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Determinants of science learning difficulties children with special needs over the past decade in Indonesia viewed from the perspective of the Qur'an

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ABSTRACT

Science teaching is one of the materials taught in great schools, even though the number of learning hours is only 2 JP per week compared to vocational learning. This article will analyze the determinants of science learning for children with special needs using the literature review method, and the approach method used is a systematic literature review. The use of applications in searching literature is Publish or Perish by Harzing.com using the keywords: science/physics/chemistry/ biology of children with special needs. Sampling is carried out with several conditions that have been determined. The range of journals or literature withdrawal is from 2013 to May 2023. Based on the analysis of the articles, the results obtained are limited learning materials that can be adjusted to the abilities of children with special needs. Limited teachers in teaching due to lack of adequate educational training for special school teachers or science teaching children with special needs. The many limitations in learning science for children with special needs need to be supported by collaboration between the government, educational institutions, teachers, families, and communities. This collaboration will certainly help the development of children with special needs in the future.

Keywords: Determinant factor; science learning; children with special needs

1. INTRODUCTION

Every human need knowledge and skills to achieve the desired goals. The educational process is a way to acquire this knowledge and skills, which can only be obtained after some time (Karakaya et al., 2015). Education aims to develop human potential, including developing personality and life skills and preparing for individual needs (Thompson et al., 2018). Therefore, everyone needs to undergo an educational process as part of self-development to develop their potential correctly.

Every individual has unique talents and abilities from birth. Therefore, every child has the same right to get fair and equal treatment, regardless of their advantages or disadvantages (Ghergut, 2011). However, today, millions of children worldwide are hampered in getting an education because of the conditions of deprivation or disability they experience. On the other hand, some children need help accessing quality education due to financial constraints, transportation, or a lack of adequate learning facilities (Drabble, 2020). Therefore, it is essential to create an inclusive environment that supports each child's needs, regardless of ability or other factors, to optimally develop their potential and contribute positively to themselves and the surrounding community (Yildiz, 2020). To achieve this, policies and regulations are needed to ensure children's educational rights in each country are respected, without discrimination and considering the diversity of individual conditions that exist.

Not all children are born in conventional conditions; many face obstacles, disorders, or delays in their development (Darma & Rusyidi, 2015). In Indonesia, the right to education has been regulated in the National Education System through Law Number 20 of 2003, which expressly mentions the Rights and Obligations of Citizens in the context of education in Article 5: (1) Every citizen has the same right to obtain a quality education. (2) citizens with physical, emotional, mental, intellectual, and social disabilities are entitled to special education (Sistem Pendidikan Nasional, 2003). Therefore, every child has the right to an equal education regardless of their special needs Insert.

The implementation of inclusive education for children with special needs in Indonesia has a variety of approaches. One approach is to determine the specific type of disability, while the other method is to integrate special education services in one institution (Garg & Sharma, 2020). This integration approach covers various levels of education, run by the principal, from Kindergarten Extraordinary (TKLB) to Sekolah Menengah Extraordinary (SMALB). In addition, integration based on the type of disorder is also carried out, wherein one level of special education educational services is provided for various types of disabilities (Kementrian Pendidikan dan Kebudayaan, 2020). Although these two integration approaches are generally used simultaneously due to considerations of efficiency and limited land, it should be noted that this pattern can also harm learners (Agung et al., 2022). For example, a teacher at an Extraordinary Elementary School (SDLB) also teaches at SMP Luar Luar (SMPLB) and SMALB, which can lead to a lack of optimal services for children with special needs.

Research on children with special needs has been carried out for a long time but generally focuses more on vocational or other subjects. An analysis of related articles was conducted to explore the extent to which science learning in exceptional schools has been researched over the past decade in Indonesia. Studies related to science learning in special schools also aim to identify the difficulties children with special needs face in learning science. Thus, this article seeks to explore the extent of research done in the context of learning Science (Physics, Chemistry, and Biology) for children with special needs in special schools. This article aims to understand the types of research methods

used, approaches adopted, research subjects, instruments used, and data analysis generally applied by researchers in Indonesia from May 2013 to May 2023.

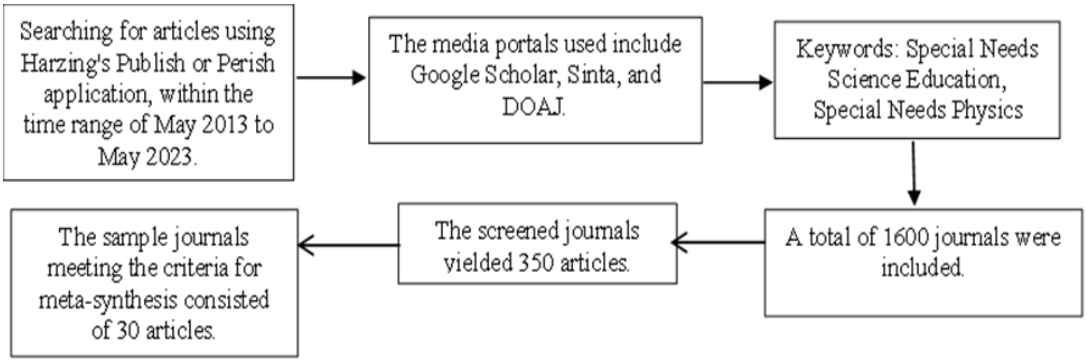
2. METHODS

This qualitative research uses the literature review method and applies the Systematic literature review approach. The Systematic literature review approach identifies, evaluates, and interprets all relevant research results and presents facts comprehensively related to the topics and phenomena studied (Chiu et al., 2023). Literature review research is a type of research that aims to collect, review, and analyze literature or references relevant to the research topic. This study did not involve primary data collection; rather, the focus lies on analyzing and synthesizing existing literature. Literature review research aims to gain a comprehensive and up-to-date understanding of the research topic, identify knowledge gaps, and devise a solid conceptual framework.

Literature review research aims to collect, review, and analyze literature or references relevant to the research topic. The goal is to gain a comprehensive and up-to-date understanding, find knowledge gaps, and form a solid conceptual framework. The Systematic Literature Review (SLR) method is used in literature review research with systematic, structured, and transparent steps in identifying, evaluating, and synthesizing relevant literature. This method produces objective, reliable, and valid information, helps identify knowledge gaps, and provides further research recommendations (Watson et al., 2015).

The SLR method provides advantages in producing more objective, reliable, and valid information because it involves a structured and transparent process (Ghosh & Guchhait, 2020). This method also identifies existing knowledge gaps, provides a solid theoretical foundation, and provides recommendations for further research development. However, it is essential to remember that the SLR process requires considerable time, effort and skills in carrying out an effective literature search and meticulous analysis.

The data in this study was collected through content analysis of various articles related to science learning (Physics, Chemistry, and Biology) in Special Schools (SLB). These articles are taken from various educational journals listed on Google Scholar using Harzing's Publish or Perish app in the last decade, from May 2013 to May 2023. Although 1600 journals were identified through Harzing's Publish or Perish application, a manual topic analysis was conducted to find articles relevant to this study.



The process of taking journals in this study meets the requirements to be analyzed, including having a clear title, location information, research methods used, samples taken, how to collect data, data analysis carried out, and relevant conclusions. The selected journal is related to learning Science (Physics, Chemistry, or Biology) at the Special School (SLB). The data obtained must meet these requirements, and journals that do not will be eliminated. The obstacle faced is that many journals must be equipped with complete files, making it challenging to analyze articles.

After collecting research literature, data analysis techniques are carried out by reducing data, presenting it, and drawing conclusions using logic, aesthetics, and ethics (Chiu et al., 2023). All articles obtained are then classified into predetermined categories based on relevant aspects. Decisions in classification are based on information in the article's abstract, which generally includes research methods and results. Furthermore, the data collected is presented as bar charts and tables to facilitate reading the data obtained.

3. RESULTS AND DISCUSSION

a. Result

1. What are the levels of learning difficulties for children with special needs?

Here is a table that shows the learning difficulties of children with special needs in studying Science (IPA) in Indonesia over the past decade, along with the prevalence rates presented in percentage figures:

Table 1. Description of learning difficulties and their presentation

Difficulty	Description	Prevalence (Last Decade)
Limited Access to Resources	Children with special needs have limited access to appropriate learning resources, including textbooks and assistive technology.	80%

Barriers to Communication and Understanding	Language barriers, cognitive impairments, and communication disorders hinder students' communication and understanding of scientific concepts.	75%
Complex Concepts and Abstract Thinking	Abstract concepts and complex theories in science subjects are challenging for children with special needs who may have difficulty understanding these concepts.	70%
Adaptation of teaching methods	Teachers need help adapting teaching methods to meet the diverse learning needs of children with special needs.	85%
Individual Learning	Providing learning tailored to the specific learning needs of each child with special needs can be challenging for teachers.	90%
Lack of an Inclusive Learning Environment	The limited availability of inclusive learning environments and accommodations limits the participation and involvement of children with special needs in science education.	80%

The learning difficulties of children with special needs in studying science in Indonesia over the past decade can be seen in the table above. The data shows some of the main challenges children with special needs face in science learning. First, limited access to resources becomes a significant issue. These children often have problems accessing textbooks and assistive technologies appropriate for their learning. His affects their comprehension of science materials. In addition, barriers to communication and understanding are also significant obstacles. Language disorders, cognitive impairments, and communication difficulties hinder their ability to interact and understand scientific concepts well. Overcoming these difficulties, teachers must adapt teaching methods according to the needs of children with special needs. It is crucial to learn tailored to each child's needs and create an inclusive environment that facilitates their participation. Collaboration between teachers, parents, and schools is also needed to overcome this learning difficulty and provide equal opportunities for children with special needs in learning science.

2. What are the difficulties teachers have in teaching children with special needs?

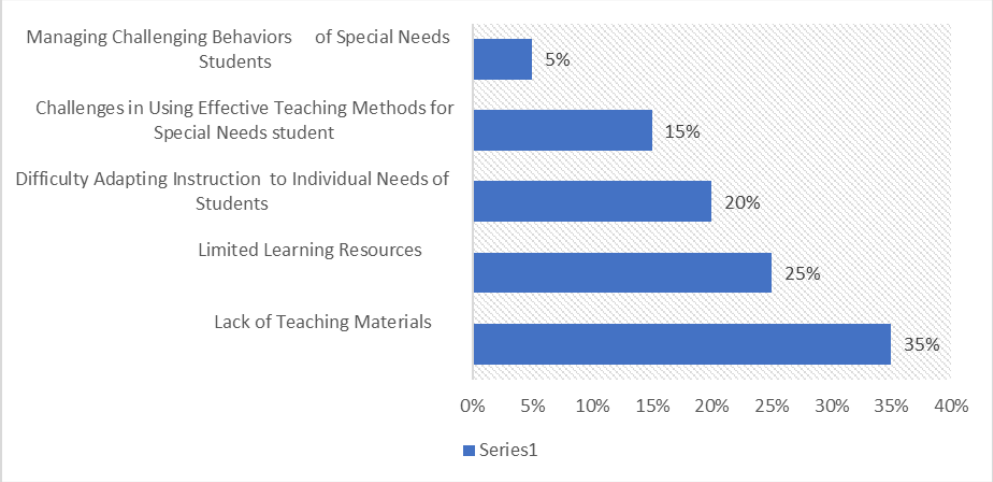


Figure 2. Summary of Difficulties Faced by Teachers in Teaching Science to Students with Special Needs

Figure 2 above summarizes teachers' difficulties in teaching Natural Sciences (Science) to children with special needs in Indonesia. There are five main types of difficulty and their respective percentages. First, about 35% of teachers need help with teaching materials. This can hinder the effective delivery of science materials to students with special needs. Second, about 25% of teachers face challenges due to limited learning resources. Limited resources can limit students' opportunities to engage in practical and exploratory activities essential for understanding scientific concepts. In addition, about 20% of teachers need help adapting teaching methods to the diverse learning needs of students with special needs. This requires different learning approaches and personalization to achieve learning objectives effectively.

Fourth, about 15% of teachers need help using effective teaching methods for students with special needs. This includes multisensory learning strategies, visual aids, and interactive approaches that can encourage active student engagement. Finally, about 5% of teachers report difficulty managing challenging behavior from students with special needs during science learning. This requires implementing behavior management strategies and creating a supportive classroom environment. Educators and relevant stakeholders must understand and overcome these difficulties to improve the quality of science learning for children with special needs in Indonesia.

3. What is the view of the Qur'an and Hadith regarding the learning needs of all human beings without exception?

Several surahs explain the need for learning for every human being without exception, as follows:

اِقْرَأْ بِاسْمِ رَبِّكَ الَّذِيْ خَلَقَۚ ١ خَلَقَ الْاِنْسَانَ مِنْ عَلَقٍۚ ٢ اِقْرَأْ وَرَبُّكَ الْاَكْرَمُۙ ٣ الَّذِيْ
عَلَّمَ بِالْقَلَمِۙ ٤ عَلَّمَ الْاِنْسَانَ مَا لَمْ يَعْلَمْۗ ٥

Translation:

> *"1. Read by (calling) the name of your God who created!, 2. He created man from a lump of blood. 3. Read it! Your Lord is the Most Glorious, 4. who teaches (man) with a pen. 5. He teaches man what he does not know."*

Surah Al-'Alaq (96:1-5) is the 96th surah in the Qur'an that emphasizes the importance of reading, studying, and seeking knowledge. The first verse confirms Allah's command to the Prophet Muhammad to read by mentioning the name of God, who created all things (Yanfaunnas, 2014). Allah This shows that knowledge and learning are commandments given by God. The second verse explains that man was created from a lump of blood, highlighting man's dependence on knowledge and learning to reach his potential. The third verse emphasizes that God is the Merciful One and the Educator who teaches man through kalam (writing) to acquire knowledge. The fourth verse says that God teaches man things he did not know before, showing the importance of learning in increasing understanding. The fifth verse underlines that he who gains knowledge will gain much good (Subakat et al., 2022; Yanfaunnas, 2014). Surah Al-'Alaq emphasizes how important it is to read, study, and seek knowledge to develop ourselves and increase our understanding of religion, the world, and life.

There is a well-known hadith about how important it is to look for obligatory things for Muslims as follows:

عَنْ أَبِي عَبْدِ الرَّحْمَنِ عَبْدِ اللَّهِ بْنِ مَسْعُودٍ، قَالَ :قَالَ رَسُولُ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ" :طَلَبُ الْعِلْمِ فَرِيضَةٌ
"عَلَى كُلِّ مُسْلِمٍ

Translation:

> *"From Abu Abdurrahman Abdullah bin Mas'ud, he said: Rasulullah sallallaahu 'alaihi wa sallam said, 'Seeking knowledge is obligatory for every Muslim."*

Seeking knowledge is considered an obligation (fardhu 'ain) for every Muslim, as conveyed in the hadith narrated by Ibn Majah and At-Tirmidhi (Khasanah, 2021). This shows that learning and acquiring knowledge have great value in Islam. Muslims must acquire correct and valuable knowledge to enhance their understanding of the teachings of religion, the world, and daily life. This hadith encourages Muslims to be active in learning and continue to develop their knowledge throughout life (Amalia Tri Utami1,

Wahid Murni2, 2020). By seeking knowledge, one can become a better Muslim, understand and practice Islam's teachings correctly, and contribute to oneself, society, and Muslims.

b. Discussion

Over the past decade, research conducted in Indonesia has identified various determinants that influence the difficulty of learning science in children with special needs. These factors are based on theories and research journals that have proven to be credible and valuable sources of information in understanding the challenges such children face.

Internal factors are the first factors affecting the difficulty of learning science in children with special needs. Research by (Mediani et al., 2022). highlights that developmental disorders such as autism or Down syndrome can hinder understanding abstract science concepts. Children with such developmental disorders often struggle to keep up with complex science material, which requires a deeper understanding of concepts. In addition, research (Nurqadriani & Syafaruddin, 2021). Found that children with low intelligence levels also face difficulties learning science. Limited levels of intelligence limit their ability to understand and apply scientific concepts well.

The second factor that contributes to the difficulty of learning science in children with special needs is external factors. Research by (Nurqadriani & Syafaruddin, 2021; Saat, 2015) suggest that a lack of support from teachers and peers and a lack of adaptation to appropriate curriculum and teaching methods can affect children's ability to understand science. In the context of educational inclusion, a more individualized approach and intensive support are needed to help children with special needs overcome science learning difficulties. In addition, research (Ashari, 2021) emphasizes the importance of an inclusive learning environment in supporting children with special needs science learning. Lack of adequate facilities and limited accessibility can hinder the developing an optimal understanding of science.

The concept of learning difficulties in children with special needs, as reflected in the Qur'an and hadith, is manifested in the principles of justice, compassion, and social responsibility. The Qur'an teaches the importance of loving one another, treating others fairly, and considering the needs of others, including children with special needs. Surah Al-Hujurat (49:13) states that a person's virtue in the sight of Allah is based on their purity, not on other factors. In the hadith, Prophet Muhammad (peace be upon him) emphasizes that compassion is a characteristic that every individual should possess, without exception. This hadith underscores the necessity of showing compassion to everyone, including children with special needs.

In addition, Islam also teaches social responsibility towards people who need special protection and attention, including children with special needs. Surah An-Nisa (4:5) encourages Muslims to give help and protection to those who are not perfect in their mind. In the hadith, Prophet Muhammad (peace be upon him) gave an example of how

enduring the hardships of an orphan or imperfect child of reason would bring blessings and great rewards in the Hereafter. This hadith affirms the importance of giving attention and assistance to children with special needs. In the view of the Qur'an and hadith, we are stressed to treat all children with fairness, compassion, and social responsibility. Children with special needs need to get the attention and help they need in learning science and other aspects of life. Islam teaches us to help each other, understand individual needs, and create an inclusive environment that allows each child to develop to his or her potential.

The perspective of the Qur'an and hadith puts forward the values of justice, compassion, and social responsibility related to the difficulty of learning science for children with special needs. The Qur'an teaches the importance of fair treatment, compassion, and special attention to those needing protection and assistance. The research results over the past decade provide a deeper understanding of the determinants of science learning difficulties in children with special needs. The study identified factors such as effective learning methods, appropriate approaches, curriculum adjustments, and support provided by teachers and the learning environment. The Qur'an teaches the importance of fair treatment, compassion, and special attention to those needing protection and assistance.

The research findings over the past decade have provided a deeper understanding of the determinants of learning difficulties in science among children with special needs. This study identified factors such as effective teaching methods, appropriate approaches, curriculum adaptations, and support provided by teachers and the learning environment. The research also offers recommendations and practical guidelines for educators and educational practitioners to enhance science learning for children with special needs.

CONCLUSION

The research results over the past decade provide a deeper understanding of the determinants of science learning difficulties in children with special needs. The study identified factors such as effective learning methods, appropriate approaches, curriculum adjustments, and support provided by teachers and the learning environment. The research also provides practical recommendations and guidelines for educators and education practitioners in improving science learning for children with special needs. Integrating theory, the Qur'an, hadith, and research results, we can comprehensively understand the determinants of science learning difficulties in children with special needs. This forms a solid foundation for inclusive, compassionate, and responsive learning to individual needs.

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