). Children with special needs are those who exhibit characteristics that differ from typical children; they experience obstacles in their growth and development. The main challenge in educating children with special needs is the necessity for methods and materials tailored to the child's abilities and needs. Children with special needs often have cognitive impairments, which clearly affect their ability to absorb learning material in class. On the other hand, they must also be given opportunities to showcase their inherent potential. They also have the same rights as others in all aspects of life, as declared by the United Nations (UN) on December 9, 1975, regarding the rights of persons with disabilities (Doherty dkk., 2020).

Cognitive development in children with special needs often becomes one of the challenges in learning. Children with special needs may experience delays or difficulties in certain cognitive aspects, such as understanding, memory, or problem-solving. These challenges can affect their ability to quickly capture and process information, comprehend abstract concepts, and complete academic tasks. Better cognitive abilities help children with special needs process information more efficiently, enhance memory, and develop abstract thinking skills. This not only supports their academic progress but also provides a solid foundation for success outside the classroom, including social interactions and daily activities. Therefore, a supportive learning approach tailored to the cognitive needs of children with special needs is crucial for helping them reach their maximum potential in an educational context. In addition to learning approaches, teachers can also use learning media that can support these cognitive aspects. Media is considered one of the ways to effectively and efficiently deliver learning material. When selecting appropriate approaches and media, teachers should consider the characteristics and needs of the children.

Proper education for children with special needs is one of the rights that should be advocated for. In education, learners are not only taught to know (learning to know) but also to

do (learning to do), to be (learning to be), and to live together (learning to live together). (Andini, 2020) Such a concept of education aligns with the concept of thematic learning. Thematic learning is a meaningful learning process that is multi-curricular, focusing on mastering two main aspects: mastering the teaching material that is more meaningful to students' lives and developing mature thinking abilities and mature attitudes so that they can be independent in solving life's problems (Demonika dkk., 2020). Thematic learning is an integrated learning approach that emphasizes student involvement. Students actively participate in the learning process and problem-solving, fostering creativity according to the diverse potentials and tendencies of each child.

Thematic learning can be tailored for children with special needs by integrating various subjects into themes or topics that are interesting to them (Fitrianti dkk., 2022). This approach allows teachers to personalize learning, adjust the difficulty level, and use methods suitable for the individual needs of children with special needs. Thus, thematic learning can provide a more inclusive and relevant learning experience. Creating meaningful learning experiences can be achieved by implementing a concrete learning system. In today's modern era, this can be supported by utilizing technology. In the field of education, technology is used to support learning activities. This is because technology facilitates teachers in delivering the material being taught, one of which is through learning media. The utilization of technology-based media can provide new experiences for learners. Based on the above description, it highlights the importance of utilizing technology, particularly in the field of education, and the critical role of thematic learning in developing the skills of children with special needs. Therefore, this research will provide an overview of the application and impact of the Anatomy application on children with special needs in thematic learning in Theme 3, Sub-theme 1, at SD TS Yogyakarta.

METHOD

This research uses a mixed-methods approach, combining quantitative and qualitative methods. The quantitative data collection was conducted using a one-group pretest-posttest design to measure the impact of the anatomy application on thematic learning for special needs children. Qualitative data collection was done through interviews with the Grade 5 teacher to understand how the application supports the cognitive competencies of special needs students. Quantitative data were analyzed using validity and reliability tests, followed by Paired Sample T-Test analysis. Qualitative data were analyzed using the Bogdan and Biklen model, involving reduction, theme identification, and theme relationships. Participants in the quantitative approach included special needs children from Grade 5, such as slow learners, children with intellectual disabilities, and children with ADHD.

In the Method section, the proportion is 10-15% of the total article length, all presented in the form of paragraphs in the subsections. All text paragraphs should be single-spaced, with the first line indented. Double spacing should NOT be used anywhere in the manuscript. The position and style of headings and subheadings should follow this template.

RESULTS

Implementation of the Anatomy Application in Thematic Learning

The anatomy application is one of many learning applications that can be utilized to support children's education. This application serves as a medium for science lessons, specifically on the topic of the human digestive system. The application can be accessed via smartphones or laptops, making it very flexible for students to use anytime and anywhere. Students can download the app from the Play Store or App Store using the following link:

<https://play.google.com/store/apps/details?id=com.habapps.anatomy>. After registration, the anatomy application can be operated with its interesting features. This application not only provides features related to the digestive system but also includes many other features related to human body anatomy, such as the brain, bones, organs, and more. The application is equipped with various interactive games, and in this study, the focus is on the digestive system. To clarify further, here is an overview of the features of the anatomy application.

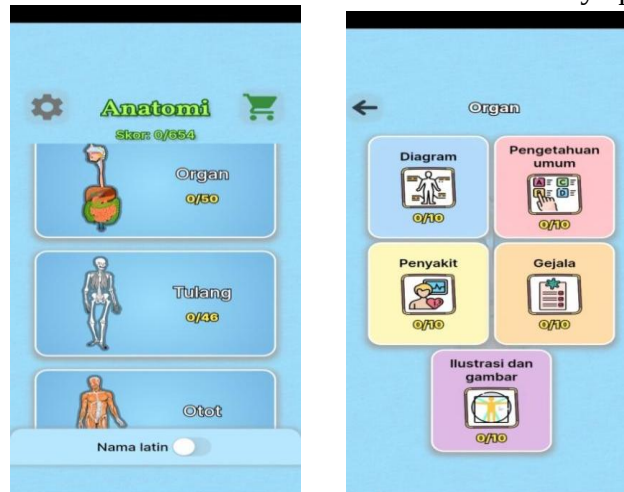


Figure 1. Features of the Anatomy Application.

In this study, the anatomy application was used in thematic learning for Grade 5, specifically in Theme 3, Subtheme 1. Based on the syllabus and lesson plans, one of the topics in this theme is the human digestive system, which is part of the science curriculum. This lesson was also integrated with arts and culture education (SBDP) because after the children understood the digestive system process, a children's song was adapted into a song about the digestive system.

The lesson began with the researcher providing an introduction about the human digestive system to pique the children's interest. Next, the children completed a pre-test that had been prepared, as this study aimed to assess whether there was an effect before and after using the anatomy application in learning. The researcher then explained the material using a PowerPoint presentation and a video illustration about the digestive system, covering the process and how to maintain the human digestive system. Up to this point, the children appeared very enthusiastic about the lesson, and children with various special needs were also highly engaged in the learning process. This was due to the different learning atmosphere created by the researcher.

Next, the researcher introduced the anatomy application to the children. The first step was to divide the children into groups, ensuring an equal distribution of special needs and non-special needs students in each group. The researcher then explained the gameplay structure of the anatomy application. Each group consisted of four children and one researcher, and each child took turns playing the game in each session of the anatomy application. Remarkably, the special needs children demonstrated patience and waited their turn to play. They were also enthusiastic and able to compete with non-special needs children.

The games played by each group in the anatomy application were based on organs, with game types including diagrams, general knowledge, and illustrations and images. Each type of game had 10 sessions that the children could play in turns. In addition to creating a positive learning experience, the use of the anatomy application fostered sportsmanship and patience in completing the games. Sportsmanship grew as the children completed the games, with groups either winning or losing, and the children were encouraged to accept their losses and

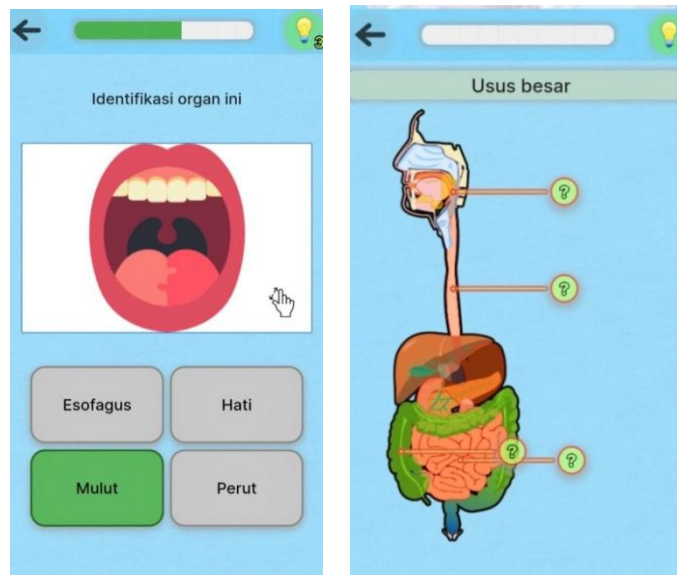


Figure 2. Game Features in the Anatomy Application

After completing the games in the anatomy app, the children were invited to sing the song "Naik Delman Istimewa," with the lyrics modified to describe the human digestive process. All the children sang the song with enthusiasm and excitement. This activity was intended to enhance the children's understanding of the material being taught. In this Arts and Crafts (SBDP) lesson, it was hoped that the contribution of children with special needs in the learning process could be observed. Interestingly, field observations revealed that they not only participated in singing the song about the human digestive system but were also able to lead their classmates in singing the song in front of the class. Finally, before closing the lesson, the researcher gave a post-test to the children. This was used to measure whether there was any change in their understanding before and after they used the anatomy app in thematic learning.

The Influence of the Anatomy App in Thematic Learning

TS Elementary School Yogyakarta is one of many inclusive schools in Indonesia. The government and society recognize that education is the right of all people, including children with special needs. The anatomy app is a form of learning media believed to support students' ability to understand the learning material. Given the diverse special needs of the fifth-grade children at this school, the researcher was interested in examining whether the anatomy app influenced the understanding of children with special needs. To address this, the researcher conducted pre-tests and post-tests in the fifth grade.

Before testing the hypothesis, the researcher first performed normality and homogeneity tests on the pre-test and post-test data. Once the prerequisite tests were met, hypothesis testing could proceed using a t-test. The hypotheses tested were as follows:

H0: There is no change in children's knowledge before and after using the anatomy app in thematic learning.

H1: There is a change in children's knowledge before and after using the anatomy app in thematic learning.

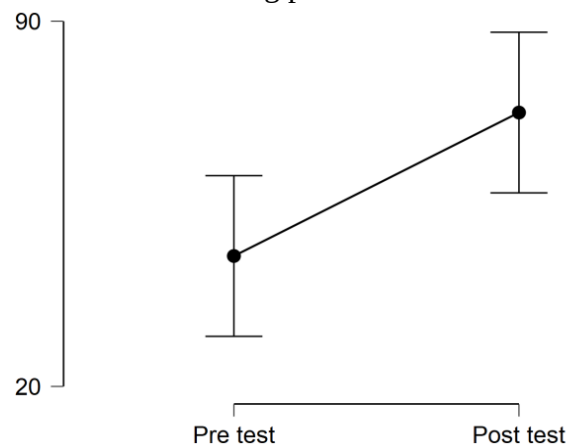
Based on data analysis using the JASP software with a Paired Sample T-Test, it was found that the P-value was 0.020, as shown in the table and plots below:

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Table.1 Results of the Paired Sample T-Test

Paired Samples T-Test					
Measure 1	Measure 2	t	df	p	Cohen's d
Pre test	- Post test	-2.986	7	0.020	-1.056

In the results of the Paired Sample T-Test analysis, the P-value was 0.020. Based on common convention, if the P-value is less than the predetermined significance level (usually 0.05), we can reject the null hypothesis. In this case, since the P-value (0.020) is less than 0.05, we can conclude that there is a significant difference between the group before and after using the anatomy app in learning. Therefore, the conclusion from these results is that the use of the anatomy app in learning has had a significant impact, as reflected by the statistically significant difference between the scores before and after the use of the anatomy app in learning. To illustrate the magnitude of the impact of the anatomy app in thematic learning for children with special needs, it can be seen in the following plot:



To provide more clarity, the researcher will classify several types of special needs children found in the 5th-grade class of TS Elementary School Yogyakarta, along with the role of the anatomy app in supporting their cognitive abilities in thematic learning.

a. The Anatomy App's Impact on the Cognition of Children with Intellectual Disabilities (Tuna Grahita)

Intellectual disability, also known as "tuna grahita," is a term used to describe individuals with significant intellectual impairments. This condition is also referred to as "mental retardation" or "intellectual disability." Children with intellectual disabilities have an intelligence quotient (IQ) that is measured to be below a certain threshold, generally below 20 to 25, a condition often referred to as "severe intellectual disability" or "severe special needs." Intellectual disability is a complex developmental disorder characterized by below-average intelligence and difficulties adapting to everyday life skills. This condition can be influenced by various factors such as heredity, environment, and psychosocial elements (Syakina, 2019). Intellectual disability is a state of subnormal intelligence that manifests from early development (from birth or childhood). Children with intellectual disabilities usually show a general delay in mental development, with the main symptom being intellectual delay. These children face significant academic challenges, requiring modifications in their learning curriculum to meet their special needs (Ardi & Vionel, 2022).

The relationship between intellectual disability and cognitive aspects is as follows:

1. Significant Cognitive Decline

Children with intellectual disabilities experience significant cognitive decline, including difficulties in comprehension, memory, problem-solving, and abstract thinking. They often struggle to develop basic academic skills such as reading, writing, and arithmetic.

2. Language Development Limitations

Children with intellectual disabilities often exhibit language and communication limitations. They may struggle with both spoken and written language comprehension and expression.

3. Limitations in Daily Living Skills

Children with intellectual disabilities generally require full support in daily activities such as eating, dressing, bathing, and personal care, as they may be unable to perform these tasks independently.

4. Need for Special Support and Care

Children with intellectual disabilities require intensive support and special care from parents, family members, and educators to help them overcome cognitive limitations and enable them to reach their full potential.

During interviews, the 5th-grade teacher stated that their primary goal in using interactive apps in teaching was to facilitate the understanding of children with intellectual disabilities in the classroom. Considering the cognitive aspects of these children, the anatomy app was expected to help visualize the human digestive process interactively, making the concept more concrete and easier to understand. With its visual and interactive elements, the app serves as an inclusive learning medium, supporting children with intellectual disabilities in overcoming their cognitive limitations.

Furthermore, the teacher stated that the children with intellectual disabilities responded very well to the learning process. They actively engaged with the anatomy app, though some students required additional guidance to overcome technical difficulties or needed further assistance in understanding the content presented in the app. The teacher also mentioned that most students showed great interest in the anatomy app. They were enthusiastic about understanding how the human body works and were eager to explore and ask more questions about specific organs.

When the researcher asked if there was any cognitive development in children with intellectual disabilities after using the anatomy app, the teacher responded that, based on their observations, several students showed significant progress in understanding the human digestive process, particularly in recognizing the images of organs involved in the digestive system.

b. The Anatomy App's Impact on the Cognition of Slow Learner Children

Children with special needs (ABK) are those who experience physical, mental, intelligence, and emotional impairments, requiring special learning approaches (Aprilita, 2023). Slow learner children are a subset of special needs children with non-physical impairments. These non-physical impairments include cognitive aspects. The cognitive aspect involves mental activities necessary for acquiring knowledge, solving problems, and other activities. The cognitive abilities of children can be assessed through their Intelligence Quotient (IQ) levels. Slow learners are children who perform below average in one or all academic areas but are not classified as having mental retardation. Their IQ scores typically range from 70 to 90 (Susanto & Lestari, 2018). Slow learners are a type of special needs child requiring inclusive education services in schools. Their limitations significantly impact their ability to handle complex problems and learning situations, placing them in a "backward" position in schools due to their severely limited cognitive capabilities (Purwanti dkk., 2022).

Burt explains that the term "backward" or "slow learner" is applied to children who cannot perform tasks expected of their age group. Slow learners with IQs between 80 and 90 are slower to grasp lessons related to symbols and abstract or conceptual material (Burton & Balleine, 2022). Most slow learners face difficulties in reading and mathematics. Factors contributing to slow learning include poverty, parental intelligence, family size, emotional issues, and personal factors (such as physical disabilities, health conditions, vision and hearing impairments, school absenteeism, and lack of self-confidence) (Fadliya, 2022). Slow learners exhibit certain characteristics that differentiate them from typically developing children. Here are four characteristics of slow learners based on contributing factors:

1. **Reduced Cognitive Capacity**
They struggle to navigate learning situations and think abstractly, have difficulties operating complex thoughts, and have low processes for developing concepts or ideas that underpin general school tasks, especially in language and mathematics. They also fail to effectively use essential cognitive strategies for retention.
2. **Low Memory Capacity**
Their lack of attention to presented information prevents them from retaining information for extended periods.
3. **Distractions and Lack of Concentration**
Slow learners have relatively short attention spans and low concentration abilities. They struggle to focus on verbally presented lessons for more than thirty minutes.
4. **Inability to Express Ideas**
They experience difficulty in finding and combining words, and emotional immaturity and shyness hinder their ability to express ideas, causing them to rely more on body language than verbal communication.

Given these conditions, slow learners will learn at a slower pace compared to their peers. Additionally, in some respects, slow learners may encounter barriers or delays in thinking, responding to stimuli, and adapting, although they generally perform better than children with intellectual disabilities. Slow learners require more time for both academic and non-academic tasks than their peers . (Purwanti dkk., 2022) Another characteristic of slow learners is their limited ability to complete school assignments due to their limited capabilities and cognitive capacities. Moreover, self-adjustment becomes problematic due to emotional instability. Issues that may lead to slow learning include concentration difficulties, poor memory, limited cognitive capacity, and social and emotional problems .(Sholihah & Kalijaga, 2020). Consequently, slow learners struggle to achieve learning outcomes consistent with their age group. These distinctive learning characteristics signify what it means to be a slow learner, particularly in subjects requiring symbol use and abstract thinking.

Considering the cognitive challenges faced by slow learners, the use of the anatomy app presents a valuable opportunity to facilitate their learning process. This app can help address cognitive capacity limitations by presenting information visually and interactively. In handling complex thought processes and developing concepts, the visual elements of the anatomy app can provide more concrete representations, aiding slow learners in understanding abstract ideas more concretely. The anatomy app can also help tackle memory challenges faced by slow learners, as creating meaningful learning experiences can enhance their retention capabilities. Finally, through the anatomy app and the learning environment established by teachers, slow learners can be more engaged in the learning process.

Based on interviews with the teacher, one reason for choosing less monotonous teaching methods and using visual interactive learning media is to assist children who

struggle to understand complex learning concepts. According to the teacher, the anatomy app can serve as a stepping stone to help students enhance their grasp of learning material. It was also noted in the interview that the slow learners in the class actively engaged with the anatomy app and participated in singing a song adapted to explain the human digestive system. This engagement was seen as a positive change in the learning process; slow learners displayed improvement in their understanding of the digestive organ systems and appeared more confident in discussing the parts of the digestive organs. The teacher observed an increase in their comprehension of medical terms that were previously challenging for them, such as identifying the throat as the esophagus. The interest in the learning topic, which was once difficult for the slow learners, is seen as a positive development in the learning process, as expressed by the teacher.

c. The Anatomy App's Impact on the Cognition of Children with Multiple Disabilities

Children with multiple disabilities face two or more disabilities or health conditions that affect their development, health, or functioning. These conditions can be highly complex and vary in severity and characteristics. Children with multiple disabilities often encounter various challenges in their cognitive aspects. Cognition refers to mental processes that involve understanding, thinking, processing information, and problem-solving. The relationship between children with multiple disabilities and cognitive aspects is as follows (Goggin, 2017):

1. Cognitive Limitations

Children with multiple disabilities frequently experience cognitive limitations related to one or more of their disabilities. This may include limitations in understanding, memory, problem-solving, or the ability to grasp abstract concepts.

2. Language and Communication Limitations

Many children with multiple disabilities also struggle with language and communication. They may find it difficult to speak or understand both verbal and written language, which are critical cognitive aspects.

3. Motor and Cognitive Development

Motor disorders, such as cerebral palsy or other motor impairments, can affect the cognitive development of children with multiple disabilities. Their ability to move, explore their environment, and interact with the physical world may also be limited.

4. Social and Emotional Skills

Cognitive aspects related to social and emotional skills can also be affected. Children with multiple disabilities may struggle to understand and express emotions and to interact effectively with others.

Children with multiple disabilities face complex cognitive challenges, such as limitations in understanding, memory, problem-solving, and the ability to comprehend abstract concepts. These limitations can become barriers in their learning processes. In interviews, the fifth-grade teacher recognized the cognitive obstacles faced by their students. The teacher also noted that, in addition to these challenges, communication limitations are a major barrier for children with multiple disabilities in the learning process. Motor impairments, such as cerebral palsy or other motor disorders, also impact the cognitive development of these children. Limitations in movement, environmental exploration, and interaction with the physical world can hinder their learning experiences. Cognitive aspects related to social and emotional skills are also affected, resulting in difficulties in understanding and expressing emotions, as well as interacting effectively with others.

Based on interview results, the teacher stated that the anatomy app is essential for aiding the cognitive understanding of children with multiple disabilities in learning. This app

can present anatomical information in a visual and interactive manner, providing a more concrete representation. Through visual elements, the anatomy app can also enhance memory retention, offering a more engaging and immersive learning experience. Thus, the anatomy app serves not only as an additional learning tool but also as an effective means to address some of the cognitive limitations that children with multiple disabilities may face, supporting them in better comprehending learning concepts.

The anatomy app can assist in overcoming the cognitive limitations of children with multiple disabilities. Because the app presents information visually and interactively, it helps children understand the human digestive system concepts in a concrete manner. Through visual representations and educational game features, the app is expected to facilitate children's understanding of the learning material. Additionally, in addressing the language and communication limitations of children with multiple disabilities, the anatomy app provides options for delivering content through visual elements that are easier for the children to comprehend and remember. By combining text, images, and interactivity, this app helps mitigate language and communication barriers, allowing children with multiple disabilities to learn through various modalities. Furthermore, the learning environment created by the teacher through the app can help develop children's social-emotional skills. Since the app is used in turn-taking activities, children can practice patience while waiting for their turn. Moreover, children with multiple disabilities can be encouraged to express their emotions when they succeed or struggle with challenges within the app's games. By providing a universal learning experience, the anatomy app serves not only as an additional tool but also as a solution to help overcome any cognitive barriers faced by children with multiple disabilities. In this process, the anatomy app acts as a facilitator, enabling children to learn and develop optimally, even when facing complex cognitive challenges.

d. The Anatomy App's Impact on the Cognition of Children with ADHD (Attention Deficit Hyperactivity Disorder)

ADHD is the name given to individuals who have difficulty paying attention, are easily distracted, overly active, and impulsive. ADHD is a neurobiological disorder and not a specific disease (Kuriyan dkk., 2013). Broadly speaking, ADHD, according to DSM V, is a developmental neurological disorder characterized by a lack of attention, social chaos, and/or hyperactivity-impulsivity (Nicholas dkk., 2015). The lack of attention and social chaos referred to includes the inability to concentrate on tasks, appearing not to listen, frequently losing items, and inconsistent behavior for developmental levels. Hyperactivity-impulsivity refers to excessive activity, restlessness, inability to sit still for long periods, interrupting or intruding on others' activities, and inability to wait for a turn (excessive symptoms for developmental levels). From various definitions of ADHD, it can be concluded that ADHD is a neurological disorder that causes individuals to be hyperactive, impulsive, and inattentive.

Children with ADHD struggle with self-control, making it difficult for them to concentrate for extended periods. Their attention can easily shift due to minor distractions, they tend to forget things quickly, and they often become confused. Children with ADHD often appear to be constantly moving, as if they never tire, and find it challenging to engage in activities quietly, disrupting others both verbally and nonverbally. Generally, children with ADHD exhibit main characteristics of attention disorders and hyperactive-impulsive behavior. Symptoms of attention disorders include chaotic movement, forgetfulness, confusion, and difficulty focusing on tasks or play activities. Symptoms of hyperactive-impulsive behavior include restless emotions, difficulty playing quietly, disrupting friends, and being in constant motion as if driven by a motor or machine (Baldwin dkk., 2014).

Children with ADHD face significant cognitive and behavioral challenges, including difficulties with concentration, impulse control, and hyperactive behavior. The interviewed teacher stated that the anatomy app plays a role in supporting the learning of children with ADHD. This app can help visualize concepts related to the human digestive system, thereby enhancing the children's understanding and creating a positive learning experience. The app is also beneficial for children with ADHD, who typically have trouble concentrating. It is designed to capture attention with appealing visuals, vibrant colors, and interactive features. By presenting material in a non-monotonous and engaging way, it is expected to improve the children's focus and concentration. Finally, the teacher expressed that, in their opinion, engaging learning with technology-based media like this can help manage the hyperactive behavior of children with ADHD, as the app presents playful content that includes educational material and actively engages the children without excessive distractions. Through this approach, the anatomy app not only provides anatomical information but also serves as a learning tool that supports the specific needs of children with ADHD. By offering an interactive, visual, and engaging learning experience, the anatomy app can significantly contribute to facilitating effective learning for children with ADHD.

CONCLUSION

Based on the research conducted, it can be concluded that the anatomy app can help improve the effectiveness of thematic learning for children with special needs. From the analysis of the Paired Sample T-Test performed, it was found that the P-value is 0.020. In this case, since the P-value (0.020) is less than 0.05, we can conclude that there is a significant difference between the groups before and after using the anatomy app in learning. Thus, the conclusion from this result is that the use of the anatomy app in learning has had a significant impact, as reflected in the significant statistical difference between the scores before and after using the anatomy app in learning.

The use of the anatomy app for children with special needs, such as those with intellectual disabilities, slow learners, multiple disabilities, and ADHD, shows several differences in approaches and student responses. For children with intellectual disabilities, content adaptation and navigation support are important focal points, while for slow learners, a structured and repetitive approach is necessary to support their slower comprehension. For children with multiple disabilities, there is a need for differentiation in content and additional support according to their physical and cognitive needs. Meanwhile, for children with ADHD, the app should utilize strategies to maintain focus and engagement, using appealing visual and interactive approaches. In all cases, student responses and interests may vary, and it is essential to provide flexibility and make necessary adjustments to ensure that the app usage maximizes benefits according to each child's needs.

This research has limitations as it focuses solely on cognitive aspects without incorporating psychomotor and affective dimensions. Therefore, information about the influence of the anatomy app on the development of motor skills and emotional responses of children with special needs was not obtained through this study. Although cognitive aspects play a significant role, further exploration of psychomotor and affective dimensions could provide a more comprehensive understanding of the potential of the anatomy app in supporting the holistic development of children with special needs. Therefore, the researcher suggests that future studies should examine the influence of the anatomy app on the psychomotor and affective aspects of children with special needs. This could provide more comprehensive insights into the success of the anatomy app in assisting learning for children with special needs.

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