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Design and Development of Frog Jump Game-Based Media for Early Reading Instruction in Elementary School Students

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Abstract

This research employs the Research and Development (R&D) method. This research aims to determine the feasibility of developing a Frog jump game media for early reading learning in second-grade students at SDN 5 Mattiropole, Soppeng Regency. The research was developed using the ADDIE model (Analysis, Design, Development, Implementation, Evaluation). The population of this research consists of all second-grade students at SDN 5 Mattiropole and a second-grade class teacher, with a sample of 20 students selected using a saturated sampling technique and a second-grade class teacher. Data were collected using media expert validation questionnaires, material expert validation questionnaires, teacher response questionnaires, and student response questionnaires. The media expert validation questionnaire obtained a percentage score of 90.67%, indicating that it is very feasible, while the material expert validation questionnaire obtained a percentage score of 92.31%, indicating that it is very feasible. Furthermore, the teacher response questionnaire obtained a percentage score of 93.33%, indicating that it is very feasible, and the student response questionnaire had a percentage score of 91.40%, also indicating that it is very feasible. This research concludes that the Frog Jump game media development is highly suitable for early reading learning for second-grade students at SDN 5 Mattiropole, Soppeng Regency. This research implies that interactive game-based learning media, such as the Frog Jump game, can effectively enhance student engagement and learning outcomes in early reading instruction. It also offers a practical and enjoyable alternative for teachers to support literacy development at the elementary school level.

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INTRODUCTION

Reading skills are one of the four types of language skills. Reading skills are basic skills that are very important to master, along with the other three language skills (Bahri et al., 2023; Batanero et al., 2021; Pamuji & Setyami, 2021; Sadiku, 2015). Reading is a process used by readers to obtain messages conveyed by the author through word media or skills in interpreting a symbol (Bahri et al., 2023; Hahnel et al., 2018; Nursalim et al., 2024; Pratiwi, 2020). Reading learning activities in elementary schools are divided into two: in the lower grades, students study early reading, and in the upper grades, students study

advanced reading. Early reading is the first step in learning to read, including letter recognition and pronunciation of letter sounds, to preparing syllables and words (Aulia & Munajah, 2021; Riyanti, 2021). Early reading includes learning to recognize or distinguish as well as pronunciation and intonation of letters, a series of syllables, and a series of words into simple sentences (Pertiwi, 2016; Pratiwi, 2020).

Early reading has an important role and will greatly impact students. Lack of early reading skills will cause students to have difficulty understanding and learning in class, affecting learning outcomes and student academic achievement. "Early reading skills play an important role in student's readiness to enter a higher level of education and will be a provision to support better academic achievement" (Pertiwi, 2016). Students with low early reading skills will lack confidence and quietness and have difficulty interacting with peers (Aulia & Munajah, 2021). Apart from these two things, without early reading ability, students will experience obstacles in receiving information or knowledge, as early reading skills can help and facilitate students in receiving and mastering knowledge (Pratiwi, 2020).

Early reading learning in the classroom often experiences several obstacles. The obstacles are divided into three factors: teachers, learners or students, and parents or families. The obstacles in learning to read at the beginning are (1) lack of teacher assertiveness in enforcing rules in the learning process and the use of inappropriate learning methods and learning media, (2) students' lack of confidence, low learning concentration, and low interest in learning, and (3) lack of parental attention in accompanying and teaching students at home (Aulia & Munajah, 2021; Pertiwi, 2016; Munawwaroh, 2023).

The solution to overcoming obstacles that may arise during the learning process of early reading is by selecting learning media that are more varied and in accordance with the needs of students. The use of varied media can increase students' interest in participating in reading learning activities, and effective media selection will develop students' reading skills (Aryani et al., 2022; Wati, 2021). Media is the main element in creating effective learning. Media is used so that information from teachers to students can be received and attract students' attention, thoughts, feelings, and interests to focus on the delivery of information by the teacher (Amin, 2019; Munawwaroh, 2023; Sari, 2019). Media is an intermediary to channel material so that students in learning activities can understand it, raise curiosity, and provide motivation (Charline et al., 2023; Putra, 2018; Wulandari et al., 2023).

Game-shaped media are appropriate for increasing students' focus and interest in learning. Using game media will create conditions for learning while playing, resulting in students being fully involved when learning in class (Setiawati et al., 2019; Wati, 2021). “Game media will involve student activity in the learning process because it invites students to try new things” (Chabib et al., 2017).

One of the game media that teachers can use to improve early reading skills is the Snakes and Ladders game media. "The Snakes and Ladders game consists of boxes, pictures of snakes, and ladders equipped with dice and played by two or more people" (Wati, 2021). The utilization of the Snakes and Ladders game media in reading learning activities improves students' early reading skills (Chusnullita & Setiawan, 2024; Munawwaroh, 2023; Nironi & Jumiatin, 2023; Pramiswari & Mukhlishina, 2023).

The Snakes and Ladders game can then be modified and developed with learning objectives. Early reading learning using Snakes and Ladders game media will bring new, entertaining, and fun learning experiences because students are actively involved in the learning process, and the material presented is combined with images, symbols, and unique color variations that help students understand the subject matter more quickly (Munawwaroh, 2023; Nironi & Jumiatin, 2023).

The researchers conducted interviews in September 2024 at SDN 5 Mattropole, Soppeng Regency. The selection of the research location is based on three key considerations aligned with the study's objectives. Firstly, the chosen elementary school accommodates early-grade students (Grades 1–3), representing the developmental stage at which foundational reading skills are formed, thus aligning with the target population of the research. Secondly, the institution demonstrates a conducive environment for academic inquiry, characterized by the willingness of school personnel to support research activities and integrate media-based interventions within classroom settings. Thirdly, preliminary assessments and existing literacy data suggest the presence of reading skill deficiencies among students, thereby providing a relevant context to examine the effectiveness of media development in improving early reading proficiency from the results of the interview with the second-grade teacher. The interviewee explained that the average score for early reading learning in the second-grade students at SDN 5 Mattiropole was 73.3, with sufficient information based on the assessment criteria used by the teacher. During early reading learning activities in the classroom, the interviewee often uses media in the form of pictures of letters or words and picture storybooks. However, there are obstacles, including students who have difficulty pronouncing letter sounds or remembering letter names, students who cannot read syllables, and students who have difficulty reading fluently.

Based on the data and obstacles described, the researcher wants to provide a solution by developing a Frog Jump game media to improve students' early reading skills. This Frog Jump media is a form of Snakes and Ladders game update tailored to improve students' early reading skills.

Previous studies Fitriana (2018) and Munawwaroh, (2023) utilized a learning tool called the Snakes and Ladders game media. In contrast, this research introduces a redesigned Frog Jump game media version to offer students a fresh, more engaging learning experience. Renaming the media signals its transformation and sparks readers' curiosity about its new appearance and features. Furthermore, Munawwaroh (2023) noted a limitation in the original Snakes and Ladders media: the static, unchangeable set of questions led to student boredom due to repetition. To address this, the Frog Jump game incorporates dynamic elements such as frog cards and number cards, which promote variety and interactivity. This development supports early reading skills, including letter sound recognition, pronunciation, syllable articulation, and word intonation.

The development of the Frog Jump game media has an element of competition that matches the nature of elementary school students who like to play. This Frog jump media also has advantages, such as its presentation using varied colors and pictures that are appropriate for the age of children in elementary school, as well as the presence of frog cards and number cards that will help improve students' early reading skills. So, the researcher plans to conduct research with the Research and Development (R&D) method entitled “Frog jump game media development for early reading learning for elementary school students.” This study aims to produce a syntax for the development of Frog jump game media for early reading learning in second-grade students of SDN 5 Mattiropole, Soppeng Regency; obtain the responses of the second-grade students of SDN 5 Mattiropole, Soppeng Regency, to the implementation of Frog jump game media to help early reading learning; and determine the feasibility of Frog jump game media for early reading learning in the second-grade students of SDN 5 Mattiropole, Soppeng Regency.

METHODS

This research is research and development (RnD). The researchers chose research and development because they want to solve problems in education by producing a scientific

product. The product or the result of development in this research is the media of the early reading Frog Jump game. The researchers who develop this media will use the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation). The ADDIE development model is suitable for use in this research because the stages of its activities are procedural and simple, which greatly helps and facilitates the researchers in compiling a framework and stage-by-stage development activities.

This research is located at SDN 5 Mattiropole, Jl. Kayangan, Lalabata District, Soppeng Regency, South Sulawesi Province, which was conducted in the even semester of the 2024/2025 school year, February 2025. The Researchers set the location to obtain accurate initial information related to problems or obstacles that might be resolved through this development research. The population in this study was 20 students of the second grade of SDN 5 Mattiropole in the 2024/2025 school year. The saturated sampling technique was used to determine the sample in this study. Thus, the total sample in this research was 20 students.

Data collection in this study was carried out using a questionnaire. “The questionnaire aims to be a basic reference in assessing product results. Questionnaires were submitted to media expert validators, material experts, teachers, and students to determine the feasibility of the Frog Jump game, which had been developed as a learning media for early reading. After the data from the research results has been collected, data analysis is carried out using a Likert scale with a rating scale (Putra, 2018), as seen in Table 1.

Table 1 Questionnaire assessment score

Description	Score
Strongly Agree (SA)	5
Agree (A)	4
Fairly Agree (F)	3
Disagree (D)	2
Strongly Disagree (SD)	1

The data from the validation questionnaires of media experts, material experts, and teacher response questionnaires was analyzed by calculating the percentage of each questionnaire. Student response questionnaire data on using Frog Jump game media will be analyzed by calculating the overall percentage of student response questionnaires. Measuring the percentage value of the validation questionnaire of media experts, material experts, teacher responses, and student responses grouped in the eligibility interpretation criteria (Nurhikmah, 2021) in Table 2.

Table 2 Feasibility interpretation criteria

Percentage	Qualification	Description
90% - 100%	Very Feasible	No Revision Needed
75% - 89%	Feasible	No Revision Needed
65% - 74%	Fairly Feasible	Revision Needed
55% - 64%	Less Feasible	Revision Needed
0% - 54%	Not Feasible	Revision Needed

Table 2 shows that if the percentage result is below 75%, the developed media requires revision. If the questionnaire percentage result is 75% and above, then the media development does not require revision and is feasible for use.

ADDIE development design

a. Analysis

The analysis stage was carried out by collecting data from the researchers' interviews with the second-grade teacher. The analysis activities include:

1) Performance analysis

Performance analysis was carried out to determine what obstacles and problems occur during early reading lessons in the second grade of SDN 5 Mattiropole. After that, solutions that can help overcome the problems were developed.

2) Needs analysis

A needs analysis was carried out to determine the second-grade students' current level of early reading ability and find solutions to help facilitate their learning.

3) Material analysis

Material analysis was carried out to determine the scope of learning materials for early reading, taking into account students' developmental and ability levels. Knowing students' developmental and ability levels is important when compiling learning materials so that all students can understand the material taught in the learning process.

4) Competency analysis

Furthermore, it is also necessary to analyze competencies. This analysis aims to determine the competencies expected to be formed in students. The competencies to be formed in students are different and adapted to each learning material. Generally, competencies are divided into three aspects: cognitive (knowledge), affective (attitude), and psychomotor (skills).

b. Design

At this stage, the researchers first determined and detailed the tools and materials to be used. Then, they designed each device or part of the Frog Jump game media. In this study, these designs were made through the Canva application.

c. Development

1) Product creation

After the design of all parts of the Frog Jump game media was completed, the design, which was originally two-dimensional, was printed and arranged to produce a three-dimensional product.

2) Product validation

At this stage, the product was validated by a lecturer in the Elementary School Teacher Education Major, Faculty of Education, Universitas Negeri Makassar as a media expert and material expert, who aims to obtain an assessment regarding the feasibility of the Frog jump game media to be implemented in the learning process of early reading.

d. Implementation

At this stage, the product was first revised or refined according to the input and suggestions given by media and material experts. Furthermore, after being revised, the Frog Jump game media product can be tested and implemented in the learning process of early reading.

e. Evaluation

At this stage, data analysis was carried out based on data from teacher response questionnaires and student response questionnaires on the implementation of the Frog jump game media in early reading learning. The questionnaire instruments assessed the feasibility of Frog Jump game media as a learning media for early reading. Based on Table 2, if the percentage of the teacher and student response questionnaires is below 75%, then the product is declared not feasible and needs to be revised or evaluated. Meanwhile, suppose the percentage of teacher and student response questionnaires equals or exceeds 75%. In that case, the product has met the needs and is feasible to use, and the product of the Frog Jump game media for early reading has been developed.

RESULTS AND DISCUSSION

Development of Frog Jump game media using the ADDIE development model. The ADDIE model was created in 1967 by Reiser and Mollanda in the United States, which was further developed and also popularized by Dick and Cary in 1978 and then revised by Russell Watson in 1981 (Muruganantham, 2015; Adeoye et al., 2024). The ADDIE model is a systematic learning design model with a dynamic and interactive process to be applied in the learning process (Slamet, 2022; Sudirman, 2023). The advantages of the ADDIE development model are simple, direct, and often used in making learning programs and products effectively, and validated by experts (Soesilo & Munthe, 2020). Each stage of the development of the Frog Jump game media in this study is described as follows:

Analysis

a. Performance analysis

The learning of early reading in second-grade students at SDN 5 Mattiropole experiences several obstacles: low student interest and motivation, and ineffective selection and use of learning media. These two obstacles impact students' early reading skills, including some students still not reading fluently, some having difficulty spelling, and some students not recognizing letters as a whole. The solution to these problems is that teachers must choose and use interactive learning media that can generate student interest and motivation to learn. "The functions of learning media are (a) communicative function; (b) motivation function; (c) meaningfulness function; (d) perception equalization function; and (e) individuality function" (Aghni, 2018). The appropriate learning media to use is game-shaped learning media because game media can stimulate students' desire to learn and be actively involved in learning (Chabib et al., 2017; Setiawati et al., 2019; Natsir, 2022).

b. Needs analysis

Second-grade students are at the age stage of enjoying playing; this is what causes students to find it difficult to focus, not motivated, or lack interest in participating in the learning process of early reading. On the other hand, early reading skills are very important for low-grade students. Early reading skills will affect student learning achievement at the next level of education. Given that students are at an age that likes to play, the learning method that can be used is the learning-while-playing method. This learning method, while playing, can be done by using learning media in the form of games. Game media has advantages in interactive elements that will involve students actively in the learning process (Aghni, 2018; Natsir, 2022). The suitable game media is the Frog Jump game media, which is a development of the traditional Snakes and Ladders game and is adapted to meet the learning aspects of early reading, including mentioning letters, spelling words, and reading words.

c. Material analysis

The learning materials for early reading in second-grade students at SDN 5 Mattiropole include letter recognition and pronunciation, stringing syllables, reading words, and reading simple word strings. However, the learning material is not yet in accordance with the level of development of some students because there are students who have not mastered or cannot recognize letters as a whole, and there are also students who are constrained in spelling words. In addition, the media that teachers have used, that is, letter cards and storybooks, are still not optimal in helping to develop students' early reading skills.

These obstacles can be resolved using the Frog Jump game media, accompanied by number cards and frog cards. The use of this media is in accordance with the needs of students who need repetition of early reading material. As well as the methods of early

reading learning, which are (a) sound method, (b) alphabet method, (c) syllable method, and (d) institutional word method, indicators of early reading ability are divided into four: first the ability to know and distinguish symbols or symbols of vowels and consonants; second the ability to know the difference from words with the same letter prefixes; third the ability to recognize differences in words that have the same initial syllables; and the fourth is skilled at stringing syllables into words (Herman et al., 2017; Muhyidin et al., 2018). Early reading materials, such as number cards and frog cards, will help with repeating material, reading habituation, and expanding and adding student vocabulary.

d. Competency analysis

Early reading learning in second-grade students of SDN 5 Mattiropole includes knowledge, attitude, and skill competencies, which aim to develop student's abilities and skills in reading simple words, reading and understanding simple sentences, and increasing their confidence in reading and being active in the learning process. The benefits of reading include developing mindsets, clarifying ways of thinking, increasing knowledge and information, improving memory, and solving problems (Riyanti, 2021; Komalasari & Riani, 2023). However, some still have not been able to master the objectives of early reading learning.

Frog jump game media would assist teachers in fostering and developing student competencies, especially related to competencies in early reading material. The Frog Jump game media covers aspects from letter and syllable recognition and reading words to reading simple sentences, which help students develop knowledge and skills competencies related to early reading. In addition, with this media, students will be actively involved in the learning process so that the goal of attitudinal competence, confidence in reading, can be achieved.

Design

Furthermore, the product design stage is adjusted to the results of the analysis stage. First, determine the tools and materials that must be prepared in the media-making process: the Canva application, printer, HVS paper, white binding cardboard, scissors, glue, laminating plastic, and Velcro. Then, proceed with creating the media design of the Frog jump game through the Canva application (see Figure 1).

Figure 1 Mat/board of the early reading frog jump game

The Frog jumping game mat/board was designed using the Canva application. The game mat/board design measures 40 cm x 40 cm. The game mat/board contains 25 boxes with a row arrangement of 5 boxes and a column of 5 boxes. Each box is written with numbers 1-25 and has various colors for each box. The box numbered one is written Start, which means the starting line, and the box numbered 25 is written Finish, which means the end line. Of

the 25 boxes, 7 of them contain pictures of frogs. On both sides of the box containing the frog image, there is a green lotus on one side and an orange lotus on the other side. These lotuses each lead to another box on the side of the box with the frog picture (see Figure 2).

Figure 2 Frog Cards and number cards

The frog card and number card designs were created using the Canva application. Each frog card and number card size is 10 cm x 5 cm. The commands in the frog cards are divided into four aspects: mentioning letters, spelling words, reading words, and reading simple sentences. There are a total of 20 cards. Meanwhile, the number cards contain words, some words, and simple sentences that must be read by the students who take them. There are a total of 51 number cards (see Figure 3).

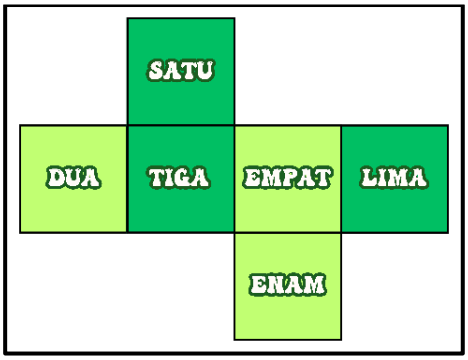


Figure 3 Dice

The dice design was created using the Canva application. The dice design is in the form of a cube net of six squares, with the size of each square being 10 cm x 10 cm. The dice contains the word writing of numbers 1-6 (see Figure 4).

Figure 4 Pawns

The pawns were designed using the Canva application. They are 8 cm x 3 cm and have different designs to make it easier to distinguish the pawns belonging to each student (see Figure 5).

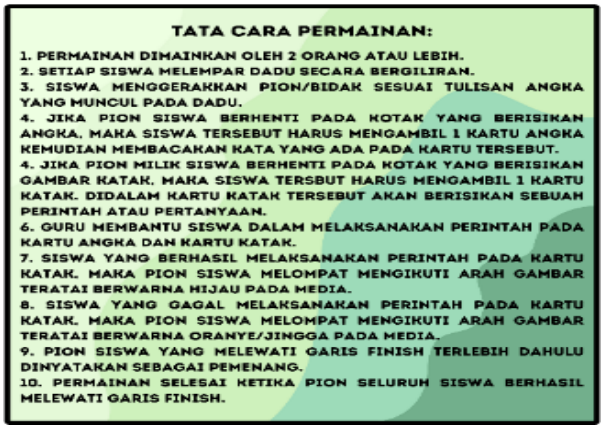


Figure 5 Game procedure design

For the Frog Jump game media to be effectively used, a game procedure design is made using the Canva application, which contains the game procedures. The game procedure is a square 20 cm x 20 cm (see Figure 6).

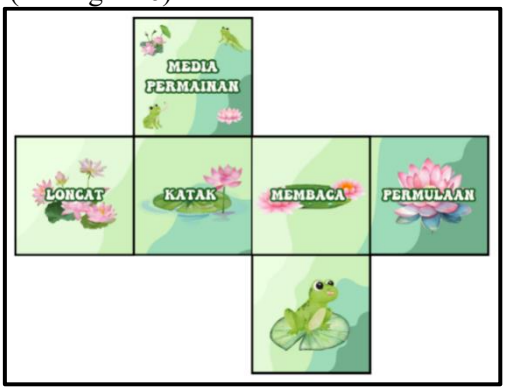


Figure 6 Media storage box design

The media storage box functions as its name implies, but its design is made using the Canva application to keep it looking attractive. The storage box design is a six-square cube net, each square measuring 20 cm x 20 cm (see Figure 7).

Figure 7 Media usage instruction design

The instructions for using this Frog Jump game media contain instructions for using the media and instructions after using the media. The usage instruction design was created using the Canva application. The instructions for use are in the form of a square 20 cm x 20 cm.

Development

a. Product creation

1) Printing media storage box design

The design of the media storage box, a cube net, was cut into six parts according to the size of each square, which is 20 cm x 20 cm. Next, the design was printed on white binding cardboard.

2) Making the mat/board of the Frog jumping game (see Figure 8).

Figure 8 Making a game mat/board

The 40 cm x 40 cm game mat/board design was cut into four sections, each measuring 20 cm x 20 cm. The game mat/board design was then printed on white binding cardboard. Next, each part on the back side was pasted with a pre-printed media storage box design, with the pasting conditions shown in picture 8.

After the pasting process, the four parts are laminated. Then, the sides of each part are attached with Velcro so that the game mat/board can be attached when used in the learning process.

3) Making frog cards and number cards

The frog card and number card designs are then printed on white binding cardboard, with each card measuring 10 cm x 5 cm. Because the frog cards and number cards have two sides, the printing is also done on both sides of the binding cardboard. After printing on the cardboard, the cards are cut out following the pattern and size of the card.

4) Making dice

The dice design in the form of a cube net was cut into six parts according to the size of each square, which is 10 cm x 10 cm. Next, the design is printed on white binding cardboard. After printing, each part is laminated and glued into a cube shape using glue.

5) Making pawns

The pawns are printed on white binding cardboard and then cut out following the design pattern of the pawns. The pawns are then laminated and finally given a base so that the pawns can stand up.

6) Making the game procedure design

The game procedure was printed on white binding cardboard and cut to the design size of 20 cm x 20 cm. The back of the game procedure was attached to one part of the pre-printed storage box design, as shown in Figure 9. After that, the game procedure was laminated and glued on the sides with Velcro.

Figure 9 Making game procedure

7) Making media usage instructions

The design that had been made was then printed on white binding cardboard and cut out following the design size of 20 cm x 20 cm. The media usage instruction on its back is attached to one part of the pre-printed storage box design, as in picture 10. After that, the media usage instruction is laminated and glued with velcro on its sides (Figure 10).

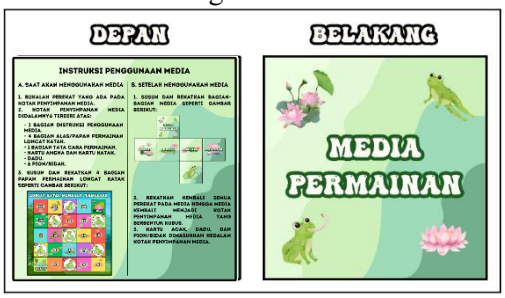


Figure 10 Making media usage instruction

b. Product validation

1) Media validation by media experts

The media validation of this media development product is a lecturer for the elementary school teacher education major, faculty of education, Universitas Negeri Makassar. The product of the Frog Jump game media development was submitted to the media expert to be assessed for feasibility, and the result is given in Table 3.

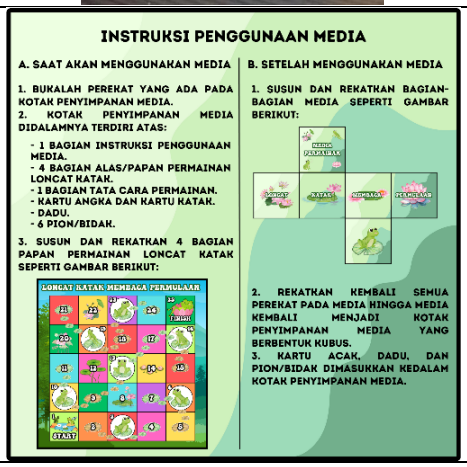
Table 3 Media validation result data

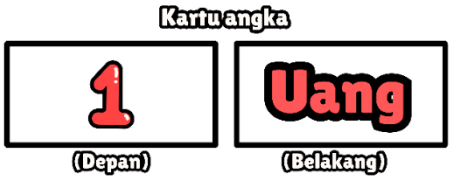
No.	Assessment Indicator	Assessment Item	Score
1.	Media Efficiency	1. Easy to use	5
		2. Easy to store	5
		3. Usage does not require special treatment	5
		4. Attractiveness of Frog Jump game media design packaging	4
2.	Media Accuracy	5. Harmonious game media board color design	5
		6. The language used in the Frog Jump game is easy to understand	4

		7. Clarity of the font used	4
		8. Consistency in the use of fonts, images, spacing, and typing on the cards	4
3.	Aesthetics	9. Harmony of color selection on the game board	5
		10. The color harmony of the writing on the cards	5
		11. Color combinations used in designing game media	5
		12. Color accuracy of each column's board	5
		13. Card attractiveness	4
4.	Media Resistance	14. Not easily separated, broken, and crushed during use	4
5.	Safety For Students	15. Has safe materials (not sharp)	4
		Total	68

Frog jump game media products based on the media expert validation questionnaire get a percentage value of 90.67%, which is within the interpretation criteria, very feasible, and does not need to be revised. However, it still requires improvement based on suggestions from media experts to produce better development products. The first suggestion is related to the dice size; initially, the dice are cubes of $10cm^3$. Based on the media expert's recommendation, the dice size was changed and reduced to $5cm^3$. The second suggestion is related to the writing on the instructions for using the media, game procedures, frog cards, and number cards, which previously used capital letters throughout, changing to only using capital letters in the title and at the beginning of the sentence. Product revisions from media experts are provided in Table 4.

Table 4 Product revisions from media expert suggestions

No.	Before Revision	After Revision
1.		
2.		

3.		
4.		
5.		

2) Material validation by material experts

The material validator of this media development product is one of the lecturers of the Elementary School Teacher Education Major, Faculty of Education, Universitas Negeri Makassar. To determine the material feasibility of developing the Frog jump game media, the material expert was asked to assess the development product, with the result given in Table 5.

Table 5 Material validation result data

No.	Assessment Indicator	Assessment Item	Score
1.	Suitability of Material with Initial Competencies	1. Completeness of the material.	5
		2. Extent of the material.	5
		3. Depth of the material.	5
2.	Accuracy of the Material	4. The accuracy of concepts and definitions.	4
		5. Accuracy of examples.	4
		6. Accuracy of the images and illustrations.	5
3.	Up-to-dateness of Material	7. Suitability of the material with the development of science.	5
		8. Examples in daily life.	5
		9. Pictures and illustrations are based on students' daily lives.	5
		10. Selection of early reading materials in accordance with the development and needs of the target teaching materials (students).	5
		11. The essence of the content or material of teaching materials does not contain Ethnicity, Religion, Race, Inter-group relations, and violence.	4

4.	Encouraging Curiosity	12. Encouraging curiosity.	4
		13. Creating questioning skills.	4
		Total	60

The percentage value of the material expert validation questionnaire assessment for the Frog Jump game media product is 92.31%, which, based on the interpretation criteria, is feasible and does not need to be revised. However, to produce a better development product, the material of the development product was improved according to the suggestions of the material expert. Some material expert suggestions are as follows: First, the teaching material is revised using language that is more communicative and adapted to students' level of understanding. Second, the teaching materials need to be added to the practice questions. The product revisions from the material expert are provided in Table 6.

Table 6 Product revisions from material expert suggestions

No	Before Revision	After Revision
1.		
2.	There are no practice questions	

Implementation

At this stage, the Frog jump game media was developed and revised based on suggestions from media experts and material experts, and then implemented in the learning process of early reading. The steps for using the Frog Jump game media product during the learning process are as follows:

a. The researchers began the learning process with prayer activities and continued with taking students' attendance.
b. The researchers explained the learning material, early reading, along with the learning objectives to be achieved, that is, students are able to recognize and pronounce letter sounds, syllables, and words through Frog Jump games.
c. The researchers asked triggering questions to determine students' initial abilities related to beginning reading skills, including letters, syllables, and words.
d. The researchers showed and explained the Frog Jump game media procedures to students. The game procedures are as follows:

1) 2 or more people can play the game.
2) Each student shakes the dice in turn.
3) Students move the pawn according to the number on the dice.
4) If a student's pawn stops on a box containing a number, the student must take 1 number card. The number card taken must have the same number symbol as the number on the box where the student's pawn stops.
5) If a student's pawn stops on a square containing a picture of a frog, the student must take one frog card, which will contain a command or question.
6) The teacher assists the students in carrying out the commands from the frog and number cards.
7) Students who successfully carry out the commands on the frog card, then the pawn held must jump following the direction of the green lotus image on the media.
8) Students who fail to carry out the commands on the frog card, then the pawn held must jump following the direction of the yellow lotus image on the media.
9) The student's pawn that crosses the finish line first is declared the winner.
10) The game is over when all student pawns cross the finish line.

e. After explaining the game's procedures, the researchers asked if there were students who wanted to ask questions related to the procedures of the Frog Jump game media.
f. The researchers distributed 1 set of game media to each group.
g. The researchers instructed to hold one pawn for each student and asked the students to hompimpa to determine their turn to throw the dice.
h. After the order of throwing the dice had been determined, the researchers instructed the four groups to start the game and supervised the game in the four groups.
i. The researchers helped students with difficulty carrying out challenges on frog and number cards.
j. After all the pawns held by each student crossed the finish line, the game was declared over.
k. The researchers then provided conclusions from this lesson.
l. The researchers closed the learning process by praying together.

After the learning process of beginning reading using the Frog Jump game media was completed, the researchers distributed teacher response questionnaires to the second-grade teacher and student response questionnaires to 20 second-grade students. The researchers guided the second-grade students in filling out the student response questionnaire by explaining how to fill out the questionnaire first and then reading the questionnaire items one by one to make it easier for students to understand the meaning of each question item. The researchers then collected the student and teacher response questionnaires that had been completed/answered, as seen in Table 7 and Table 8.

Evaluation

a. Response from the second-grade teacher

The results of the teacher response questionnaire data are shown in Table 7.

Table 7 Teacher response questionnaire data

No.	Assessment Indicator	Assessment Item	Score
1.	Material Suitability	1. The media contains material according to the indicators to be achieved	5
		2. The developed media is concrete for use in learning	5
2.	Actuality	3. Learning media makes it easier for teachers to teach early reading lessons	5
		4. The Frog Jump game media has met the criteria of learning media	5

		5. Accuracy of illustrations with the material	4
3.	Completeness and Quality of Materials	6. Strong and durable media	4
		7. The media is easy for students to use	5
		8. Media can be used repetitively	5
4.	Easy to Understand	9. The developed media makes it easier for students to understand the theme material on the theme of the wise use of money.	5
		10. The media contains material that can increase student understanding	4
		11. Clarity of rules in the Frog Jump game media on the theme of the wise use of money	5
5.	Clarity	12. The frog jump game media plays a very important role in learning	4
		13. The use of illustrations helps learners' understanding	4
6.	Giving Feedback	14. Media facilitates students to communicate	5
		15. The use of this learning media makes students motivated in learning	5
		Total	70

The percentage value of the teacher response questionnaire for the Frog Jump game media product is 93.33% in the interpretation criteria, which means it is very feasible and does not need to be revised.

b. Response from the second-grade students

The results of the student response questionnaire data are shown in Table 8.

Table 8 Students response questionnaire data

No.	Assessment Item	Score
1.	I am interested in early reading learning using the Frog Jump game media.	96
2.	Frog jump game media is different from other learning media.	75
3.	The material in the Frog Jump game media is very easy to understand.	96
4.	The frog and number cards in the jumping frog game media helped me understand the material better.	93
5.	Commands/questions contained in the Frog Jump game media are fun.	85
6.	I can learn independently, even without a teacher, with the Frog Jump game media.	90
7.	The content of the frog jump game media is presented interestingly.	96
8.	The Frog Jump game media encourages me to learn early reading.	92
9.	With the Frog Jump game media, I become more active in learning because it is easy to recognize letters, words, and sentences.	96
10.	My early reading skills got better after using the Frog Jump game media.	95
	Total	914

The results of the calculation of students' response questionnaire data obtained a percentage value of 91.40%, which, based on the interpretation criteria, means that it is very feasible and does not need to be revised.

This Frog Jump game media product began to be developed in October 2024 and was completed in February 2025. The development of this Frog Jump game media uses the ADDIE development model, which starts with the analysis stage and goes to the evaluation stage (Slamet, 2022; Sudirman, 2023). The supporting factors behind the development of this product were collected, starting from performance analysis, needs analysis, material analysis, competency analysis, media expert validation questionnaire, material expert

validation questionnaire, teacher response questionnaire, and students' response questionnaire.

The development of the Frog Jump game media involves technology. The Canva application designs all media components, followed by the process of making or assembling media manually, such as printing, cutting, and pasting. The Frog Jump game media components consist of a base or board, instructions for using the media, game procedures, frog cards, number cards, dice, pawns, and media storage boxes. The output of this product development is to produce a learning media product for early reading as a game.

The media expert validator gave very feasible validation results, and the suggestions from the validator are: "The size of the dice is too large; reduce it to 5 x 5 cm, and game instructions on the game board do not need to use capital letters." From the media expert validation questionnaire, data in the form of scores are obtained to determine the validity of media feasibility, while data in the form of suggestions are used to revise the Frog Jump game media products developed by the researchers. Criteria of material validation by the validator obtained very feasible validation results, with suggestions: "The design of teaching materials should use communicative language, the level of difficulty is adjusted to the level of students, as well as add practice questions, and pay attention to color harmony in writing and pictures." The data in the form of scores obtained is used to determine the validity of the feasibility of the material, while the data in the form of suggestions is used to revise and improve the product development of the Frog Jump game media.

Teacher and student response questionnaires were used to assess the feasibility of media development. The assessment aspects in the teacher response questionnaire include material suitability, actuality, completeness and quality of materials, ease of understanding, clarity, and provision of feedback. Based on data from the second-grade teacher of SDN 5 Mattiropole, the results of the teacher response questionnaire show that this media is very feasible without the need for revision. Material suitability and providing feedback obtained the highest average score of 5, indicating that the Frog jump game media is very suitable for early reading learning and encourages student activity in the learning process.

Student response questionnaire data from 20 second-grade students of SDN 5 Mattiropole showed feasible results without needing revision. Four statement items with the highest average value, 4.8, indicate that students are interested in learning early reading with the Frog Jump game media. In addition, the material in this media is easy to understand, the presentation is interesting, and it helps students learn more actively because it makes recognizing letters, words, and sentences easier. Thus, the Frog Jump game media has been fully developed and declared feasible for early reading learning.

Fitriana (2018) the Snakes and Ladders game is a traditional game with interactive, entertaining, and educational elements, and it becomes an effective and entertaining learning media innovation option. Then, the results of research by Munawwaroh (2023) Early reading learning using the Snakes and Ladders game media provides an interesting and new learning atmosphere because students are actively involved in the learning process. The material presented combines images, symbols, and interesting color variations so that students quickly remember and understand the subject matter.

Based on this research, the researchers designed a Frog jump game media product that can solve problems in the learning process of early reading, which generates student interest in learning through learning-while-playing activities, increasing student understanding of early reading through the process of repeating reading words or sentences and building student confidence by inviting students to be actively involved during the learning process (Chabib et al., 2017; Setiawati et al., 2019; Natsir, 2022).

The novelty aspect of this media development lies in the name change from the Snakes and Ladders game to the Frog Jump game. This media is designed to provide a new experience for students and arouse their curiosity and interest in trying this game. In addition, the mat or game board, dice, and pawns are coated with plastic laminating to make them stronger and more durable while distinguishing them from the traditional Snakes and Ladders game. Another innovation is the addition of frog cards and number cards that support early reading and learning.

The advantages of using the Frog jump game media are images or symbols and bright color variations that can attract students' focus and attention towards the Frog jump game media. Frog jump game media is not just a means of entertainment but also an early reading learning. This Frog Jump game media allows students to learn independently without a teacher due to its easy use, and the media has been equipped with instructions and game procedures.

The disadvantage of the Frog Jump game media is that it can only be played with a maximum of 6 players per media or in groups. The maximum number of players is six people because students play in turns, so students do not have to wait too long for each turn to play. In addition, the disadvantage of using the Frog Jump game media is that the teacher must guide and supervise several groups simultaneously.

The researchers also faced obstacles during the development of this media, such as developing and adjusting game media so that the elements of early reading learning could be achieved. However, these obstacles can be resolved so that the development of the Frog Jump game media can be completed with the quality of feasibility that has been tested.

CONCLUSION

The Frog Jump Game media development for early reading learning followed the ADDIE model—analysis, design, development, implementation, and evaluation—and received positive feedback from students, who found the media engaging, easier to understand reading material, and motivating for active learning. Validation results showed high feasibility, with expert and user response scores above 90%, indicating the media is highly suitable without needing revision. However, the study was limited to a single school, focused only on early reading instruction, and was constrained by short-term observation. Despite these limitations, the study provides valuable insights for educators, supporting the use of interactive media to improve early literacy and offering a foundation for future research in instructional strategies across various subjects.

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

AUTHOR CONTRIBUTIONS STATEMENT

This research results from the collaboration of three authors with the following contributions: (1) S is responsible for the conceptualization of the research and the design of the research methodology, as well as editing the manuscript for publication; (2) AK is responsible for preparing the theoretical framework of the research; (3) MTAZ is responsible for collecting and analyzing data, drafting the manuscript, and writing with the template, and (4) Z is responsible for interpreting results and editing the manuscript for publication.

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