Jurnal Paedagogy:
Jurnal Penelitian dan Pengembangan Pendidikan
https://e-journal.undikma.ac.id/index.php/pedagogy/index
Email: paedagogy@undikma.ac.id

Vol. 11 No. 1 : January 2024
E-ISSN: 2722-4627
pp. 132-143

Development of 'Smart Egg Puzzle' as An Innovative Learning Media in Introducing Numbers to Early Childhood

Rizka Febrilia Inkasari, Indah Kharismawati*, Selasi Priatiningsih
Universitas PGRI Argopuro Jember, Indonesia.
*Corresponding Author. Email: iendah.kharismawati@gmail.com

Abstract: This study aims to develop a 'smart egg puzzle' as an innovative learning media to introduce numbers to 5-6-year-old children at TK Lab.School IKIP PGRI Jember. This research method used research and development with the ADDIE model, namely Analysis, Design, Development, Implementation, and Evaluation. The instruments used in this study included validation instruments, response questionnaires, pretests, and posttests. Quantitative data analysis was processed by presenting percentages using the Likert scale as a measurement scale. Expert validation in media and material has been conducted to assess the feasibility of developing the 'smart egg puzzle' learning media. Practicality testing was performed by evaluating practicality questionnaire sheets conducted by teachers. Effectiveness testing was carried out using pretests and posttests, with the first test conducted before using the 'smart egg puzzle' media (pretest) and the second test conducted after using the 'smart egg puzzle' media (posttest). The results of this study indicated that the 'smart egg puzzle' was found to be highly valid, with an 88.75% validation rate from media experts and an 83.92% validation rate from material experts. Additionally, practical assessments by teachers indicated that the learning media was very practical, with an average score of 90.38%. The effectiveness of the 'smart egg puzzle' was tested with pretests and posttests, showing a significant improvement in students' number recognition skills. Developing the 'smart egg puzzle' was effective and met the validity, practicality, and effectiveness criteria, making it a suitable learning tool for students at TK Lab.School IKIP PGRI Jember.

Article History
Received: 08-11-2023
Revised: 11-12-2023
Accepted: 21-12-2023
Published: 10-01-2024

Key Words:
Smart Egg Puzzle; Innovative Learning Media; Early Childhood.

How to Cite: Inkasari, R., Kharismawati, I., & Priatiningsih, S. (2024). Development of 'Smart Egg Puzzle' as An Innovative Learning Media in Introducing Numbers to Early Childhood. *Jurnal Paedagogy*, *11*(1), 132-143. doi:https://doi.org/10.33394/jp.v11i1.9573

https://doi.org/10.33394/jp.v11i1.9573

Introduction

The importance of learning number recognition for children from an early age will greatly affect the intelligence of mathematical logic in each child or individual, because counting in mathematics is often encountered or used in everyday life (Sari et al., 2023). Thus, it is necessary to introduce numbers from an early age, so that each child or individual has the ability and readiness to recognize numbers for counting (Mufarizuddin, 2017). Cognitive ability is closely related to the level of intelligence (intelligence) everyone possesses. It characterizes a person with various interests, especially those aimed at ideas and interest in learning. Cognitive is a thought process, which is the ability possessed in each individual to assess, consider and connect an event or event (Setyani et al., 2023).

The low ability of early childhood to recognize number symbols often assumes that learning related to numbers or numbers is a complicated subject to understand. Various ways that educators have done to teach basic mathematics learning materials for early childhood related to numbers, counts, numbers and others, starting with conventional learning methods where the learning process uses the lecture method, namely oral delivery between teachers

Jurnal Paedagogy:
Jurnal Penelitian dan Pengembangan Pendidikan
https://e-journal.undikma.ac.id/index.php/pedagogy/index
Email: paedagogy@undikma.ac.id

Vol. 11 No. 1 : January 2024
E-ISSN: 2722-4627
pp. 132-143

and students, and uses tools in the form of learning media to be able to attract children's attention during the learning process in the classroom so that they can be easily understood (Utami & Sriwijaya, 2021)(Björklund et al., 2020).

Based on the observations and interviews conducted by the researcher at TK Lab. School IKIP PGRI Jember with children aged 5-6 years, totaling 16 children, and considering the developmental progress in recognizing numerical symbols through classroom learning observations, issues were identified. During the learning process at TK Lab.School IKIP PGRI Jember, a conventional teaching approach was used, involving a lecture-based method as the means of oral communication between the teacher and students throughout the learning process within the classroom. This approach resulted in a lack of interest in learning among the children. To address this issue, the researcher needs to develop engaging learning media for early childhood to enhance children's interest in learning and improve their ability to recognize numbers. It is achieved by creating the smart egg puzzle media, which can be implemented for early childhood education at TK Lab.School IKIP PGRI Jember.

About 60% of children are less able to mention number symbols in sequence correctly, use number symbols to count, match numbers with number symbols, and make sequences of numbers 1-20 correctly. In addition, there is a lack of use of learning media as a tool during the learning process, so children still seem to find it difficult to understand what the teacher conveys in the classroom during the learning process. In addition, children's participation and activeness in the classroom are very low due to their low ability to recognize numbers and the lack of supporting learning media in the classroom. Thus, children are not confident answering questions about numbers given by the teacher in the classroom. That is because the child's understanding of recognizing numbers is still low (Khumaeroh & dkk, 2018). In delivering the material used to teach children, namely in the form of blackboards, magazines, and paper cutouts. So it causes children's learning boredom, the problem in language skills is that most group b children aged 5-6 years cannot speak language, namely narrating about the pictures they make and asking questions. Puzzle education games are expected to develop cognitive and language skills and reduce the level of boredom in children's learning. It is in line with the research of (Hermawan et al., 2017) in his journal stated as a Puzzle game based on conditions that are easy to understand and can trigger math skills.

Several studies on media development have been conducted including (Sintia, 2020) (Fitriyah et al., 2021) (Pertiwi et al., 2022) (Kirana et al., 2022). Learning media development is one of the efforts to improve the quality of learning. In developing learning media, it should also be noted that the learning media developed must be able to support independent learning by students without being accompanied by a teacher, and can be accessed easily by students (Sintia, 2020) (Friwahyuni et al., 2022). In addition, the learning media developed must be developed on material whose phenomena are actually easily observed by students in everyday life (Rahmatia et al., 2021). In developing learning media, it is necessary to analyze student needs, design learning media that suits their needs, develop learning media by material validation experts and media experts, and test learning media on students (Hartati, 2018) (Saurina, 2016).

Learning interesting and interactive media can help early childhood understand basic concepts such as numbers. One of the learning media that can be used is Smart Egg Puzzle. In this study, the development of Learning Media 'Smart Egg Puzzle' uses the ADDIE Model (Analysis, design, development, implementation, evaluation). The aim of this research is to

Jurnal Paedagogy:
Jurnal Penelitian dan Pengembangan Pendidikan
https://e-journal.undikma.ac.id/index.php/pedagogy/index
Email: paedagogy@undikma.ac.id

Vol. 11 No. 1 : January 2024
E-ISSN: 2722-4627
pp. 132-143

develop a 'Smart Egg Puzzle' as an innovative learning media to introduce numbers to children aged 5-6 years in kindergarten Lab.School IKIP PGRI Jember.

Research Method

This research method used research and development with the ADDIE model, which has 5 stages, namely Analysis, Design, Development, Implementation, and Evaluation.

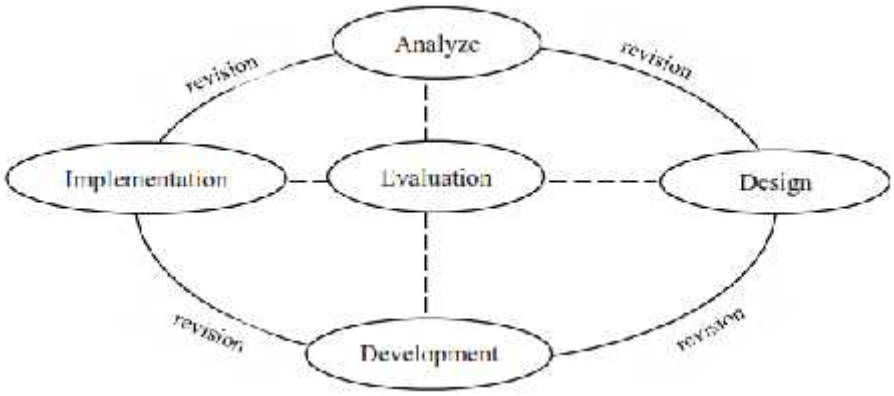

Figure 1. ADDIE Model (Latip, 2022)

The stages of the ADDIE model in this 'smart egg puzzle' Learning Media Development research in introducing numbers to Early Childhood are as follows:

a) Analysis

The stages of analysis in this research were: 1) Identification of learning problems in students at TK Lab.School IKIP PGRI Jember. 2) Evaluating students' learning needs, learning preferences, and obstacles they may face. 3) Analysis of available learning media, such as learning media to introduce numbers in early childhood as support.

b) Design

The stages of design in this research were: 1) Determining specific learning objectives: Introducing numbers and basic math concepts. 2) Designing the structure of the 'smart egg puzzle' learning media. 3) Selecting the type of materials and colors in the media to be developed that are in accordance with the character of early childhood. 4) Designing expert validation sheets and observation sheets to measure number comprehension.

c) Development

The stages of development in this research were: 1) Making learning media 'smart egg puzzle' that has been designed. 2) Validating media experts and material experts on the media that had been made.

d) Implementation

The stages of implementation in this study were: 1) Test the learning media 'smart egg puzzle' that has been made to students aged 5-6 years at TK Lab.School IKIP PGRI Jember. 2) Ensuring the use of media in real learning situations. 3) Observation of students' responses and their interaction with the 'smart egg puzzle' learning media that has been made.

e) Evaluation

This stage of evaluation in this research existed at each stage of the ADDIE model. Analyze the data to measure the achievement of learning objectives set at the implementation stage. Use the evaluation results to refine and improve the learning media if needed.

Jurnal Paedagogy:
Jurnal Penelitian dan Pengembangan Pendidikan
https://e-journal.undikma.ac.id/index.php/pedagogy/index
Email: paedagogy@undikma.ac.id

Vol. 11 No. 1 : January 2024
E-ISSN: 2722-4627
pp. 132-143

This ADDIE model scheme provides a systematic step-by-step guide to developing 'smart egg puzzle' learning media. It ensures that this media is effective in introducing numbers to early childhood.

The data analysis techniques used in this research were quantitative analysis techniques. Quantitative data analysis was processed by presenting percentages using the Likert scale as a measurement scale. Expert validation in media and material has been conducted to assess the feasibility of developing the 'smart egg puzzle' learning media. Practicality testing was performed by evaluating practicality questionnaire sheets conducted by teachers. Effectiveness testing was carried out using pretests and posttests, with the first test conducted before using the 'smart egg puzzle' media (pretest) and the second test conducted after using the 'smart egg puzzle' media (posttest). The results of data analysis were used as a basis for revising the products developed. The data that has been obtained by researchers is then analyzed to determine the feasibility of the product developed.

Table 1. Criteria for product eligibility (Fitriyah et al., 2021)

Percentage Score (%)	Criteria
0-25	Invalid
26-50	Less valid
51-75	Valid
76-100	Very valid

Table 1. is a criterion for the feasibility of a product, that product development, namely learning media, will be said to be feasible when the assessment score of this learning media has met the eligibility requirements with the level of material suitability and media feasibility in media development, which is> 51% or included in the valid and very valid criteria.

Table 2. Response questionnaire criteria (Widiana et al., 2019)

Percentage Practicality score (%)	Criteria
$0 \leq P < 55$	Not practical
$55 \leq P < 60$	Less practical
$60 \leq P < 75$	Practical enough
$75 \leq P < 85$	Practical
$85 \leq P < 100$	Very Practical

Table 2. are the criteria for the response questionnaire, that the 'smart egg puzzle' media developed is said to be practical if it gets a good response from students and teachers, namely ≥ 60% or quite practical, practical, and very practical.

Table 3. Score Interpretation (Widiana et al., 2019)

Interval	Score	Criteria
$85 \leq$ Score < 100	A	Very effective
$65 \leq$ Score < 85	B	Effective
$55 \leq$ Score < 65	C	Moderately effective
$45 \leq$ Score < 55	D	Less effective
$0 \leq$ Score < 45	E	Not effective

Table 3. Is an interpretation of the value for the effectiveness test of the product developed, that the development of the 'smart egg puzzle' media is said to be effective if it meets 3 conditions, namely the posttest value on the criteria ≥ 65 or good, the average posttest value above the pretest value, and if the average posttest value ≥ 75 according to the KKM.

Jurnal Paedagogy:
Jurnal Penelitian dan Pengembangan Pendidikan
https://e-journal.undikma.ac.id/index.php/pedagogy/index
Email: paedagogy@undikma.ac.id

Vol. 11 No. 1 : January 2024
E-ISSN: 2722-4627
pp. 132-143

Results and Discussion

The results of this 'Smart Egg Puzzle' learning media development research through the stages of the ADDIE model, which consists of:

a) Analysis

The needs analysis conducted on students at the IKIP PGRI Jember Lab.School Kindergarten is the unavailability of game media to attract children to play and learn. The only media available are posters and other learning books. Therefore, the 'Smart Egg Puzzle' media is very useful for children to help develop number recognition in early childhood. The needs analysis conducted by researchers aims to identify the availability and state of learning media used and the result is the unavailability of learning media such as those developed by researchers.

Analysis of the characteristics of different children is used as a consideration for developing learning media to be used. The level of number recognition ability in children at Lab.School IKIP PGRI Jember Kindergarten is different. Researchers developed learning media in the form of 'Smart Egg Puzzle' games that are tailored to children's abilities and can be used by all children in Lab.School IKIP PGRI Jember Kindergarten. Based on unstructured interviews with teachers at the Lab.School IKIP PGRI Jember Kindergarten, the ability to recognize numbers in children varies, causing learning activities to be less well implemented. Based on the results of the following analysis, learning media in the form of 'Smart Egg Puzzle' media is expected to be able to improve the ability of number recognition in TK Lab.School IKIP PGRI Jember.

The curriculum analysis used by TK Lab.School IKIP PGRI Jember is an independent curriculum. This curriculum analysis aims to find out the curriculum used at the school to be adjusted to the learning media developed by the researcher. Curriculum analysis is used to determine teaching materials for children. teaching materials used are adjusted to the level of developmental achievement and indicators in the curriculum. Indicators of learning implementation are used as a reference for making learning objectives. The learning objectives to be achieved in this learning activity are that children can recognize numbers, train children's physical motor skills and are able to socialize with peers well.

b) Design

At the design stage that has been carried out in this study, it has compiled an instrument for assessing product quality was developed in the form of a checklist questionnaire for media and material experts. This stage begins with the preparation of a questionnaire lattice and the preparation of a questionnaire; the results of this stage have obtained a validation questionnaire that media experts and material experts will give. To determine the feasibility of the 'Smart Egg Puzzle' media that has been developed, then the practicality test by the teacher, and also conducted a small group trial and a large group trial.

This 'Smart Egg Puzzle' media is designed to be as interesting as possible. initially, the puzzle game was just a game to assemble broken pieces to form a predetermined image or writing, whereas the game only sat arranging puzzle pieces. So, at this design stage, the researchers redesigned, starting by maintaining materials that are safe and resistant to children, interesting puzzle shapes with colorful origami colors that attract children's attention, and adding numbers from the 'smart egg puzzle pieces.' Then the 'Smart Egg Puzzle' media that has been developed is validated by media experts and material experts to determine the feasibility of the product, and after validation the 'Smart Egg Puzzle' media that

Jurnal Paedagogy:
Jurnal Penelitian dan Pengembangan Pendidikan
https://e-journal.undikma.ac.id/index.php/pedagogy/index
Email: paedagogy@undikma.ac.id

Vol. 11 No. 1 : January 2024
E-ISSN: 2722-4627
pp. 132-143

has been developed is declared feasible to be tested on children aged 5-6 years at TK Lab.School IKIP PGRI Jember.

Figure 2. 'Smart egg puzzle' media that has been designed and developed

Figure 2. is the 'smart egg puzzle' media that the researchers have developed based on the indicators of number recognition development; the researchers made several changes that make this game interesting, one of which is the 'Smart Egg Puzzle' game steps, which are not just like sitting still arranging puzzle pieces, with this 'Smart Egg Puzzle' the researchers made unique and interesting game steps, of course, attracting children to play while learning to recognize numbers, thus the 'Smart Egg Puzzle' method that the researchers developed is expected to increase the enthusiasm and interest in learning children, especially in the TK Lab.School IKIP PGRI Jember.

Figure 2. is the 'smart egg puzzle' media that the researchers have developed based on the indicators of number recognition development; the researchers made several changes that make this game interesting, one of which is the 'Smart Egg Puzzle' game steps, which are not just like sitting still arranging puzzle pieces, with this 'Smart Egg Puzzle' the researchers made unique and interesting game steps, of course, attracting children to play while learning to recognize numbers, thus the 'Smart Egg Puzzle' method that the researchers developed is expected to increase the enthusiasm and interest in learning children, especially in the TK Lab.School IKIP PGRI Jember.

c) Development

Media expert validation has been carried out to fill out an assessment questionnaire sheet on each aspect of the assessment consisting of 3 aspects with 20 questions, all of which have been filled in by the media expert. Validators of media experts are lecturers who concentrate on learning media. Media expert assessment of the learning media 'smart egg puzzle' can be seen in Table 4.

Table 4. The results of learning media expert validation

Aspects	Score	Maximum score	Percentage (%)	Criteria
Clarity of media display	3	4	75	Valid
Pattern design of 'smart egg puzzle' media	10	12	83,33	Very valid
Use of 'smart egg puzzle' media	58	64	90,63	Very valid

Jurnal Paedagogy:
Jurnal Penelitian dan Pengembangan Pendidikan
https://e-journal.undikma.ac.id/index.php/pedagogy/index
Email: paedagogy@undikma.ac.id

Vol. 11 No. 1 : January 2024
E-ISSN: 2722-4627
pp. 132-143

Total number of scores	**71**	**80**
Percentage		**88,75%**
Criteria		**Very valid**

In table 4, the validation test results by learning media experts obtained a total of 71 out of a maximum score of 80 with a percentage of 88.75% and stated in very valid criteria. Material expert validation has been carried out by filling out an assessment questionnaire sheet on each aspect of the assessment consisting of 2 aspects with 14 questions, all filled in by the material expert. The results of the material expert assessment on the 'smart egg puzzle' learning media can be seen in Table 5.

Table 5. Material expert validation results

Aspects	Score	Maximum score	Percentage (%)	Criteria
Content feasibility	34	40	85	Very valid
Presentation	13	16	81,25	Very valid
Total score	**47**	**56**		
Percentage		**83,92%**		
Criteria		**Very valid**		

In table 5. The results of the validation test by material experts obtained a percentage of 83.92% with a total of 47 out of a maximum score of 56 and stated in very valid criteria.

d) Implementation

At the implementation stage, an assessment of the level of practicality and effectiveness of the 'smart egg puzzle' learning media that has been developed has been carried out. The practicality test stage has been carried out in a field trial with 11 students and 1 teacher of TK Lab.School IKIP PGRI Jember. The effectiveness test that has been carried out aims to determine the extent to which the product made can make students meet the KKM provisions. Data on the effectiveness of learning media 'smart egg puzzle' seen from the ability to recognize the numbers of students increased. Practicality test by kindergarten teachers Lab.School IKIP PGRI Jember has been calculated in the teacher's practicality questionnaire to assess the developed media. Covering aspects of instructions, aspects of attractiveness, aspects of the process and ease of use, benefits, and efficiency of learning time. The complete assessment results can be seen in Table 6.

Table 6. Practicality test by teacher

Aspects	Score value of each aspect	Maximum score	Percentage (%)	Criteria
Attractiveness	14	16	87,5	Very practical
Process and ease of use	22	24	91,6	Very practical
Benefits of	7	8	87,5	Very practical
Efficiency of learning time	4	4	100	Very practical
Total score	**47**	**52**		
Percentage		**90,38%**		
Criteria		**Very practical**		

The effectiveness test was carried out by testing the ability twice, namely the first test (pretest) before using the 'smart egg puzzle' media and the second test (posttest) after using the 'smart egg puzzle' media.

Table 7. Results of pretest and posttest in the 'smart egg puzzle' media effectiveness test

Name	Pretest Score (before using 'smart egg puzzle' media)	Posttest Score (after using 'smart egg puzzle' media)
Learner 1	40	80

Jurnal Paedagogy:
Jurnal Penelitian dan Pengembangan Pendidikan
https://e-journal.undikma.ac.id/index.php/pedagogy/index
Email: paedagogy@undikma.ac.id

Vol. 11 No. 1 : January 2024
E-ISSN: 2722-4627
pp. 132-143

Learner 2	40	80
Learner 3	30	60
Learner 4	40	60
Learner 5	50	90
Learner 6	80	90
Learner 7	80	100
Learner 8	20	70
Learner 9	60	90
Learner 10	60	80
Learner 11	40	80
Average score	**49,09**	**80**

After developing the learning media 'smart egg puzzle' and testing it on students at TK Lab.School IKIP PGRI Jember, it can be seen that each stage has increased, although some students are still in the unfinished category. Based on the results of the posttest scores, it is known that there were still 2 students who had scores below the KKM that had not been declared complete and 9 students who got scores above the KKM. The average obtained from the posttest scores of 11 students is 80 in the good criteria. Overall, from the posttest results, students' problem solving skills are good and have improved.

e) Evaluation

At this stage, the second evaluation of data was carried out in the form of suggestions obtained from media experts and material experts, as well as children's posttest and pretest observation sheets from the implementation stage, which are used to determine children's number recognition abilities. The results of the above research indicate that the use of 'Smart Egg Puzzle' media is feasible, practical, and able to improve number recognition in early childhood at TK Lab.School IKIP PGRI Jember. Children can recognize numbers and apply them in everyday life. This is because the 'Smart Egg Puzzle' can be used in a relaxed manner in the form of interesting and unique games to increase children's learning motivation.

Discussion

The first stage of the ADDIE development model is the analysis stage. The analysis stage is divided into needs, student characteristics, and curriculum analysis. Needs analysis is conducted to identify the availability of pre-existing learning tools. From the results of teacher interviews, it was found that the learning tools to be developed did not exist and had never been applied at the TK Lab.School IKIP PGRI Jember. Analysis of student characteristics is carried out to identify the abilities of children to be studied. From the results of analyzing children's characteristics, it is obtained that children's abilities vary. Curriculum analysis is used to identify the curriculum applied and as a reference for making learning tools that are in accordance with the core competencies and basic competencies in the curriculum.

After the analysis stage, the researchers carry out the next stage, namely the design stage at the design stage, designing the appropriate 'smart egg puzzle' media based on the data obtained from the initial research stage based on the needs analysis. At this design stage, the 'smart egg puzzle' media that will be developed, starting from the selection of media materials, media colors, media displays, images, and media sizes, must be in accordance with the characteristics of children aged 5-6 years.

Media 'smart egg puzzle' is shaped like an egg made of plywood, played uniquely unlike the usual puzzle game that sits quietly arranging puzzle pieces. This 'smart egg puzzle'

Vol. 11 No. 1 : January 2024
E-ISSN: 2722-4627
pp. 132-143

media is played in a way that is determined by steps designed by researchers that are interesting and unique to stimulate children's interest in playing and not boring. This 'smart egg puzzle' media is made to develop number recognition in early childhood to be applied in everyday life so that the resulting 'smart egg puzzle' media becomes truly suitable to support learning, especially number recognition in children.

Then the development stage that has been carried out is the initial stage in making the 'smart egg puzzle' media, which will become a complete unit and validation by experts; the purpose of validation by these experts is to obtain input, criticism and suggestions for improvement and perfection of the 'smart egg puzzle' media developed. At the implementation stage, the 'smart egg puzzle' media was tested on students aged 5-6 years at the lab.School IKIP PGRI Jember Kindergarten and has not undergone revision; this can be seen from the students as the test subjects being able to use and play the 'smart egg puzzle' media developed in number recognition so that students have an increase in number recognition as evidenced by the results of the pretest and posttest. So, using this 'smart egg puzzle' media can facilitate children in number recognition; the use of 'smart egg puzzle' media in the teaching and learning process can increase the desire and interest in learning children. In addition, the ability of children's number recognition in TK Lab.School IKIP PGRI Jember increased because, in essence, children need concrete and fun media such as the 'smart egg puzzle' media.

After developing the 'smart egg puzzle' media at TK Lab.School IKIP PGRI Jember, it can be seen that each stage has increased, although some students are still in the unfinished category. Based on the results of the posttest scores, it is known that there are still 2 students who have scores below the KKM that have not been declared complete and 9 students who get scores above the KKM. Overall, from the posttest results, the number recognition ability of students is good. Based on the results obtained, developing the 'mart egg puzzle' media to improve number recognition skills in the kindergarten Lab can be concluded.School IKIP PGRI Jember is declared effective and has met three requirements: the posttest score with a score of 80 in good criteria, the average posttest score above the pretest score, and the average posttest score above 75, according to the KKM.

According to (Nari et al., 2020) in their research, providing educational tools in the form of Puzzle games can improve children's cognitive. Puzzle games are one of the game learning methods that can develop cognitive abilities. Apart from being used for cognitive development, puzzles can also be used for language development. It is in line with (Trimantara et al., 2019) which concluded that children's language development can be developed through educational games like puzzles. According to research (Sunarti & Dalle, 2017), the right language settings in puzzles can be used to determine the nature of objects logically. The results of(Zusanti et al., 2022) discuss six logic puzzles that are available in smartphone applications, namely thermometer puzzles, color puzzles, infinite circles, sliders and free flow. Of the six games used to introduce math concepts. Which is part of cognitive development. In research conducted by (Ningrum et al., 2022) (Made & Asri, 2020), the development of Smart Egg Puzzle learning media with the ADDIE model has proven effective in introducing numbers to early childhood. The study used Smart Egg Puzzle as a learning media for early childhood in kindergarten. The results showed that using Smart Egg Puzzle can improve children's ability to recognize numbers.

The use of 'smart egg puzzle' media that has been developed makes it easier for students to learn and recognize numbers so that students can apply them in everyday life. In addition, the ability of students in TK Lab.School IKIP PGRI Jember, in terms of number

Vol. 11 No. 1 : January 2024
E-ISSN: 2722-4627
pp. 132-143

recognition, really needs concrete media that is fun, like this 'smart egg puzzle' media. So, with the application of the 'smart egg puzzle' media developed by introducing numbers, especially for children aged 5-6 years in kindergarten Lab.School IKIP PGRI Jember can increase.

The development of the 'smart egg puzzle' learning media that has been made has several advantages as a learning media, especially in terms of improving early childhood number recognition, namely as follows; 1) The 'smart egg puzzle' media can improve children's number recognition, this is evidenced by the results of the validation of material experts and media experts, and has been tested for practicality and pretest and posttest tests. 2) Media 'smart egg puzzle' can be used as a fun learning media, when children use Media 'smart egg puzzle' all children are enthusiastic and they look very happy. 3) The 'smart egg puzzle' media uses interesting designs and game steps so that it can attract attention and make it easier for children to understand what they want to convey. The conclusions obtained from this research are in accordance with those researched by (Syukur et al., 2020) (Puspitasari et al., 2019).

Conclusion

The conclusions obtained from the results of this study are: a) Based on the results of the validation of 2 experts, namely media experts, and material experts to test the feasibility of developing learning media 'smart egg puzzles' to introduce numbers, it is declared very valid for use with a percentage value of 88.75% in the media expert validation test and 83.92% in the material expert validation test, so the learning media 'smart egg puzzle' in introducing numbers that have been developed are said to be very valid. b) The results of the practicality assessment conducted by the teacher, where the results on the teacher's practicality questionnaire sheet gave an average score of 90.38% on the practicality test of the developed 'smart egg puzzle' learning media, can be categorized as very practical. c) The effectiveness test of the development of 'smart egg puzzle' media in introducing numbers in TK Lab.School IKIP PGRI Jember was carried out using pretest and posttest. The first test was before using the 'smart egg puzzle' media (pretest), and the second was after using the 'smart egg puzzle' media (posttest). At this stage, the effectiveness test amounted to 11 students. Based on the results of the second test value (posttest), there was an increase in the recognition of numbers in students; namely, the average pretest score of 49.09 was in the criteria less, while the average posttest score of 80 was in the criteria good. So, developing the 'smart egg puzzle' media to introduce numbers in TK Lab.School IKIP PGRI Jember can be declared effective and has fulfilled 3 conditions: the posttest score with a score of 80 in good criteria, the average posttest score above the pretest score, and the average posttest score above 75 or, according to KKM.

Recommendation

Based on the research findings that we have examined, we recommend early childhood education teachers to consider integrating the 'Smart Egg Puzzle' into their curriculum. This media has been proven to be valid, practical, and effective in assisting children in recognizing numbers. By incorporating this media into daily learning activities, teachers can enrich children's learning experiences. By following these recommendations teachers can fully harness the potential of the 'Smart Egg Puzzle' as a learning tool to enhance children's understanding of numbers, creating a more interactive and enjoyable learning environment.

Vol. 11 No. 1 : January 2024
E-ISSN: 2722-4627
pp. 132-143

References

Björklund, C., van den Heuvel-Panhuizen, M., & Kullberg, A. (2020). Research on early childhood mathematics teaching and learning. *ZDM - Mathematics Education*, *52*(4), 607–619. https://doi.org/10.1007/s11858-020-01177-3

Fitriyah, I., Wiyokusumo, I., & Leksono, I. P. (2021). Pengembangan media pembelajaran Prezi dengan model ADDIE simulasi dan komunikasi digital. *Jurnal Inovasi Teknologi Pendidikan*, *8*(1), 84–97. https://doi.org/https://doi.org/10.21831/jitp.v8i1.42221

Friwahyuni, D., Hasanah, H., & Kharismawati, I. (2022). Pengembangan Media Ular Tangga Edukatif dalam Menanamkan Nilai Nasionalisme pada Anak Usia 5-6 Tahun. *JECIE (Journal of Early Childhood and Inclusive Education)*, *6*(1), 53–60. https://doi.org/https://doi.org/10.31537/jecie.v6i1.716

Hartati, U. (2018). The Development of Interactive Learning Media "Bedah Beruang" to Introduce the Concept of A Substraction in Kindergarten. *Pendidikan Guru PAUD S-1*, *5*(6), 621–634. https://journal.student.uny.ac.id/index.php/pgpaud/article/view/2776

Hermawan, D. P., Herumurti, D., & Kuswardayan, I. (2017). Efektivitas Penggunaan Game Edukasi Berjenis Puzzle, RPG dan Puzzle RPG Sebagai Sarana Belajar Matematika. *JUTI: Jurnal Ilmiah Teknologi Informasi*, *15*(2), 195. https://doi.org/10.12962/j24068535.v15i2.a663

Khumaeroh, S., & dkk. (2018). Penggunaan Puzzle Sebagai Alat Permainan Edukatif dan ImplementasiTerhadap Aspek Motorik Halus Anak Usia 4-6 Tahun. *Journal Of Early Childhood Islamic Education*, *5*(2), 229–241.

Kirana, S. N., Kharismawati, I., Hariyanto, H., & Gerhani, F. (2022). Pengembangan Media Pembelajaran Busy Book pada Materi Pokok Mengenal Tanaman Buah untuk Anak Usia 4-5 Tahun. *JECIE (Journal of Early Childhood and Inclusive Education)*, *6*(1), 33–39. https://doi.org/https://doi.org/10.31537/jecie.v6i1.713

Latip, A. (2022). PENERAPAN MODEL ADDIE DALAM PENGEMBANGAN MULTIMEDIA PEMBELAJARAN BERBASIS LITERASI SAINS. DIKSAINS. *Jurnal Ilmiah Pendidikan Sains*, *2*(2), 102–108. https://doi.org/https://doi.org/10.33369/diksains.2.2.102-108

Made, N., & Asri, I. (2020). *Pengembangan Media Pembelajaran Puzzle Angka untuk Meningkatkan Kemampuan Mengenal Lambang Bilangan*. *3*(October), 416–426. https://doi.org/http://dx.doi.org/10.23887/jippg.v3i3

Mufarizuddin, M. (2017). Peningkatan Kecerdasaan Logika Matematika Anak melalui Bermain Kartu Angka Kelompok B di TK Pembina Bangkinang Kota. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, *1*(1), 62. https://doi.org/10.31004/obsesi.v1i1.32

Nari, N., Akmay, D. Y., Sasmita, D., Tarbiyah, F., Agama, I., Negeri, I., & Batusangkar, I. (2020). *Penerapan permainan puzzle untuk meningkatkan kemampuan membilang*. *7*(1), 44–52.

Ningrum, S. U., Leksono, I. P., & Rohman, U. (2022). Pengembangan Media Ajar E-Book Berbasis Sains Model Addie Di Taman Kanak-Kanak. *JIPI (Jurnal Ilmiah Penelitian Dan Pembelajaran Informatika)*, *7*(3), 958–968. https://doi.org/10.29100/jipi.v7i3.3154

Pertiwi, P. I., Hasanah, H., & Kharismawati, I. (2022). Pengembangan Media Permainan Kotak Ajaib dalam Mengenal Bacaan Huruf Satu Suku Kata pada Aspek Bahasa

Vol. 11 No. 1 : January 2024
E-ISSN: 2722-4627
pp. 132-143

Anak Usia 5-6 Tahun. *JECIE (Journal of Early Childhood and Inclusive Education)*, *5*(2), 50–54. https://doi.org/10.31537/jecie.v5i2.701

Puspitasari, E., Masitoh, S., & Jannah, M. (2019). Testing the Effect of Smart Egg Puzzle Games on Understanding the Geometry Concepts of Early Childhood. *International Journal for Educational and Vocational Studies*, *1*(1), 68. https://doi.org/10.29103/ijevs.v1i1.1490

Rahmatia, R., Pajarianto, H., Kadir, A., Ulpi, W., & Yusuf, M. (2021). Pengembangan Model Bermain Konstruktif dengan Media Balok untuk Meningkatkan Visual-Spasial Anak. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, *6*(1), 47–57. https://doi.org/10.31004/obsesi.v6i1.1185

Sari, M., Habibah, S., & Ramlah. (2023). Peningkatan Kecerdasan Logika Matematika Melalui Permainan Berhitung Menggunakan Papan Telur Di TKIT Anak Sholeh Mataram. *Jurnal Profesi Kependidikan*, *4*(1), 55–62.

Saurina, N. (2016). Pengembangan Media Pembelajaran Untuk Anak Usia Dini Menggunakan Augmented Reality. *Jurnal IPTEK*, *20*(1), 95. https://doi.org/10.31284/j.iptek.2016.v20i1.27

Setyani, N. H., Handayani, A., & Rahmawati, D. (2023). Pengembangan Keterampilan Numerasi Dan Kemampuan Kognitif Pada Anak Usia Dini Melalui Media Pembelajaran Menggunakan Bahan Alam. *Jurnal Insan Pendidikan Dan Sosial Humaniora*, *1*(3), 55–73.

Sintia, M. D. (2020). Pengembangan Media Pembelajaran Big Puzzle untuk Meningkatkan Kemampuan Kerjasama pada Anak. *Journal for Lesson and Learning Studies*, *3*(3), 454–460. https://ejournal.undiksha.ac.id/index.php/JLLS/article/view/29409

Sunarti, & Dalle, A. (2017). *Keefektifan penggunaan media gambar puzzle dalam keterampilan menulis kalimat sederhana bahasa jerman siswa kelas xi man 1 makassar*. *1*(1).

Syukur, A., P., S. E., & Leba, M. G. (2020). The Implementation of Puzzle as a Learning Media to Introduce the Color Concept to Class B Students of Munatuan Early Childhood Education (PAUD) in Kupang District. *Digital Press Social Sciences and Humanities*, *6*, 00012. https://doi.org/10.29037/digitalpress.46378

Trimantara, H., Mulya, N., & Liyana, U. (2019). *MENGEMBANGKAN BAHASA ANAK USIA 4-5 TAHUN MELALUI ALAT PERMAINAN EDUKATIF PUZZLE*. *2*(1), 25–34. https://doi.org/http://dx.doi.org/10.24042/ajipaud.v2i1.4553

Utami, F., & Sriwijaya, U. (2021). Indonesian Journal of Early Childhood Education Studies The Introduction for Number Symbols in Children Aged 4-5 Years through Mathematics Play Activities. *Indonesian Journal of Early Childhood Education Studies*, *10*(2), 96–102. http://journal.unnes.ac.id/sju/index.php/ijeces

Widiana, I. W., Rendra, N. T., & Wulantari, N. W. (2019). MEDIA PEMBELAJARAN PUZZLE UNTUK MENINGKATKAN HASIL PENGETAHUAN IPA. *Indonesian Journal Of Educational Research and Review*, *2*(3), 354–362.

Zusanti, M., Masitoh, S., & Setyowati, S. (2022). PENGARUH MEDIA PUZZLE EDUCATION GAME TERHADAP PERKEMBANGAN KOGNITIF DAN BAHASA ANAK TK. *JOEAI (Journal of Education and Instruction)*, *5*(1), 52–64. https://doi.org/10.31539/joeai.v5i1.3307

