

## Systematic Literature Review: Mathematics Learning for Children with Special Needs

Marhamah<sup>1\*</sup>, Ratu Ilma Indra Putri<sup>2</sup>, Zulkardi<sup>3</sup>, Yusuf Hartono<sup>4</sup>

Universitas PGRI Palembang, Palembang, Indonesia<sup>1\*</sup>

Universitas Sriwijaya, Palembang, Indonesia<sup>2,3,4</sup>

marhamah@univpgri-palembang.ac.id<sup>1\*</sup>, ratuilma@unsri.ac.id<sup>2</sup>,

zulkardi@unsri.ac.id<sup>3</sup>, y\_hartono@fkip.unsri.ac.id<sup>4</sup>

### ABSTRACT

The aim of this research is to classify research related to mathematics learning in children with special needs into several categories. This Systematic Literature Review (SLR) research identifies, evaluates, and interprets research that is relevant to mathematics learning for children with special needs. Researchers reviewed 16 articles from 9 journal indexed by Scopus. The results of this research are in the form of classifying the content of the article into 5 categories, namely subjects, material, education level, methods, and student competencies, which can be used as recommendations in further research regarding mathematics learning for children with special needs. The classification results revealed that the most frequently studied research subjects were children with autism, accounting for 37.5% of the articles. In terms of instructional content, the most commonly explored topic was whole number operations, with a proportion of 42.86%. Regarding educational level, elementary school emerged as the most common focus, appearing in 56.25% of the studies. As for research methods, both qualitative and research and development approaches were used in 18.75% of the articles, respectively. Meanwhile, in terms of student competencies, conceptual understanding was the dominant focus, discussed in 41.67% of the reviewed studies.

**Keywords** : children with special needs, mathematics learning

### ABSTRAK

Tujuan dari penelitian ini adalah untuk mengklasifikasikan penelitian-penelitian yang berkaitan dengan pembelajaran matematika pada anak berkebutuhan khusus ke dalam beberapa kategori. Penelitian ini menggunakan pendekatan *Systematic Literature Review* (SLR) untuk mengidentifikasi, mengevaluasi, dan menginterpretasikan penelitian yang relevan dengan pembelajaran matematika bagi anak berkebutuhan khusus. Peneliti meninjau 16 artikel dari 9 jurnal yang terindeks Scopus. Hasil dari penelitian ini berupa klasifikasi isi artikel ke dalam 5 kategori, yaitu subjek, materi, jenjang pendidikan, metode, dan kompetensi siswa, yang dapat digunakan sebagai rekomendasi untuk penelitian lebih lanjut terkait pembelajaran matematika bagi anak berkebutuhan khusus. Hasil klasifikasi menunjukkan bahwa subjek penelitian yang paling sering dikaji adalah anak dengan autisme, dengan proporsi sebesar 37.5% dari total artikel. Dari segi konten pembelajaran, topik yang paling banyak dikaji adalah operasi bilangan cacah, dengan proporsi sebesar 42.86%. Berdasarkan jenjang pendidikan, sekolah dasar menjadi fokus yang paling umum, muncul dalam 56.25% penelitian. Adapun metode penelitian yang digunakan, pendekatan kualitatif dan research and development masing-masing digunakan dalam 18.75% artikel. Sementara

itu, dalam hal kompetensi siswa, pemahaman konseptual menjadi fokus utama, dibahas dalam 41.67% dari studi yang ditinjau.

**Kata Kunci** : anak berkebutuhan khusus, pembelajaran matematika

## INTRODUCTION

The opportunity to obtain quality education is a fundamental right that must be guaranteed by the state for all citizens, including children with special needs. These children, who may experience physical, emotional, mental, intellectual, or social disabilities, require not only access to education but also tailored support to ensure meaningful participation and learning. This principle is firmly established in the Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System, specifically Article 5 paragraph (2), which states that "Citizens who have physical, emotional, mental, intellectual, and/or social disabilities have the right to receive special education." This legal mandate obligates the government to provide inclusive and adaptive educational services that meet the unique needs of each student, reflecting a commitment to equity, dignity, and the development of every individual's potential.

In Indonesia, the government really cares about people with disabilities. Coordinating Minister for Human Development and Culture (*Menteri Koordinator Pembangunan Manusia dan Kebudayaan*), Muhadjir Effendy, said that people with disabilities also have the right to receive good and quality educational services in all pathways, levels and types of education in an inclusive and special manner. This is in line with the opinion of the President of the Republic of Indonesia, Joko Widodo, on International Day of Persons with Disabilities 2021, that "Commitment and service to people with disabilities is a benchmark for the progress of a nation's civilization." Persons with disabilities have the same opportunities as education providers, educators, education staff and students, as in Law Number 8 of 2016 concerning persons with disabilities and Government Regulation number 13 of 2020 concerning appropriate accommodation for students with disabilities.

Desiningrum (2016) defines children with special needs as individuals who experience limitations in one or more areas of ability, whether physical or psychological. These limitations may affect their ability to participate fully in typical educational and social environments, thereby requiring special support, services, or adaptations to meet their developmental and learning needs.

One of the compulsory subjects in both general education and special education is mathematics. According to Yolanda (2019) mathematics is divided into three large groups, namely algebra, analysis and geometry. Mathematics is related to various aspects of life and is related to various fields of science (Sari et al., 2019). Mathematics is needed in human life, because it can help students think systematically, critically, logically and can solve problems in real life (Yunitasari, 2019). However, in reality on the ground, mathematics lessons are not popular with some students and are considered difficult lessons (Fauzy & Nurfauziah, 2021). This is a challenge for educators to teach mathematics to students with special needs.

Several studies regarding mathematics learning for children with special needs have been carried out and published in various national journals accredited and

indexed by Scopus, including, learning division operations for students with mental retardation through math spinning (Nuari et al., 2019), media development for ABK students (Wahyuni et al., 2008), online video-based learning for autistic children (Yakubova et al., 2023), implementation of mathematics learning for children with special needs in Indonesia (Fitriani & Prahmana, 2021). This research focuses on grouping several studies related to mathematics learning for students with special needs.

## METHOD

This research is classified as a systematic literature review research (SLR). Xiao dan Watson (2019) explained that the purpose of SLR is to explain, analyze, combine existing literature, and test hypotheses to develop a new theory. SLR is used to identify, generate, interpret all research that is appropriate to the research topic being studied (Lusiana & Suryani, 2014; Yunanto & Rochimah, 2017). Calderón dan Ruiz (2015) explain that SLR is a way to identify, assess and interpret all research results that are relevant to the topic being researched. The SLR steps used in this research can be seen in Figure 1 which consists of eight steps which are divided into three main stages, namely the planning, implementation and reporting stages (Xiao & Watson, 2019).

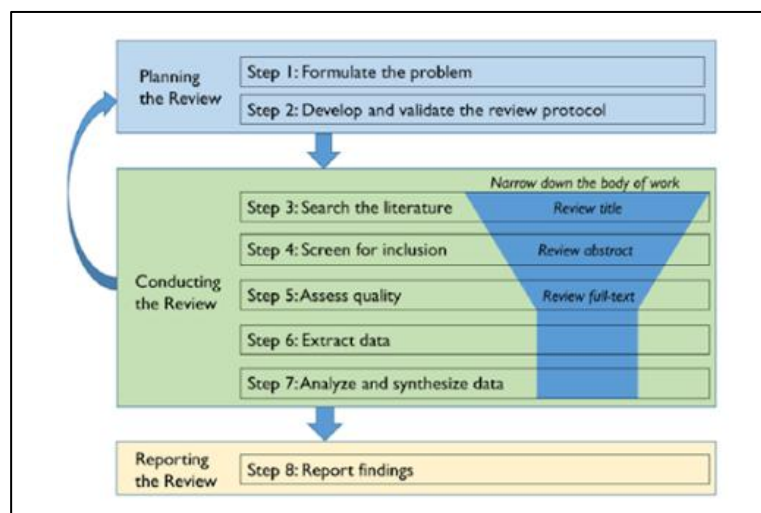


Figure 1. Systematic literature review stage

**Planning Stage:** There are two steps taken at the planning stage, namely: 1) Formulate the problem, The researcher formulated the problem in the form of a research question, namely how is mathematics taught to children with special needs?; 2) Develop and validate study protocols, After formulating the problem, the next step is to develop and validate a study protocol that describes how mathematics is taught for children with special needs based on quality assessment criteria questions, namely, does the article write about the research subject, does the article write about educational level, does the article write about the material. Does the article explain the methods used and does the article mention the student abilities that will be studied in mathematics research for children with special needs?

**Implementation Stage:** At the implementation stage, there are five steps that must be taken, namely:

- 1) Search for literature, use the Publish or Perish application to collect articles that are relevant to the topic being researched.
- 2) Carry out screening, at this stage, screening is carried out to see whether the data meets the eligibility criteria, namely coming from Scopus indexed journals and is research on mathematics learning for children with special needs for the period 2016 – 2023.
- 3) Quality of Assessment, at this stage the article is evaluated based on quality assessment criteria questions, namely:
  - a) Does the article contain research topics on mathematics learning for children with special needs?
  - b) Does the article contain research material on mathematics learning for children with special needs?.
  - c) Does the article explain the level of education in research on mathematics learning for children with special needs?
  - d) Does the article contain research methods used for teaching mathematics to children with special needs?
  - e) Does the article contain student competencies that will be measured in research on mathematics learning for children with special needs?. The value of these five questions is "Yes" or "No". If "Yes" write "Y", and if "No" write "N"
- 4) Extracting Data, data that has been evaluated through quality assessments is then extracted to select and obtain articles related to mathematics learning for children with special needs.
- 5) Data Analysis and Synthesis, at this stage, analysis is carried out on the articles that have been collected, namely by recording each article collected and then classifying the articles.

**Reporting Stage:** The steps taken in this stage involve compiling a report based on the review of the selected articles. These articles were obtained from previously identified data and evaluated using a quality assessment framework. The evaluation aimed to determine whether each article addressed the following criteria: A1 (research subjects), A2 (instructional content), A3 (educational level), A4 (research methods used), and A5 (student competencies).

## RESULT AND DISCUSSION

The research process was carried out through three main stages: planning, implementation, and reporting. In the planning stage, two key steps were taken: first, the researcher formulated the core research question—*how is mathematics taught to children with special needs?*; second, a study protocol was developed and validated, guided by five quality assessment criteria questions, which examined whether the article discussed the research subject, educational level, instructional material, research methods, and student competencies. In the implementation stage, five steps were conducted: (1) literature was collected using the *Publish or Perish* application to gather relevant articles; (2) screening was applied to select studies published in Scopus-indexed journals from 2016 to 2023, specifically focused on mathematics education for children with special needs; (3) a quality assessment was conducted by evaluating articles using five criteria (topics, content, educational level, methodology, and student competencies), each rated as "Y" (Yes) or "N" (No); (4) data extraction

was carried out by selecting articles that met the quality criteria; and (5) the collected articles were analyzed and synthesized by recording and classifying them based on shared themes. Finally, in the reporting stage, the findings were compiled into a report, structured around the results of the quality assessment framework to determine how comprehensively each article addressed the key elements of effective mathematics learning for children with special needs.

**a. The result of the literature search process**

The results of searching for literature are grouped based on Scopus indexed articles related to research related to mathematics learning in children with special needs in the period 2016 - 2023. The results of the literature search process are presented in Table 1.

**Table 1.** The results of the literature search process

No	Journal Name	Sum
1	International Journal of Advanced Science and Technology	1
2	Journal of Physics Conference Series	6
3	Journal of Autism and Developmental Disorders	3
4	International Journal of Educational Methodology	1
5	International Journal of Interactive Mobile Technologies	1
6	Journal on Mathematics Education	1
7	Learning Disability Quarterly	1
8	European Journal of Mathematics and Science Education	1
9	Remedial and Special Education	1

**b. Results of Performing Screening**

Based on the literature review, 16 articles from 9 Scopus-indexed journals were identified. These articles met the screening criteria as they are directly related to research on mathematics learning for children with special needs. The selected studies were analyzed and evaluated using a quality assessment framework comprising five key questions: A1 addresses the research subjects, A2 focuses on the instructional content, A3 identifies the educational level, A4 examines the methodologies employed, and A5 evaluates student competencies. The findings of this assessment are presented in Table 2.

**Table 2.** The findings of the results assessment

No	Author	Title	Year	Journal Name	A 1	A 2	A 3	A 4	A 5
1	R Marlina and B Usodo	Shadow Supervisor Strategy on Student with ADHD is Mathematics Learning Activity for Inclusive Secondary Class of Elementary School	2016	Journal of Physics: Conference Series	Y	Y	Y	Y	Y
2	Z A Shomad, T A Kusmayadi and Riyadi	The Difficulties of Teacher in Teaching Geometry for Mental Retardation Students	2017	Journal of Physics: Conference Series	Y	Y	Y	Y	N
3	Jenny R. Root, PhD, BCBA, Diane M.	Schema-Based Instruction With Concrete and Virtual Manipulatives to Teach	2017	Remedial and Special Education	Y	Y	Y	Y	Y

No	Author	Title	Year	Journal Name	A 1	A 2	A 3	A 4	A 5
	Browder, PhD, Alicia F. Saunders, PhD, and Ya-yu Lo, PhD	Problem Solving to Students With Autism							
4	Putranto and Marsigit	Does Peer Tutoring with Realistic Mathematics Education Approach Effective to Develop Conceptual Understanding of Slow Learners?	2018	Journal of Physics: Conference Series	Y	Y	Y	Y	Y
5	Laila Fatika Nuari, Rully Charitas Indra Prahmana, Irma Fatmawati	Learning of Divison Operation for Mental Retardations' Student Through Math Gasing	2019	Journal on Mathematic s Education	Y	Y	Y	Y	Y
6	Jessica H. Milton, MEd, Margaret M. Flores, PhD, BCBA-D, Alexcia J. Moore, Med, Ja'Lia J, Taylor, MEd and Megan E. Burton, PhD.	Using the Concrete- Representational -Abstract Sequence to Teach Conceptual Understanding of Basic Multiplication and Division	2019	Learning Disability Quarterly	Y	Y	Y	Y	Y
7	Che Ku Nuraini Che Ku Mohd, Faaizah Shahbodin , Muliati Sedek , Munirah Samsudin	Game Based Learning for Autism in Learning Mathematics	2020	Internation al Journal of Advanced Science and Technology	Y	Y	Y	Y	N
8	Rizawati Rohizan, Lim Hean Soon and Dr. Siti Azreena Mubin	Math Fun: A Mobile App For Dyscalculia Children	2020	Journal of Physics: Conference Series	Y	Y	Y	Y	Y
9	Rizawati Rohizan, Lim Hean Soon and Dr. Siti Azreena Mubin	Math Fun: Examining the Effectiveness of Calculic Model in Designing App for Dyscalculia Children	2020	Journal of Physics: Conference Series	Y	Y	Y	Y	Y
10	T Kramarenko, K Bondar and O Shestopalova	The ICT Usage in Teaching Mathematics to Student With Special Educational Needs	2021	Journal of Physics: Conference Series	Y	Y	Y	Y	N
11	Irene Polo- Blanco, Paula Suárez- Pinilla	Comparison of Mathematics Problem-Solving Abilities in Autistic and Non-autistic	2022	Journal of Autism and Developme	Y	Y	Y	Y	Y

No	Author	Title	Year	Journal Name	A 1	A 2	A 3	A 4	A 5
	Juncal Goñi-Cervera, Marta Suárez-Pinilla, Beatriz Payá	Children: the Influence of Cognitive		ntal Disorders					
12	Sriyanti Mustafa, Vernita Sari	Gesture Analysis of Children With Special Needs in Solving Mathematics Problems	2023	International Journal of Educational Methodology	Y	N	Y	Y	Y
13	Michael Cooper and George Farkas	High School Math and Motivation for Autistic Students	2023	Journal of Autism and Developmental Disorders	Y	N	Y	Y	N
14	Tri Murdiyanto, Dwi Antari Wijayanti, Anny Sovia	Identify Slow Learners in Math: Case Study in Rural School	2023	International Journal of Interactive Mobile Technologies	Y	Y	Y	Y	Y
15	Gulnoza Yakubova, Melissa A. Defayette, Briella Baer Chen	Mathematics Learning Through Online Video-Based Instruction for an Autistic Child	2023	Journal of Autism and Developmental Disorders	Y	Y	Y	Y	Y
16	Danuri, S.B. Waluya, Sugiman, Y.I. Sukestiyarno	Numerical Literacy and Math Self-Concept: Children -Friendly Learning in Inclusive Elementary Schools	2023	EJMSE: European Journal of Mathematics and Science Education	Y	Y	Y	Y	Y

Based on the analysis of the collected articles, the research subjects identified include students with autism, speech impairments, slow learners, ADHD (Attention-Deficit/Hyperactivity Disorder), intellectual disabilities (mental retardation), dyscalculia, and specific learning disabilities. These diverse categories reflect the broad spectrum of special needs addressed in studies on mathematics learning, highlighting the importance of differentiated instructional approaches to support each learner's unique challenges and strengths.

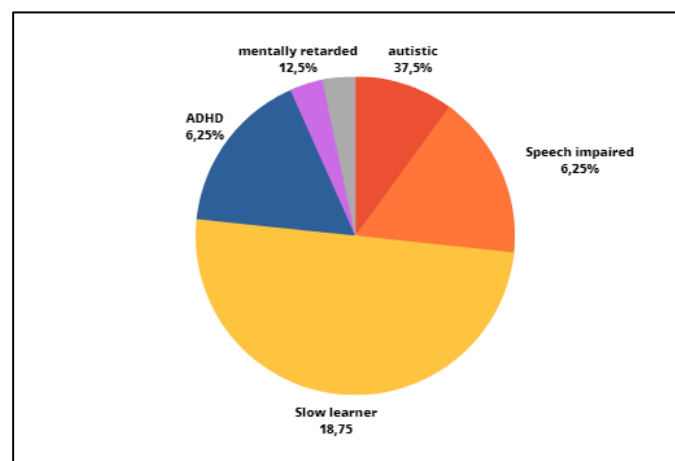
The subject category in research on mathematics learning for children with special needs, namely autistic students, is 37.5% with 1 article from the International Journal of Advanced Science and Technology, 3 articles from the Journal of Autism and Developmental Disorders, 1 article from the International Journal of Educational Methodology, and 1 article from the Journal of Remedial and Special Education. Speech impaired students are 6.25% with 1 article from the Journal of Physics:

Conference Series. Slow learner students were 18.75% with 1 article from the Journal of Physics: Conference Series, 1 article from the International Journal of Interactive Mobile

Technologies and 1 article from EJMSE: European Journal of Mathematics and Science Education. Attention-Deficit/Hyperactivity Disorder (ADHD) students were 6.25% with 1 article from the Journal of Physics: Conference Series. 12.5% of mentally retarded students with 1 Journal on Mathematics Education and 1 article from the Journal of Physics: Conference Series. Dyscalculia students were 12.5% with 2 articles from the Journal of Physics: Conference Series and students with specific learning disabilities were 6.25% with 1 article from the Journal Learning Disability Quartely.

Autistic students are students who experience communication disorders, as well as limited and repet-itive behavior that appears before the age of 3 years (Hallahan & Kauffman, 2006). Speech-impaired students are students who experience disorders of voice, pronunciation/speech fluency, which result in deviations in language form, language content/language function (Desiningrum, 2016). Slow learner students are students whose learning achievements are slightly below the average of normal children in general (Supriadi & Damayanti, 2016). ADHD students are a student's obstacle in concentrating atten-tion accompanied by hyperactive behavior.

Mentally retarded students are students who have intellectual abilities below average (Pradhitya et al., 2017). Dyscalculic students are students who are not yet mature in using mathematical strategies, so they cannot learn arithmetic well and their memory cannot remember smoothly (Azhari, 2017). Students with specific learning disabilities are students who show marked dif-ficulties in one subject area, for example mathematics or writing (Blackhurst & Berdine, 1981). The percentage of mathematics learning research subjects for children with special needs is described in Figure 2.



**Figure 2.** Subjects in research on mathematics learning for children with special needs

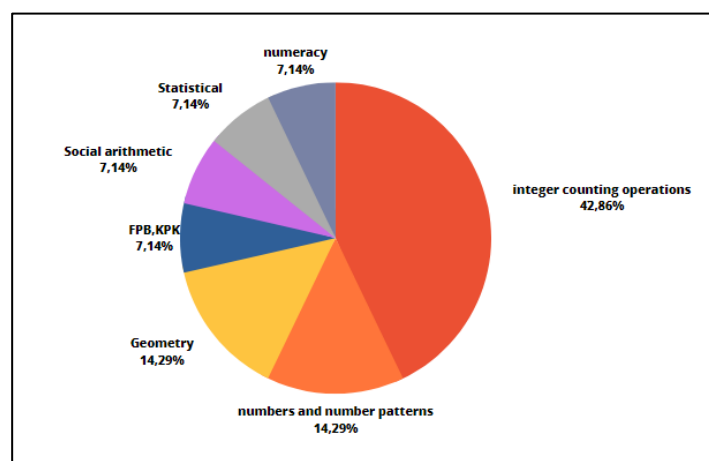
The materials used in research on mathematics learning for children with special needs encompass a wide range of topics, including whole number arithmetic operations (addition, subtraction, multiplication, and division), basic number concepts, number patterns, geometry, social arithmetic, greatest common factor (GCF) and least common multiple (LCM), fractions, plane figures, and statistics. This variety reflects

efforts to adapt and deliver core mathematical content in ways that are accessible and meaningful to learners with diverse needs and abilities.

The material categories in research on mathematics learning for children with special needs include material on integer counting operations (addition, subtraction, multiplication and division) amounting to 42.86% with 1 article from the Journal of Advanced Science and Technology, 1 article from the Journal on Mathematics Education, 2 articles from the Journal of Physics: Conference Series, 1 article from the Journal Learning Disability Quartely, and 1 article from Remedial and Special Education. The material on numbers and number patterns was 14.29% with 1 article from the Journal of Autism and Develop-mental Disorders and 1 article from the Journal of Physics: Conference Series. Geometry material is 14.29% with 2 articles from the Journal of Physics: Conference Series. Social arithmetic material was 7.14% with 1 article from EJMSE: European Journal of Mathematics and Science Education. Material FPB, LCM, Fractions and Flat Figures is 7.14% with 1 article from the International Journal of Interac-tive Mobile Technologies. Statistical material was 7.14% with 1 article from the Journal of Physics: Con-ference Series and numeracy material, comparing the figure of 7.14% with 1 article from the Journal of Autism and Developmental Disorders.

Material on whole number operations (addition, subtraction, multiplication, and division) is most widely used in research on mathematics learning for children with special needs. The importance of inte-ger operations is because in learning mathematics, one of the competencies that students must understand is solving integer operation problems. Understanding whole number calculation operations is very im-portant for students to understand (Arifuddin & Arroseyid, 2017). This is because integer arithmetic operations are the basis for understanding other mathematical concepts.

The percentage of material in research on mathematics learning for children with special needs can be seen in Figure 3.



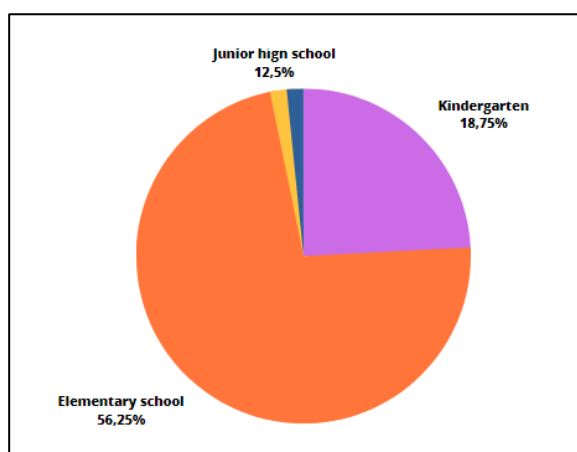
**Figure 3.** Material in research on mathematics learning for children with special needs

The educational levels used in research on mathematics learning for children with special needs are kindergarten, elementary school, middle school, and high school.

The educational level categories in research on mathematics learning for children with special needs include Kindergarten education level at 18.75% with 1

article from the Journal of Autism and Developmental Disorders and 2 articles from the Journal of Physics: Conference Series. Elementary school education level is 56.25% with 1 article from the Journal of Advanced Science and Technology, 1 article from the Journal of Autism and Developmental Disorders, 1 article from the International Journal of Educational Methodology, 1 article from the International Journal of Interactive Mobile Technologies, 2 article from the Journal of Physics: Conference Series, I article from the Journal Learning Disability Quartely and 1 article from EJMSE: European Journal of Mathematics and Sci-ence Education. Junior high school education level is 12.5% with 1 article from the Journal of Physics: Conference Series and 1 article from the Journal of Autism and Developmental Disorders. High School education level is 12.5% with 1 article from the Journal on Mathematics Education and 1 arti-cle from the Journal of Physics: Conference Series.

The percentage of educational levels in research on mathematics learning for children with special needs can be seen in Figure 4.

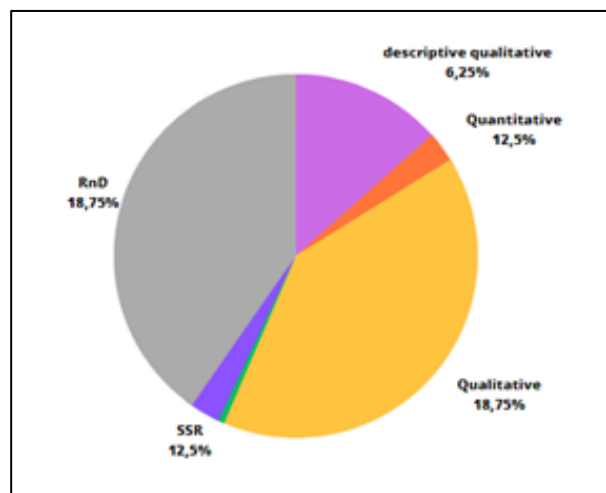


**Figure 4.** Level of education in research on mathematics learning for children with special needs

Research methods used in learning research for children with special needs include a variety of approaches aimed at understanding and improving their educational experiences. Descriptive methods, both qualitative and quantitative, help identify patterns and challenges in learning. Qualitative methods like interviews and observations offer deep insights into personal experiences, while quantitative methods provide measurable data. Case studies allow in-depth analysis of individual learners or settings. Experimental designs and Single Subject Research (SSR) are used to test the effectiveness of specific interventions. Research and Development (RnD) methods focus on creating and evaluating new educational tools or programs. Together, these methods offer a well-rounded understanding of effective strategies for supporting children with special needs.

The categories of methods used in research on mathematics learning for children with special needs include descriptive qualitative at 6.25% with 1 article from the Journal of Physics: Conference Series. Quantitative 12.5% with 1 article from the Journal of Advanced Science and Technology and 1 article from the Journal of Learning Disability Quartely. Qualitative is 18.75% with 1 article from the Journal of Advanced Science and Technology, 1 article from the Journal of Physics: Conference Series and 1 article from EJMSE: European Journal of Mathematics and Science

Education. Case study of 6.25% with 1 article from the International Journal of Interactive Mobile Technologies. Experiments of 25% with 2 articles from the Journal of Autism and Developmental Disorders, 1 article from the Journal of Physics: Conference Series and 1 article from Remedial and Special Education. Single Subject Research (SSR) was 12.5% with 1 article from the Journal on Mathematics Education and 1 article from the Journal of Autism and Developmental Disorders. Research and Development (RnD) was 18.75% with 3 articles from the Journal of Physics: Conference Series.



**Figure 5.** Research methods in research on mathematics learning for children with special needs

The percentage of research methods used in research on mathematics learning for children with special needs can be seen in Figure 5.

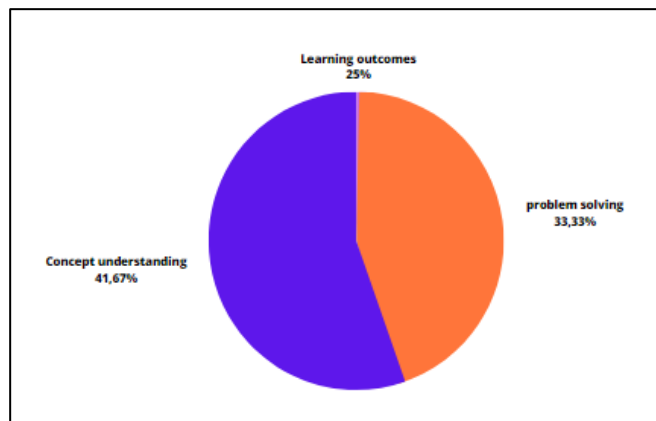
Experimental research methods dominate research on mathematics learning for children with special needs. Djamarah (2020) revealed that using the experimental method students carry out experiments by experiencing and proving for themselves something they are learning.

Research on mathematics learning for children with special needs often focuses on key student competencies such as problem solving, conceptual understanding, and learning outcomes. Problem solving involves the ability to apply strategies to find solutions, while conceptual understanding refers to grasping mathematical ideas and relationships. Learning outcomes encompass the overall academic performance and progress achieved as a result of instruction. These competencies are essential indicators of how well children with special needs are engaging with and benefiting from mathematics education.

The student competencies that are discussed in research on mathematics learning for children with special needs include problem solving at 33.33% with 1 article from the Journal of Autism and Developmental Disorders, 1 article from the International Journal of Educational Methodology, 1 article from EJMSE: European Journal of Mathematics and Science Education and 1 article from Remedial and Special Education. Concept understanding was 41.67% with 2 articles from the Journal of Physics: Conference Series, 1 article from the International Journal of Interactive Mobile Technologies, 1 article from the Journal of Autism and Developmental Disorders, and 1 article from Learning Disability Quarterly. Learning outcomes were

25% with 1 article from the Journal on Mathematics Education and 2 articles from the Journal of Physics: Conference Series.

The percentage of student competency that is discussed in research on mathematics learning for children with special needs can be seen in Figure 6.



**Figure 6.** Student Competencies that are Discussed in Research on Mathematics Learning for Children with Special Needs

## CONCLUSION

From the results of the analysis of 16 articles from 9 journals indexed by Scopus and the research was classified into research on mathematics learning for children with special needs which was evaluated based on quality assessment criteria questions, including subject, material, level of education, methods used and student competency. The dominant research subjects for mathematics learning in children with special needs are autistic students. The material that is often used in research on mathematics learning for children with special needs is whole number operations. Researchers suggest other branches of mathematics such as geometry and statistics. The dominant level of education is elementary school. Researchers suggest that further research can be carried out at other levels. The research method that dominates is experimentation and the student competency that is most discussed in research on mathematics learning for children with special needs is understanding concepts. This research provides information related to research on mathematics learning in children with special needs so that it can be an idea for future researchers who will research mathematics learning in children with special needs.

## DAFTAR PUSTAKA

- Arifuddin, A., & Arrosyid, S. R. (2017). Pengaruh Metode Demonstrasi Dengan Alat Peraga Jembatan Garis Bilangan Terhadap Hasil Belajar Matematika Materi Bilangan Bulat. *Al Ibtida: Jurnal Pendidikan Guru MI*, 4(2), 165–178.
- Azhari, B. (2017). Identification of Dyscalculia Learning Disorders in Madrasah Ibtidaiyah Students. *Al Khawarizmi: Journal of Mathematics Education and Learning*, 1(1), 60–74.
- Blackhurst, A. E., & Berdine, W. H. (1981). *An Introduction to Special Education*. Boston. Little Brown and Company.
- Calderón, A., & Ruiz, M. (2015). A Systematic Literature Review on Serious Games

- Evaluation: An Application to Software Project Management. *Computers & Education*, 87, 396–422.
- Cooper, M., & Farkas, G. (2023). High School Math and Motivation for Autistic Students. *Journal of Autism and Developmental Disorders*, 53(7), 2717–2727.
- Desiningrum, D. R. (2016). *Psychology of Children with Special Needs*. Psychoscience.
- Djamarah. (2020). *Teaching and Learning Strategies*. Rineka Cipta.
- Fauzy, A., & Nurfauziah, P. (2021). Kesulitan Pembelajaran Daring Matematika pada Masa Pandemi COVID-19 di SMP Muslimin Cililin. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, 5(1), 551–561.
- Fitriani, R., & Prahmana, R. C. I. (2021). Penelitian Implementasi Pembelajaran Matematika Bagi Anak Berkebutuhan Khusus di Indonesia. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, 10(3), 1293–1307.
- Hallahan, D. P., & Kauffman, J. M. (2006). *Exceptional Learners: Introduction to Special Education 10th ed.* Pearson.
- Kramarenko, T., Bondar, K., & Shestopalova, O. (2021). The ICT Usage in Teaching Mathematics to Students With Special Educational Needs. *Journal of Physics: Conference Series*, 1840(1), 12009.
- Lusiana, & Suryani, M. (2014). SLR Method for Identifying Issues in Software Engineering. *Sains Dan Teknologi Informasi*, 3(1), 1–11.
- Marlina, R., & Usodo, B. (2016). Shadow Supervisor Strategy on Student with ADHD in Mathematics Learning Activity for Inclusive Secondary Class of Elementary School. *Journal of Physics: Conference Series*, 1227(1), 12016.
- Milton, J. H., Flores, M. M., Moore, A. J., Taylor, J. J., & Burton, M. E. (2019). Using The Concrete–Representational–Abstract Sequence to Teach Conceptual Understanding of Basic Multiplication and Division. *Learning Disability Quarterly*, 42(1), 32–45.
- Mohd, C., Shahbodin, F., Sedek, M., & Samsudin, M. (2020). Game Based Learning for Autism in Learning Mathematics. *International Journal of Advanced Science and Technology*, 29(5), 4684–4691.
- Murdiyanto, T., Wijayanti, D. A., & Sovia, A. (2023). Identify Slow Learners in Math: Case Study in Rural Schools. *Int. J. Interact. Mob. Technol.*, 17(6), 45–61.
- Mustafa, S., & Sari, V. (2023). Gesture Analysis of Children with Special Needs in Solving Mathematics Problems. *International Journal of Educational Methodology*, 9(1), 1–11.
- Nuari, L. F., Prahmana, C. I., & Fatmawati, I. (2019). Learning of Division Operation for Mental Retardations' Student through Math GASING. *Journal on Mathematics Education*, 10(1), 127–142.
- Polo-Blanco, I., Suárez-Pinilla, P., Goñi-Cervera, J., Suárez-Pinilla, M., & Payá, B. (2022). Comparison of Mathematics Problem-Solving Abilities in Autistic and Non-Autistic Children: The Influence of Cognitive Profile. *Journal of Autism and Developmental Disorders*, 54(1), 353–365.
- Pradhitya, R. F., Yuniarta, T. N. H., & Ratu, N. (2017). Geometry Thinking Profile of Mentally Disabled Students based on Van Hiele Level at SMPLB Negeri Salatiga. *Kreano*, 8(1), 85–93.
- Putranto, S., & Marsigit. (2018). Does Peer Tutoring with Realistic Mathematics Education Approach Effective to Develop Conceptual Understanding of Slow Learners? *Journal of Physics: Conference Series*, 1097(1), 12127.

- Rohizan, R., Soon, L. H., & Mubin, S. A. (2020). MathFun: A Mobile App for Dyscalculia Children. *Journal of Physics: Conference Series*, 1712(1), 12030.
- Root, J. R., Browder, D. M., Saunders, A. F., & Lo, Y. (2017). Schema-based Instruction With Concrete and Virtual Manipulatives to Teach Problem Solving to Students With Autism. *Remedial and Special Education*, 38(1), 42–52.
- Sari, I. P., Yensy, N. A., & Maizora, S. (2019). Perbandingan Hasil Belajar Matematika Siswa Antara Model Pembelajaran Kooperatif Tipe Think Talk Write (TTW) Dengan Pembelajaran Ekspositori. *Jurnal Penelitian Pembelajaran Matematika Sekolah (JP2MS)*, 3(3), 329–334.
- Shomad, Z. A., Kusmayadi, T. A., & Riyadi. (2017). The Difficulties of Teacher in Teaching Geometry for Mental Retardation Students. *Journal of Physics: Conference Series*, 983(1), 12140.
- Supriadi, N., & Damayanti, R. (2016). Analisis Kemampuan Komunikasi Matematis Siswa Lamban Belajar Dalam Menyelesaikan Soal Bangun Datar. *Al-Jabar: Jurnal Pendidikan Matematika*, 7(1), 1–9.
- Wahyuni, N., Hiltrimartin, C., & Zulkardi. (2008). Development of Basic Currency Material using the PMRI Approach for Class XI Mild Intellectually Impaired Students at SLBC by Mrs. Palembang. *Journal of Mathematics Education*, 2(1), 1–12.
- Waluya, S. B., & Sukestiyarno, Y. L. (2023). Numerical Literacy and Math Self-Concept: Children-Friendly Learning in Inclusive Elementary Schools. *EJMSE: European Journal of Mathematics and Science Education*, 4(1), 19–27.
- Xiao, Y., & Watson, M. (2019). Guidance on Conducting a Systematic Literature Review. *Journal of Planning Education and Research*, 39(1), 93–112.
- Yakubova, G., Defayette, M. A., & Chen, B. B. (2023). Mathematics Learning Through Online Video-based Instruction for an Autistic Child. *Journal of Autism and Developmental Disorders*, 53(6), 2349–2361.
- Yolanda, M., Yensy, N. A., & Siagian, T. (2019). Efektifitas Lembar Kerja Siswa dengan Pendekatan Kontekstual di Kelas VIII SMP Negeri 13 Kota Bengkulu. *Jurnal Penelitian Pembelajaran Matematika Sekolah (JP2MS)*, 3(3), 353–361.
- Yunanto, A. A., & Rochimah, S. (2017). Systematic Literature Review Terhadap Evaluasi Perangkat Lunak Tentang Serious Game. *Jurnal Informatika*, 4(1), 54–65.
- Yunitasari, I. (2019). Development of Mathematics Teaching Materials by Utilizing the Geogebra Program to Improve Conceptual Understanding and Student Learning Independence on the Subject of Building Flat-Side Spaces. *Journal of Mathematics Learning*, 2(2), 1–11.