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Using the Somatic, Auditory, Visual, and Intellectual (SAVI) Learning Model for Improving Geometry Ability in Early Childhood

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ABSTRACT: One of the most important areas of mathematics education that must be developed from a young age is geometry. Various studies state that arithmetic, geometry, and measurement are three mathematical disciplines that must be prioritized in early childhood education. This research aims to determine the effect of the Somatic, Auditory, Visual, and Intellectual (SAVI) learning model on the geometric abilities of children aged 5-6 years. This research uses a pre-experimental experimental method with a one-group pretest-posttest design. The sample in this study was 18 children aged 5-6 years old Harapan Bunda Kindergarten Pancung Sol Pesisir Selatan. Data collection was obtained from observation and documentation, then the data was analyzed using paired sample tests. The results obtained in this research are that the SAVI model can improve the geometric abilities of children aged 5-6 years. This is known from the results of the paired sample t-test, which obtained a significance value of $0.000 < 0.05$, which means H_0 is rejected and H_a is accepted so that children's initial mathematical abilities, geometry, increase through the SAVI learning model. Children may become actively involved in their education with the help of the SAVI learning model, particularly when it comes to teaching them geometric forms. Because the teacher may utilize real items to aid in learning, children can recognize and retain the geometric forms around them as they grow older.

Keywords: SAVI learning model, geometry ability, early childhood

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1 INTRODUCTION

Education must be carried out from an early age, starting from early childhood education. Early childhood education is the foundation for children to develop all their potential and aspects of child development which are called early childhood. The development obtained during this period greatly influences the child's subsequent development. Early childhood is also a golden period for children that cannot be repeated so that children's development must be done as well as possible (Hariawan et al, 2019). Currently, brain development in children has a very important influence on aspects of child development. This is proven by the research results of Gilmore et al., (2018) that human brain development from birth to early childhood is very fast and dynamic so it is important to build aspects of development in children. One branch of cognition that is very important to develop from an early age is mathematical ability. Hardy and Hemmeter (2019) say that early mathematics ability is an important predictor for early childhood which is very influential on children's subsequent academic achievement. There are so many things that children get when learning mathematics, such as learning about geometry.

This is in line with what Hosain and Wiest (2013) said that geometry is an important area of mathematical study that is taught from the early grades and is used widely in real life situations. Geometry learning in early childhood must be done in stages, starting from the easiest to the most difficult (Partini et al, 2017). This is because young children need the opportunity to explore 2D and 3D geometric shapes freely. Teachers are required to be able to introduce the names and characteristics of each geometric shape, such as 2D geometric shapes consisting of squares, rectangles, triangles, and circles, while 3D shapes include balls, cylinders, parallelograms, diamonds, etc. Geometry learning should be taught in a real way, that way children will enrich their own knowledge about geometric shapes, both 2D and 3D geometric shapes. Apart from that, Selmi et al., (2014) also explain that by studying geometry children can explore the shapes of objects, the properties of these shapes, and how these objects are related to each other. Geometric thinking that young children can know and recognize several names and geometric shapes through children's experiences in everyday life (Ozcakir et al., 2019). For example, in learning activities children will know the geometric shape of a triangle, children will know that a triangle has 3 sides that meet each other and has 3 vertices. Then, children learn about triangular geometric objects such as house roofs, clothes hangers, birthday hats, etc. This will make it easier for children to differentiate between 2D and 3D geometric shapes, for example children know that a circle is a 2D geometric shape while a ball is a 3D geometric shape.

Based on the results of observations regarding children's geometric abilities in Harapan Bunda Kindergarten, Pancung Soal sub-district, Pesisir Selatan, there are still many children who have low geometric abilities. This can be seen when children make mistakes in showing geometric shapes which are exemplified by surrounding objects, especially 3D geometric shapes (tubes and balls). As a result, children find it difficult to differentiate

between geometric shapes and objects in 2D and 3D geometric shapes. Then, children also make mistakes when saying the names of each geometric shape, including square, rectangular, triangle, circle, ball, and tube, which are the 2D and 3D shapes that children most often encounter in everyday life. Not only that, but children also hesitate when mentioning geometric shapes, whether they are given examples with objects around the child or not. This happens because so far there has been no special model that teachers use to actively improve children's geometric abilities.

One effort to overcome the problems that occur is to provide a learning model so that children's geometric abilities can develop well, namely by using Somatic, Auditory, Visual, Intellectual (SAVI) learning model. The SAVI learning model is designed so that children can learn actively by using all their five senses, such as learning by doing and moving, learning by listening and speaking, learning by seeing and observing, and learning by thinking and solving problems. In line with what Meier (2000) stated, the SAVI learning model is learning that combines physical movement with intellectual activity, where the use of all five senses has a big influence on the learning process.

Utami and Harianja (2023) also say that the SAVI learning model is a child-centered model so that it can make children active and directly involved in the learning process. This is supported by Andrianti et al., (2016) that the SAVI learning model is a learning process based on children's activities that can move actively both physically and using the five senses so that the child's entire body and mind can be involved. Active involvement of children in the learning process has built children's understanding step by step (Amineh & Asl, 2015). In line with results study Kencanawati, et al., (2020) that the SAVI learning model can increase participation and activity Study student. For that, this research purpose to find out the effect of using the SAVI learning model as effort improve the geometric abilities of children aged 5-6 years.

2 THEORETICAL STUDY

2.1 *Somatic, Auditory, Visual, and Intellectual (SAVI) Learning Model*

The SAVI learning model is one approach from accelerated learning discovered by Dave Meier. Meier created a learning-centered model to participant educate, where participant educate involved active in the learning process so that can build knowledge based on with experience gained. The SAVI learning model is based on theory Study Piaget's constructivism, Piaget argued that in the learning process child try in a way active understand their world and accept stimulation information Then appreciate through their experience can with arrange mental structure in cycles assimilation and accommodation in a way sequentially (Pauli & Reusser, 2015). Wijaya et al., (2021) added that The SAVI (Somatic, Auditory, Visualization, Intellectually) learning model is one from type of learning model cooperative, involved learning all sense in activity Study.

SAVI learning model was designed so child can Study in a way active with move all five existing senses, because lots difficult child for concentrate without do something in a way physique. The SAVI learning model is demanding participant educate involve all

over five sense in learning, so student more interested to material presented will impact on results Study students (Sulaksana et al., 2018; Yudiari et al., 2015; Yuliana & Sisma, 2019). Septia, et al., (2023) also said that the SAVI learning model can make atmosphere Study become more interesting and fun Because involve use all tool senses you have participant educate, not only hear and see teacher's explanation but there is a visual medium for Look , students try For explain and practice lesson, discussion fellow Friend as well as ask fellow friends and teachers so learning also happens more communicative and more can optimizing potential learning you have participant educate. This matter strengthened with Thersia et al., (2019) statement that a conducive and active learning process can realized through a combined learning model with approach interesting learning so that capable become corner look for determine activity learning .

SAVI learning model has four element Study among them Study with moving and doing (somatic), learning with speaking, and listening (auditory), learning with observing (visual), learning with solve problems and thinking (intellectual) (Murti et al ., 2019). All the elements of the SAVI learning model have mixed and matched between one and another as well own linkages meaning. In carrying out teacher learning must involve all existing elements, so that learning become more maximum. Sarnoko et al., (2016) said that learning with involve all elements contained in the SAVI learning model can awaken intelligence child in a way integrated through merger movement physical and activity intellectual, creating environment and atmosphere positive, varied, interesting and effective, productive learning creativity and ability psychomotor child as well as maximizing sharpness concentration child through sight, hearing and knowledge.

2.2 *Geometry Ability*

Geometry is involving abilities, shape, size, space, position direction and movement. In life very much everyday shaped objects, like geometry Good shaped 2D and 3D geometry. Gejard and Melender (2018) also have opinion that geometry is field related mathematics with statement shape, size, relative position of images, properties space and relationships points, lines, and shapes. Ivrendi et al., (2018) also explained that There is a number of a must aspect developed in learning geometry like introduction shape, find feature shape, appearance mental form, proximity, symmetry, movement, and topology. However, in learning child preschool only develop learning about understanding topology. Topology here interpreted with studies geometry quantitative without exists numbers, measurements, and calculations like introduce form, characteristics, and properties geometry.

Learning geometry in children preschool must done in a way gradually, started from the easiest until with the most difficult (Partini et al., 2017). This matter because child preschool need chance for explore form 2D and 3D geometry free. Teachers are sued for can introduce names and characteristics from each form geometry like form 2D geometry consists of square, square length, triangle, and circle whereas 3D shapes include balls, cylinders, parallelograms, diamonds, etc. Further, this is also explained by Gejard and Melender (2018) that teachers must can provide explanation about draft learning correct

geometry to child, push child for explore shapes geometry moment activity learning and identifying plans and needs study for child.

Teacher knowledge about geometry own impact direct to method teach they to children (Tutak & Adams, 2015). What teachers teach and how they transfer knowledge that to child in a way direct influence understanding children's learning (Birel et al., 2020). Learning geometry should give in a way real, with so child will enrich his knowledge Alone about forms geometry good form 2D and 3D geometry. Apart from that, Selmi et al., (2014) also explains that with Study geometry child can explore form thing, nature from form these, as well How objects each other relate. Student of preschool can know and recognize some name and form geometry through experience child in life every day (Ozcakir et al., 2019). For that's important introduce and improve ability geometry since early.

3 METHOD

This research is quantitative research with experimental methods. The experimental method used is a *pre-experimental design* in the form of a one-group pretest - posttest design, in this design the researcher carries out two measurements, before being treated (*pretest*) and after being given treatment (*posttest*) to be able to determine the effect of the treatment SAVI learning model on the geometry abilities of early childhood. Sampling in this research used a purposive sample technique. The sample in this study consisted of 18 children aged 5-6 in group B of Harapan Bunda Kindergarten, Pancung Soal sub-district, Pesisir Selatan.

3.1 Instrument

The instrument in this research uses a teacher-made test in the form of a six-item statement consisting of an oral test and an action test. Instruments are used to make research easier, and the results are more accurate, complete, and systematic so that the data is easier to process. The geometric ability instrument is a tool for measuring children's geometric abilities. This research instrument can be used after conducting validity and reliability tests (see Table 1).

Table 1. Grid Instrument Geometry Ability

Variable	Sub Variable	Indicator	Statement Items
Geometry Ability	Compile	Arranging shapes geometry	Children are capable compile forms geometry
		Mention form geometry	Children are capable mention forms geometry
	Differentiate	Mention shaped objects geometry	Children are capable mention shaped objects 2D geometry. Children are capable mention shaped objects 3D geometry.
		Differentiate object shaped 2D and 3D geometry	Children are capable differentiate object shaped 2D and 3D geometry
Classify	Classify form the same geometry.	Children are capable classify forms the same geometry	

Source: (Parks, 2015: 37), (Rohman, Rustono & Rifa'i. 2016: 54), (Lee, 2017: 230), (Elia, Heuvelpanhuizen & Gagatsis, 2018: 77) and (Reeve, 2019 : 256-259)

3.2 Data Collection

The data collection techniques used consist of observation and documentation. Observations were carried out by looking at the children's *pre-test* and *post-test results* after using the SAVI learning model, then assessed using a checklist format adapted to the assessment criteria in the ECE curriculum using four assessment criteria. The assessment criteria for this research are very well developed given a score of 4, developing according to expectations given a score of 3, starting to develop given a score of 2, not yet developed given a score of 1. Meanwhile, documentation is carried out to strengthen the data. observation, where documentation contains photos and videos of children's activities while learning before and after being given treatment. The collected data was analyzed using the normality test, homogeneity test and hypothesis test (*paired sample test*).

4 RESULT AND DISCUSSION

4.1 Results

The purpose of this research focuses improving children's geometric abilities through the SAVI learning model with hypothesis testing analysis (paired sample test) to formulate results. The results of this research show that there is an increase in children's geometric abilities through the SAVI learning model carried out by the teacher. This research data was obtained from observations aimed at children through documentation of several photos and videos. Then data analysis was carried out using normality tests, homogeneity tests, and hypothesis tests to find out and show differences before and after treatment. The following is the data on the pre-test and post-test results in Table 2.

Table 2. Calculation Results of *Pre-Test Scores* and *Post-Test Scores*

N=18	Geometry Ability of Children Aged 5-6 Years			
	Minimum	Maximum	Mean	Std. Deviation
Pretest	53	75	63.03	5,883
Post-test	77	95	85.57	6,235

From the Table 2, it shows that children's geometric abilities before being given treatment had a low average, namely 63.03. Meanwhile, children's geometric abilities after being treated through the SAVI learning model increased to an average of 85.57 for 18 children. Before the data is analyzed using the paired sample test, the data must be normally distributed and proven to be homogeneous. The data from the calculation results of the normality test and homogeneity test can be seen in Table 3.

Table 3. Normality Test Calculation Results

Geometry Ability	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistics	Df	Sig.	Statistics	Df	Sig.
Pretest	,202	18	,050	,911	18	,080
Post-test	,233	18	,011	,875	18	,022

From Table 3, before and after being treated with the SAVI learning model to improve children's geometric skills, data was normally distributed using the Kolmogorov-Smirnov and Shapiro-Wilk formulas with the help of SPSS.26 windows, where data is normal if $p > 0.05$.

Table 4. Homogeneity Test Calculation Results

Geometry Ability	Levene Statistics			
	Statistics	df1	df2	Sig.
	,432	1	34	,516

From table 4 above, the significance value (sig) for geometric ability is 0.516, which means more than 0.05 ($0.516 > 0.05$), so it can be concluded that the data variance using the Levene Statistics formula is rocky with the help of SPSS.26 windows and is proven to be homogeneous. This is because data is called homogeneous if $p > 0.05$. The following data results from the hypothesis using the paired sample t-test in Table 5.

Table 5. Calculation Results Paired Sample t-Test

Geometry Ability	Q	Df	Sig. (2-tailed)	Paired Differences			
				Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
	-11,181	17	,000	-22,542	2,016	-26,795	-18,288

From table 5 above, the paired sample t-test obtained a significance value of 0.000, which is smaller than the error level of 0.05 ($0.000 < 0.05$). Based on these results, it can be stated that H_0 is rejected, and H_a is accepted. The SAVI learning model can improve the geometry abilities of children aged 5-6 years.

4.2 Discussion

Geometry skills play an important role in everyday life, it could be said that geometry is inseparable from everyday life (Hwang et al., 2019). Hwang et al (2018) added that the environment can stimulate and grow children's knowledge about geometric characteristics based on the objects around them. Children cannot be separated from the objects around them. Since they were small children, they have been familiar with nearby objects which are shaped like geometric shapes, for example cupboards, tables, books, balls, or other objects which are used to fulfill their needs in daily life and for playing purposes.

In learning geometry there are levels of geometric thinking which are useful for measuring children's geometric abilities. Children must go through all these levels because children will not be able to reach a level of thinking without going through the previous level and each level also shows the thinking abilities that children use in learning geometry. Children aged 5-6 years have a geometric thinking level at level 1 (visualization). In accordance with van Hiele's theory, at stage 1 (visualization) children recognize and identify geometric shapes based on their appearance which are similar to objects in the real world, such as children seeing wall clocks as "circle" geometric shapes, children seeing books as "square" geometric shapes, children see the blackboard as a "rectangle" geometric shape, children see the roof of the house as a "triangle" geometric

shape, children see the ball as a "ball" geometric shape and children see drinking water bottles as a "tube" geometric shape.

The SAVI learning model influences children's geometric abilities, where during the activity, children are directed to be more active in expressing their ideas and knowledge so that children can solve problems based on their experiences. Children's knowledge is stimulated with the help of media in the form of 2D and 3D geometry and then connected with concrete objects around the child which are like 2D and 3D geometric shapes. With this stimulation, it is easier for children to solve problems when asked to arrange, name, differentiate and classify 2D and 3D geometric shapes and objects in 2D and 3D geometric shapes, because children directly experience learning activities and children's geometric abilities can also be well stimulated.

Geometry learning refers to all the elements in the SAVI learning model, the learning activities carried out will stimulate children to be more active, children will learn by doing/moving, listening, and then talking, seeing, and observing and thinking to solve problems given by the teacher. All elements of the SAVI learning model have been combined and matched with each other and have related meanings. Sarnoko et al., (2016) say that learning by involving all the elements contained in the SAVI learning model can awaken children's intelligence in an integrated manner through combining physical movement and intellectual activity, creating a positive, varied, interesting and effective learning environment and atmosphere., produces children's creativity and psychomotor abilities and maximizes children's sharpness of concentration through vision, hearing, and knowledge.

Apart from that, when learning activities use the SAVI learning model, children look enthusiastic because learning is done in a fun way, children learn by doing, hearing, seeing, and solving problems (Utami & Harianja, 2023). In line with what Gohel (2020) explains, the auditory learning process (hearing) makes children learn by remembering all the information based on what they hear. Meanwhile, visual learning (seeing) can help students to develop visual thinking so that students become better at understanding, retaining information, and relating ideas, words, concepts, and images (Raiyn, 2016). Through listening and seeing activities, audio and visual and audio-visual learning styles make it easier to understand the material.

The results of this research are not much different from the results of previous research, in the research results of Sahara et al., (2018) show that discovery learning using the SAVI approach has a positive influence on children's mathematics learning achievement, especially in learning geometry. Apart from that, the research results of Dewi et al., (2018) also show that the SAVI learning model with the help of Lego media can improve children's cognitive abilities by obtaining an F_{Count} of 6.465 and improve children's language skills by obtaining an F_{Count} of 3.860. Then, the research results of Utami and Harianja (2023) also show that the SAVI learning model is declared feasible for stimulating students' abilities.

The learning process is still centered on the teacher (*teacher center*), the teacher uses the classical learning model with lecture, question and answer methods and provides several activities for children to complete. Basically, teachers in various Kindergartens have carried out activities to stimulate geometric skills such as folding, cutting, filling in patterns and coloring, but these are not interesting enough to stimulate children's geometric abilities so that children can remember, understand, and not get bored. Geometry learning should be designed in an interesting way so that children can easily remember and understand it, such as making children active in every activity, both in terms of doing, speaking, observing, and thinking as well as mixing and matching non-concrete and concrete learning media. Teachers' creative and innovative ideas in teaching geometric shapes to children need to be conveyed optimally so that learning objectives can be achieved well because in fact every child has different geometric abilities. Therefore, teachers must be able to encourage children to be interested in and like geometry so that children do not get bored when carrying out learning activities.

5 CONCLUSION

The results of this research indicate that the SAVI learning model can be used to introduce the geometric abilities of children aged 5-6 years as proven by the results of the paired sample t-test hypothesis test which obtained a significance value of $0.000 < 0.05$ so that there are differences before and after being given treatment using the SAVI learning model. The SAVI learning model can make children active in the learning process, especially in introducing geometric shapes to children. That way, children can know and remember the geometric shapes around them until they grow up because in the learning process the teacher can use concrete objects around the child.

6 REFERENCES

- Alfiani, D. A. (2016). Penerapan Model Pembelajaran SAVI (Somatis, Auditori, Visual, Intelektual) Terhadap Hasil Belajar Anak Usia Dini. *Jurnal Pendidikan Anak*, 2(1), 1-15. <https://www.syekhnrjati.ac.id/jurnal/index.php/awlady/article/view/763>
- Amineh, R. J., & Asl, H. D. (2015). Review Of Constructivism And Social Constructivism. *Journal of Social Sciences, Literature and Languages*, 1(1), 9-16.
- Andrianti, R. Y., Irawati, R., & Sudin, A. (2016). Pengaruh Pendekatan SAVI (Somatic, Auditory, Visual, Intellectual) Dalam Meningkatkan Kemampuan Komunikasi Matematis Dan Motivasi Belajar Siswa Sekolah Dasar Pada Materi Pengolahan Data. *Jurnal Pena Ilmiah*, 1(1), 471-480. <https://ejournal.upi.edu/index.php/penailmiah/article/view/2976>
- Birel, G. K., Deniz, D., & Onel, F. (2020). Analysis of primary school teachers' knowledge of geometry. *International Electronic Journal of Elementary Education*, 12(4), 303-309.
- Dewi, D. M. T., Masitoh, S., & Bachri, B. S. (2019). Improve Language And Cognitive Ability Through SAVI Learning Model With Lego Media For Preschool Child In Group A. *Advances in Social Science, Education and Humanities Research*, 212, 715-719. <http://doi.org/10.2991/icei-18.2018.162>

- Elia, I., & Heuvel-panhuizen, M. V. D., & Gagatsis, A. (2018). Geometry Learning in the Early Years : Developing Understanding of Shapes and Space with a Focus on Visualization. 73–95. http://doi.org/10.1007/978-981-10-7153-9_5
- Gejard, G., & Melander, H. (2018). Mathematizing in preschool: Children's participation in geometrical discourse. *European Early Childhood Education Research Journal*, 26(4), 495-511.
- Gilmore, J. H., Knickmeyer, R. C., & Gao, W. (2018). Imaging Structural And Functional Brain Development In Early Childhood. *Nature Review: Neuroscience*. 19, 123-137.
- Gohel, K. (2020). A Study of effectiveness of auditory learning style instructional strategy on science achievement with reference to study habit. *Purakala (UGC Care Journal)*, 31(4), 412-420.
- Hardy, J. K., & Hemmeter, M. L. (2019). Systematic Instruction of Early Math Skill For Preschoolers At Risk For Math Delays. *Topics in Early Childhood Special Education*, 38(4), 234-247. <https://doi.org/10.1177/0271121418792300>
- Hariawan, R., Nurul, U., Muhammad, H. A. Y., & Imron, A. (2019). Contributions Management of Parenting and Education Program to Strengthen The Service Three Early Childhood Education Center. *International Education Studies*. 12 (2). <http://doi.org/10.5539/ies.v12n2p100>
- Hosain, M., & Wiest, L. R. (2013). Collaborative Middle School Geometry Through Blogs And Otherweb 2.0 Technologies. *Journal of Computers in Mathematics and Science Teaching*, 32(3), 337–352. <https://eric.ed.gov/?id=EJ1006190>
- Hwang, W. Y., Hoang, A., & Tu, Y. (2019). Exploring Authentic Contexts With Ubiquitous Geometry To Facilitate Elementary School Students' Geometry Learning. *The Asia-Pacific Education Researcher*, 29, 269-283. <https://doi.org/10.1007/s40299-019-00476-y>
- Hwang, W. Y., Liu, Y. F., Purba, S. W. D., & Zhang, Y. Y. (2018). Investigation On The Effects Of Measuring Authentic Contexts On Geometry Learning. *IEEE Transactions on Learning Technologies*, 12, 291-302.
- Ivrendi, A., Erol, A., & Atan, A. (2018). Developing a test for geometry and spatial perceptions of 5-6 year old. *Kastamonu Education Journal*, 26(6).
- Kencanawati, S. A. M. M., Sariyasa, S., & Hartawan, I. G. N. Y. (2020). Pengaruh penerapan model pembelajaran SAVI (Somatic, Auditory, Visual, Intellectual) terhadap kemampuan berpikir kreatif matematis. *Pythagoras: Jurnal Pendidikan Matematika*, 15(1), 13–23. <https://doi.org/10.21831/pg.v15i1.33006>
- Lee, J. E. (2017). Preschool Teachers' Pedagogical Content Knowledge In Mathematics. *International Journal of Early Childhood*. 49, 229-243.
- Meier, D. (2000). *The Accelerated Learning Handbook A Creative Guide To Designing And Delivering Faster, More Effective Training Programs*. United Kingdom: McGraw-Hill.
- Murti, E. D., Nasir, N., & Negara, H. S. (2019). Analisis Kemampuan Pemecahan Masalah Matematis : Dampak Model Pembelajaran SAVI ditinjau dari Kemandirian Belajar Matematis. *Desimal: Jurnal Matematika*, 2(2), 119–129. <https://doi.org/10.24042/djm.v2i2.4072>.
- National Research Council. (2009). *Mathematics Learning In Early Childhood: Paths Toward Excellence And Equity*. Washington, DC : National Academies Press.

- Ozcakir, B., Konca, A. S., & Arikan, N. (2019). Children's Geometric Understanding Through Digital Activities: The Case Of Basic Geometric Shapes. *International Journal of Progressive Education*, 15(3), 108-122.
- Parks, A. N. (2015). *Exploring Mathematics Through Play In The Early Childhood Classroom*. Teachers College Press.
- Partini, K. E., Wirya, I. N., & Ujianti, P. R. (2017). Pengaruh Metode Proyek Terhadap Kemampuan Mengenal Bentuk Geometri Pada Kelompok B Gugus I Singaraja Semester I. *e-Journal Pendidikan Anak Usia Dini: Universitas Pendidikan Ganesha*, 5(2), 210-219. <https://ejournal.undiksha.ac.id/index.php/JJPAUD/article/view/12606/12967>
- Pauli, C., & Reusser, K. (2015). Co-constructivism in educational theory and practice. *International Encyclopedia of the Social and Behavioral Sciences*. (Second Edition). 913-917
- Raiyn, J. (2016). The Role of Visual Learning in Improving Students' High-Order Thinking Skills. *Journal of Education and Practice*, 7(24), 115-121. <http://iiste.org/Journals/index.php/JEP/article/view/32607/33498>.
- Reeve, R. A. (2019). Mathematical Learning And Its Difficulties In Australia. *International Handbook of Mathematical Learning Difficulties*, 253–264. http://doi.org/10.1007/978-3-319-97148-3_16
- Rohman, N., Rustono., & Rifa'i, A. (2016). Cooperative Learning Model To Increasing Mathematical Concept For Early Childhood. *Indonesian Journal of Early Childhood Education Studies*, 5(1), 54-58. <https://doi.org/10.15294/ijeces.v5i1.11277>
- Sahara, R., Mardiyana., & Saputro, D. R. S. (2018). Discovery Learning With SAVI Approach In Geometry Learning. *Journal of Physics: Conference Series*, 1013, 1-5. <https://iopscience.iop.org/article/10.1088/1742-6596/1013/1/012125>
- Sarnoko., Ruminiarti., & Setyosari, P. (2016). Penerapan Pendekatan SAVI Berbantuan Video Pembelajaran Untuk Meningkatkan Aktivitas Dan Hasil Belajar IPS Siswa Kelas IV SDN I Sanan Girimarto Wonogiri. *Jurnal Pendidikan*, 1(7), 1235-1241. <http://journal.um.ac.id/index.php/jptpp/article/view/6524>
- Selmi, A. M., Gallagher, R. J., & More-Flores, E. R. (2014). *Early Childhood Curriculum For All Learners: Integrating Play And Literacy Activities*. SAGE Publications.
- Septia, P., Pandra, V., & Mandasari, N. (2023). Penerapan Model Pembelajaran SAVI Dalam Pembelajaran Bangun Ruang Untuk Mengukur Hasil Belajar Matematika, *Journal of Elementary School (JOES)*, 6(2), 468-476. <https://doi.org/10.31539/joes.v6i2.6661>
- Shoimin, A. (2014). *68 Model Pembelajaran Inovatif Dalam Kurikulum 2013*. Yogyakarta: Ar-ruzz Media.
- Sulaksana, Y. T., Margunayasa, I. G., & Wibawa, I. M. C. (2018). Pengaruh Model Pembelajaran SAVI (Somatic Auditory Visualization Intellectually) Berbantuan LKS terhadap Hasil Belajar IPA. *Jurnal Pedagogi Dan Pembelajaran*, 1(3). <http://dx.doi.org/10.23887/jisd.v3i3.18895>.
- Thersia, V., Arifuddin, M., & Misbah. (2019). Meningkatkan kemampuan pemecahan masalah melalui pendekatan somatis auditori visual intelektual (SAVI) dengan model pengajaran langsung. *Berkala Ilmiah Pendidikan Fisika*, 7(1), 19-27.

- Tutak, F. A., & Adams, T. L. (2015). A study of geometry content knowledge of elementary preservice teachers. *International Electronic Journal of Elementary Education*, 7(3), 301-318.
- Utami, W. S., & Sri, I. H. (2023). Pengembangan Model Stimulasi Geometri Berbasis Pendekatan SAVI (*Somatic, Auditory, Visual, Intellectual*) untuk Anak Usia Dini. *Jurnal PG-PAUD Trunojoyo: Jurnal Pendidikan dan Pembelajaran Anak Usia Dini*, 10(1), 25-36. <https://doi.org/10.21107/pgpaudtrunojoyo.v10i1.18879>
- Wijaya, I. K. P., Bayu, G. W., & Sumantri, M. (2021). Model Pembelajaran Somatis, Auditory, Visualization, Intellectually (SAVI) Berbantuan Icebreaker Terhadap Hasil Belajar IPA Siswa. *Jurnal Ilmiah Pendidikan Profesi Guru*, 4(1), 54-60. <http://dx.doi.org/10.23887/jippg.v4i1>
- Yudiari, M. M., Parmiti, D. P., & Sudana, D. N. (2015). Pengaruh Model Pembelajaran SAVI Berbantuan Media Mind Mapping Terhadap Hasil Belajar IPA Siswa Kelas V. *MIMBAR PGSD Undiksha*, 3(1). <http://dx.doi.org/10.23887/jjgsd.v3i1.5683>.
- Yuliana, D., & Sisma, R. U. A. (2019). Penerapan Model Pembelajaran Savi (Somatis, Auditori, Visual, Dan Intelektual) Untuk Meningkatkan Minat Dan Hasil Belajar Peserta Didik. *Jurnal Pendidikan Dan Kewirausahaan*, 7(1). <https://doi.org/10.47668/pkwu.v7i1.19>.