

Playful Pathways to Age-Appropriate Sexual Education: Crafting Board Game Media for 4-6-Year-Olds

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ABSTRACT

Sex education is very important for early childhood because it helps children avoid the rampant cases of violence that have recently occurred in children. In addition, knowledge related to sex education among educators, parents and even BKB cadres is still minimal. Therefore, it really needs the right media to educate in giving sex education properly. This study aims to develop a board game to introduce sex education from an early age to children aged 4-6 years, in addition to testing the feasibility of board games in terms of validity and effectiveness. This research is research and development using the ADDIE model. The sample in this study was 30 children aged 4-6 years in the KB village of Ambon city. The data in this study were obtained through two main techniques, namely interviews and observations. In the initial phase, the data were analyzed qualitatively to understand the perspectives held by Family Planning (KB) facilitators and parents regarding early childhood sex education. Subsequently, in the evaluation phase, quantitative analysis was conducted using descriptive statistics obtained from expert validation, teacher response questionnaires, and student observation sheets. The results of this analysis were used to provide insights into the validity, utility, and effectiveness of the product developed in this research. The feasibility of using board games, seen from the aspect of validity, was obtained through the assessment of media experts and material experts. In contrast, the effectiveness aspect was obtained through observing the ability to understand sex education in children aged 4 to 6 years. The results showed that the board game was feasible in terms of the validity aspect of the material in the very good category, the validity aspect of the media in the very good category, and the effectiveness aspect in the good category.

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1. INTRODUCTION

Children represent the nation's future generation and serve as inheritors of the nation's vision and mission (Kerby et al., 2022). The phenomenon of sexual violence has emerged as a significant issue recently in Indonesia. According to research conducted by (Sommaliagustina Sari, 2018), sexual violence against children occurs repeatedly and extensively. This situation holds a profound irony, as the

perpetrators of this violence often happen to be individuals closest to the victims, and the underlying causes can be triggered by trivial issues stemming from a lack of parental responsibility towards the development and needs of the child (Mohideen & Khokhlova, 2022). According to the findings by End Child Prostitution in Asia Tourism (ECPAT), sexual violence against children involves instances where children interact with adults, older children possessing advanced cognitive abilities, or even strangers, siblings, or parents. In these deeply concerning scenarios, the child becomes an object of satisfaction for the sexual desires of the perpetrator (Zahirah et al., 2019; Moss et al., 2023). Sexual violence against children is a serious issue that not only harms them physically but also leaves deep psychological wounds. Perpetrators of such violence often happen to be individuals who should be protecting and caring for children, thus betraying the trust that should rightfully exist.

The Data acquired from the World Health Organization based on Septiani's research (Jalal et al., 2021) showed that 20% of women and 5-10% suffered violence since childhood. Other than that, based on Kemmenpa data until January 2022 - there were 218 cases, among them 32 male victims and 2015 female victims. Other things that were found are 7 cases of violence; sexual violence is higher cases with 85 cases. One hundred thirty-eight cases are based on gender, 10 cases are based on family relationships, and it happened to elementary school children. Another phenomenon that happened based on the interview with parents and teachers talking about sex is a taboo thing. The decline in knowledge about sexual education resulting from this phenomenon has significant impacts on the social and educational contexts. Additionally, the prevailing belief in society that cases of sexual violence are a family disgrace and should be concealed indicates a deep-seated stigma surrounding the issue. In relation to the common tendency to keep cases of sexual violence secret, this reflects an exacerbation of the problem in society, affecting the availability of information required by individuals to protect themselves and others from the risks of sexual violence.

This phenomenon has considerable psychological impacts on children, as proposed by Arliman (2017) and Yusyanti (2020). The resulting impacts include depression, phobias, nightmares, and even suspicions of others. Furthermore, several victims may fear future pregnancies resulting from sexual violence to the extent of contemplating suicide. Another impact is the development of sexual trauma, feelings of helplessness, betrayal, and a negative self-image (Zahirah et al., 2019). Hence, addressing this issue requires a range of treatments for sexual violence, including education about reproductive health, religious values, decency, social rehabilitation, psychosocial support, and various forms of protection and assistance (Arliman, 2017; Yusyanti, 2020). emphasizes the importance of early sexual education, enabling children to receive explanations more easily compared to seeking knowledge from unreliable sources.

According to (Febriagivary, 2021), children between the ages of 4 and 6 are highly sensitive to differences between genders and various other aspects, driven by their natural curiosity. Therefore, educators and parents should address this curiosity and provide appropriate educational guidance based on the child's age. Sex education can be defined as instruction about the anatomy of body organs and sexual reproduction, aiming to reduce negative sexual behaviours (Arliman, 2017; Yusyanti, 2020). Douglas (Anggraini et al., 2017) note that sex education equips children with information and skills related to safe sex, communication about sex, and relationship management. Calderone (Kasmini et al., 2016) adds that sex education strengthens family life and promotes self-understanding, respect, healthy human relationships, and sexual and social responsibility while preparing for responsible adulthood and parenthood.

Early sex education offers numerous benefits to children, such as improving social skills, fostering independence, promoting responsible behaviour, reducing the risk of sexual crimes, enabling reporting of such crimes, and enhancing the ability to choose adaptive attitudes and behaviours in line with social norms (Kasmini et al., 2016; Osadolor et al., 2022). The enhancement of sex education's engagement level hinges upon the significant role of creativity, as underscored by Kamaludin et al. (2022). The incorporation of multimedia elements, especially in early childhood sexual education, is instrumental in amplifying children's comprehension. Board games, for example, can be used as a creative and interactive medium, allowing children to learn while playing and experiencing events, ultimately preparing them to connect with real-life situations (Nasrulloh et al., 2019). Board games offer a fun and effective way to deliver sex

education to young children, enabling them to learn through play (Esquivel et al., 2022). Fostering engagement in children's sex education necessitates the incorporation of creativity as a fundamental component. Moreover, the utilization of multimedia resources, such as board games, holds the potential to enrich their comprehension in this context significantly. Board games provide a fun and effective approach to delivering sex education to children, allowing them to learn while playing and experiencing relevant real-life situations.

Sex education needs to be made as creative as possible (Lindberg & Kantor, 2022). The use of media in sexual education in early childhood will be very helpful in improving children's understanding related to sex education (van Reeuwijk, Rahmah, & Mmari, 2023). In addition, media is also a component in learning to support learning to go well. One of the media that can be used is Board Games because by using board games, children will be able to experience an event so that the focus makes children gain experiential learning (Ho et al., 2022). Through this, children are equipped from an early age to connect with real events (Nasrulloh et al., 2019). Based on the explanation above, the purpose of this writing is to find out the effectiveness of the application of board games for sexual education for children aged 3-6 years. Educators are encouraged to seek appropriate and enjoyable resources to provide sex education to students at a young age. A board game is a structured game governed by a set of rules, often employed as an educational tool with diverse themes (Sydelko et al., 2023).

In this exposition, board games involve strategic gameplay governed by specific rules. The recognition of its versatile nature and creative potential allows board games to convey messages for various purposes effectively. Board games can proficiently convey messages tailored for diverse purposes. (Nasrulloh et al., 2019; Sapulette & Pakniany, 2019) Define board games as group activities engaging 5-6 participants. These games are increasingly utilized as instructional media due to their capacity to impart messages in a relaxed and enjoyable manner, suitable for classroom and public settings with focused audiences.

Sex education is a teaching program related to gender, includes the growth of genders, so sex education needs to be applied since childhood so that individuals acquire sexual-related knowledge (Astuti, 2017; Anggraini et al., 2017) explained the form of sex education for preschool-age children also proposed by Handayani (2008; Mamuroh et al., 2022) as follows: 1) Age 18 months to 3 years, children begin to learn to recognize their part of bodies. When teaching a child, remember it is important to give appropriate names to each part of bodies. Changing the name of the body parts with another name will actually make the child think there is something wrong with the real name of the part. Previous studies have not extensively examined the use of board games to introduce sex education. While Rizkha & Anggapuspa (2022) employed board games to promote balanced nutrition among 9-12-year-olds and Nasrulloh et al. (2019) employed them to introduce children to goal-setting within the same age group, ^ utilized the snake and ladder game method for sex education. Given the limited research in this area, this current study is intriguing as it aims to develop board games for introducing sex education from an early age, targeting children aged 4-6 years who are beginning to learn about body parts.

Based on the explanation above, the questions in this research are: What are the issues related to sexual education that were identified? How is the design of the board game focused on teaching children about sexual education, including the introduction of body parts? Moreover, how is the product development aligned with the design in the creation of educational media? This research has several potential innovations and contributions in the context of sexual education for children aged 4-6 years old in the Family Planning Village in Ambon. Some possible innovations of this research include the development of new media in the form of a specialized board game that is not widely available in preschool sexual education. The use of board games as a creative learning tool is an approach that has not been extensively explored, especially in the context of early childhood sexual education. The benefits of this research are to help improve the understanding of preschool-aged children about sexual education in general, reduce the risk of sexual violence against children, and provide benefits to parents and teachers about the importance of early sexual education and support the use of board games as an effective learning tool.

2. METHODS

This study used research and development with the ADDIE model (Analysis, Design, Development, Implementation and Evaluation). The initial stage, namely analysis, aims to analyze the problems found. The subjects involved were children with 4-6 years old in KB villages. The second stage, design, aims to design a board game that focuses on learning related to the introduction of sex education in children, which includes the introduction of body parts. The next stage is development, to develop products according to the design discussed earlier. After the product is completed, it will be validated by two expert staff and sexual psychology experts as media and material experts and revised in accordance with directions or instructions. The next step is implementation, from the results of development in the learning process involving 30 children aged 4-6 years in KB Village. At this level, an observation sheet related to sexual education will be given after learning about the product being developed. The last stage is Evaluation, where the results of the expert validation process, teacher response questionnaires, and student observation sheets obtained from the development process to implementation will be used to conclude the validity, practicality, and effectiveness of the product developed.

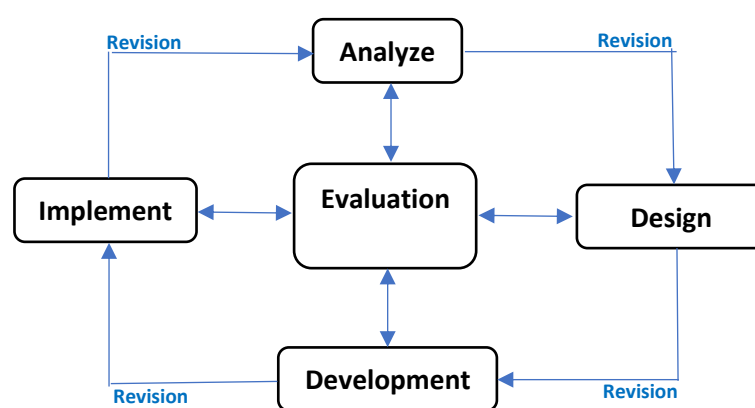


Figure 1. Model ADIE

This product is an educational board game with the theme "Understanding Body Parts." The game is specifically designed for children aged 4-6 years old and is used as a learning tool for introducing the parts of the human body and early sexual education. The illustration of this product includes:

1. Game Board: The game is in the form of a board with a bright and engaging design for children. The board features illustrations of various parts of the human body, such as eyes, nose, mouth, hands, feet, and more, arranged in the form of a puzzle.
2. Picture Cards: In addition to the board, there are picture cards that contain illustrations of body parts identical to those on the board. These cards are used in various game activities.
3. Validation Instrument: The product also includes a validation instrument in the form of a questionnaire used to measure the understanding and knowledge of children after they have used the game. The questionnaire is administered to subject matter experts and media experts to evaluate the validity of the game.

This product was tested with 30 children aged 4-6 years old. The testing was conducted using a "one-shot case study" model, where the children did not have a control group and received special treatment for a certain period. In the implementation, children would gather around the game board. They would choose a picture card representing one of the body parts. Then, they would search for the corresponding location on the game board where that body part fits and place the card in the correct spot. The game may also include simple sexual education questions appropriate for the children's age.

The research was conducted in Kampung KB of Ambon city. The Consideration of location selection because this study has the potential to be researched because the children in the villages have various social and economic backgrounds, so it becomes a distinctive feature of this study. The number of samples

in this study is 30 people, who were selected using purposive sampling techniques. The selection of samples was in accordance with the purpose of the study, which is for children aged 4-6 years and settled in KB Village. Data collection techniques used in this study are psychological scales, interview techniques, and observation or observation. Interviews were conducted to find problems more openly related to conditions at the research site. Observation is used to gain a clear picture of the effectiveness of the product on early childhood development, especially in terms of sexual development, for data analysis techniques are used to test the validity and effectiveness of board games using descriptive statistics.

In order to evaluate its efficacy, a reference criterion, as outlined by Widyoko (as cited in Oktavianingsih and Fitroh, 2022), is implemented. This criterion is visually represented in Figure 2 and serves as a benchmark for measuring the product's effectiveness.

Table 1. Test the effectiveness

No.	Interval Skor	Klasifikasi
1.	$X > M_i + 1,8 S_{b_i}$	Sangat Baik
2.	$M_i + 0,6 S_{b_i} < X \leq M_i + 1,8 S_{b_i}$	Baik
3.	$M_i - 0,6 S_{b_i} < X \leq M_i + 0,6 S_{b_i}$	Cukup
4.	$M_i - 1,8 S_{b_i} < X \leq M_i + 0,6 S_{b_i}$	Kurang
5.	$X < M_i - 1,8 S_{b_i}$	Sangat Kurang

Moreover, the formula for analyzing the effectiveness of data is according to Oktavianingsih and Fitroh (2022).

$$P = \frac{\Sigma R}{N} \times 100\%$$

Explanation:

P = Final score,

ΣR = Sum of assessment scores, and

N = Minimum score.

Data collection techniques in this research include interviews used to gather qualitative data during the needs analysis phase. Experts conducted interviews with Family Planning (KB) facilitators and parents to understand their perspectives on early childhood sex education and potential challenges that may arise. Additionally, observations were employed during the needs analysis phase and during implementation to gain a clear picture of the product's effectiveness in early childhood development, particularly in the context of sexual development. These observations may encompass the behaviour of children as they interact with the board game.

The analysis in this research involves qualitative analysis used during the needs analysis phase, where qualitative data obtained from interviews and observations are utilized to comprehend issues related to sex education for children aged 4-6 in KB villages. Qualitative analysis typically involves identifying patterns, themes, and trends within qualitative data. Furthermore, quantitative analysis is used, employing descriptive statistics to analyze data obtained during the evaluation phase. Results from expert validation, teacher response questionnaires, and student observation sheets are utilized to assess the validity, utility, and effectiveness of the developed product. Descriptive statistics are used to summarize data in numerical form and depict the characteristics of the data. To evaluate the product's effectiveness, we utilize reference criteria that mirror the desired benchmarks or objectives for sex education products. These criteria are employed to measure the research results against the predefined standards.

3. FINDINGS AND DISCUSSION

This developmental research has resulted in a product in the form of a board game aimed at introducing early sex education to children aged 4-6 years old. This research adheres to the principles

of good and proper Indonesian scientific language. The methodology employed in this developmental research is the ADDIE model (Analysis et al., and Evaluation), which has proven to be effective in developing educational products. With this approach, we can ensure that the board game produced has undergone a systematic and in-depth process, thereby providing optimal benefits in helping children understand fundamental concepts of early sex education.

3.1. Analysis Stage

The initial stage of this research began with conducting a needs analysis, which included a deep understanding of the field conditions and the children's situation. Additionally, the references to be integrated into the development of the board game were also a focal point of attention. This approach was carried out by gathering relevant data and information related to early sex education in villages included in the Family Planning (KB) program, and this process was done in collaboration with Early Childhood Family Education (BKB). The data collection process involved two main methods, namely interviews and observations. Field observations took place over four days, and interviews were conducted over one day, involving a representative from BKB and a parent. Furthermore, the interview process was extended for an additional two days to deepen the understanding of the existing situation in the field.

The results of these interviews and observations reflect the views and assessments of various parties regarding early sex education for children in KB villages. For example, in the interview results, it was revealed that sexual training or education is primarily directed towards adolescents, given the belief that young children do not need such knowledge. In a statement by a respondent with the initials AA, aged 50, it was stated, "Sexual training is only provided by the Youth Family Development because in our opinion, adolescents need it more than children, especially if the children are still young. It would be better if children's minds were not exposed to sexual matters." This opinion is also reflected in the perceptions of BKB cadres and parents, who believe that sexual education for children can have negative effects. In the words of a 40-year-old parent with the initials BC, it was revealed, "I don't like children learning anything about sex. I'm afraid they will be contaminated with such situations. It's very dangerous, so it must be in good conditions."

In this context, there is a common perception among parents regarding the introduction of sex education to children with a similar view to the role of BKB cadres. Parents tend to believe that providing knowledge about sex to children can have negative impacts on their development, as expressed by a mother with the statement, "I don't like children learning anything about sex. I'm afraid they will be contaminated with such situations. It's very dangerous, so it must be in good conditions, BC, 40 years old." However, it should be noted that in sex education, as in the role of BKB cadres, there are various opinions and approaches to consider. Proper sex education, delivered effectively and adapted to the child's age, can help them understand important aspects of the body and human relationships. Therefore, before making decisions regarding children's sex education, it is important to consider various perspectives and ensure an appropriate approach in line with children's development.

From the needs assessment conducted, several important findings can be highlighted. First, it is concluded that material related to sex education has never been provided to children. Second, the Evaluation indicates that the development of the quality of early childhood education, especially in the context of sex education, is not well reflected in the roles of BKB cadres and parents. Third, there is a strong tendency to view the topic of sex as something taboo and inappropriate to discuss, both by cadres and parents. Fourth, the assessment results also note widespread concerns that this situation can have a negative impact on children's future sexual experiences.

3.2. Design Stages

In the second stage of this research, the researcher took concrete steps in designing a board game as a focused learning medium for introducing early sex education, including the presentation of body parts to children. Additionally, the researcher also designed instruments aimed at validating the media

and materials to be used, as well as media testing instruments to be provided to children and BKB cadres. The steps taken in designing the board game media are as follows:

1. **Determining Desired Sexual Behavior and Knowledge:** The initial step to be taken is to clearly define the sexual behaviour and sexual knowledge that children are expected to understand after playing this board game as part of the process of establishing specific and measurable learning objectives.
2. **Designing Images and Body Shapes to Be Taught:** In this phase, the researcher designs images and body shapes that will be taught to children through the board game medium. These images should be well-designed to facilitate children's understanding of body parts clearly and accurately.
3. **Board Game Creation:** After the design of images and lesson materials is completed, the researcher proceeds with the creation of the board game itself. This process includes creating detailed descriptions of the board game, including rules, objectives, and components. The goal of this step is to facilitate the production of a product that can be used in education.
4. **Preparation of Validation Instruments:** To ensure the quality of the designed learning media, the researcher prepares validation instruments in the form of questionnaires. These questionnaires will be given to subject matter experts and media experts, who will assess the quality and effectiveness of this learning medium. The assessment is conducted using a rating scale with a range of values from 1 to 5.

By following these steps, this research aims to ensure that the developed board game media has strong educational value and is effective in helping children understand early sex education while ensuring its validity and quality through a rigorous validation process by experts. An assessment scale of 1-5.

3.3. Development Stages

In the initial stage of creating the educational media, the first step taken was to design body part images arranged in the form of puzzles. These images serve as elements that children can combine to form a complete human body image. During this combining process, children would have the opportunity to identify and name each body part they assembled, enabling them to understand and recognize the various body parts. For more detailed information about the content of this board game, a comprehensive description can be found in Table 2, presented below. This table provides a clear and structured overview of the elements within the game, facilitating understanding and the use of this educational media in early sex education efforts.

Table 2. Board Game Contents

No	Arrangement	Information
1	Cover	Title: Know My Own Body
2	Content	Instruction manual Cards of body parts

In the table presented above, there is a summary describing the content of the designed board game. This game includes various elements, including a user instruction guide that guides users and body part cards that depict the body parts used in children's learning activities. The overall goal of this educational media is very clear, which is to help children interactively recognize and understand body parts. Achieving this is done through puzzle-solving activities, wherein children can combine these images to form a complete human body image. Additionally, this media introduces the names of each body part, aiding children in gaining a deeper understanding of anatomical terminology. Thus, this educational media is designed with a very specific purpose to support early sex education through an interactive and educational approach.

3.4. The Validation of Learning Media

The board game media developed in this research has undergone comprehensive validation, both in terms of content and media. In terms of content validation, the board game media was evaluated by Huwae, a psychologist who is also a Psychology lecturer at UKSW. The evaluation results provided by Huwae indicate that this media received a score of 38, with a rating criterion of "very good." Meanwhile, validation in terms of media was conducted by Makulua, a lecturer in Early Childhood Education at IAKN, who gave a score of 52 with a "good" rating criterion. Both experts provided valuable suggestions for improving the board game media. First, media expert Makulua recommended adding more variety to the images in the media. Additionally, he suggested clarifying the puzzle piece images used to facilitate children's understanding. Second, content expert Huwae deemed the content in the media to be very good but recommended adding more body shapes to enrich children's learning experiences.

These improvement suggestions will serve as important guidelines in optimizing the quality of the board game media to provide greater benefits in early sex education. Thus, the validation results and recommendations from both experts will serve as a foundation for enhancing the effectiveness and quality of this learning media in helping children interact, understand and recognize body parts. It is important to note that the validation of this learning media is based on criteria that refer to the views of Widyoko, as outlined in the research conducted by Fitroh et al. (2022). These criteria are presented in detail in Tables 3 and 4 below: [Tables are presented based on Oktavianingsih and Fitroh's research]. By referring to these criteria, the validation of learning media can be done objectively. It can help identify aspects that need improvement to enhance the effectiveness and quality of the board game media as a tool for early sex education.

Table 3. Reference Criteria Based on Material Expert Assessment

No	Score Interval	Classification
1	$X > 40$	Very good
2	$39 > X > 33$	Good
3	$32 > X > 26$	Quite
4	$25 > X > 19$	Less
5	$X < 18$	Very Less

Table 4. Reference Criteria Based on Media Expert Assessment

No	Score Interval	Classification
1	$X > 55$	Very good
2	$54 > X > 46$	Good
3	$45 > X > 39$	Quite
4	$38 > X > 30$	Less
5	$X < 22$	Very Less

The results of the validation conducted using these criteria indicate that the board game developed for sex education in children aged 4-6 years is considered suitable for testing on children of that age group. The conclusion can be drawn from the scores obtained in the content and media validation, which are near or exceed the threshold set in the criteria tables. The favourable and sufficiently good assessments from experts in these two crucial aspects provide a strong basis for proceeding with the testing of this board game media with the target audience, namely children aged 4-6 years, in support of early sex education.

3.5. Implementation Stage

In this implementation phase, the product that has been successfully developed will be applied to a group of 30 children aged 4 to 6 years from KB villages in the city of Ambon. In this stage, the research design applied is a single-case study model, which is a type of research where there is no control group

used, and children are given specific treatment for a certain period. The research subjects will receive treatment in the form of using the board game as a learning medium. This research aims to measure the impact of using board games as a learning medium on the development of children aged 4 to 6 years in KB villages in the city of Ambon. Data will be collected through observation, interviews, and child development tests.

Data analysis will be a key step in evaluating the effectiveness of the board game as a teaching method for the targeted age group. Through this analysis, it is expected to gain a deep understanding of how effective the board game can be as a tool in the learning process for children in this age group. The results of this research are expected to provide valuable insights for the development of more effective learning approaches, especially in the KB village context. Additionally, at the end of this research program, observations will be made regarding indicators of children's sexual development. Gaining a more concrete and detailed understanding of the impact of using the board game as a teaching method in this context will be possible through this. The experimental design used in this research can be found in Table 5, which will provide a clear and structured overview of the steps to be taken in testing the effectiveness of the board game as a teaching method.

Table 5. Design a shot case study

Subject	Treatment	Observation
1 Group (30 children)	X	O

The results obtained regarding children's understanding of sex education are obtained through observation sheets or observations of sexual education comprehension, showing a score of 85% with good criteria. This research aims to measure the level of children's understanding of sex education as one of the important indicators in education development. The 85% score indicates that children's understanding of sex education material can be considered adequate and aligned with the program's objectives. Therefore, the results of this research provide a positive indication of the effectiveness of the sex education program provided to children in the treatment group. From the effectiveness test results, it can be concluded that the board game has a high level of effectiveness, as seen in Table 6.

Table 6. Accumulated Observations of Sex Education for Children Aged 4-6 Years

No	Code	Total scores	Percentage	No	Code	Total Scores	Percentage
1	AA	21	87,5	16	ZC	20	83,333
2	BD	21	87,5	17	ERT	22	91,67
3	CG	19	79,167	18	ZZR	14	58,33
4	AL	20	83,333	19	MNR	21	87,5
5	AAC	12	50	20	THU	20	83,33
6	FSB	20	83,333	21	BD	20	83,33
7	CCD	22	91,67	22	SP	18	75
8	PZW	14	58,33	23	PTR	20	83,333
9	ATQ	21	87,5	24	ERT	12	50
10	HDR	20	83,33	25	AAQ	21	87,5
11	YYU	18	75	26	QYA	21	87,5
12	TR	20	83,333	27	EED	21	87,5
13	RST	12	50	28	THU	21	87,5
14	PPO	21	87,5	29	OPU	19	79,167
15	LWR	21	87,5	30	ER	20	83,333

In the percentage analysis, the observation results indicate that the board game has successfully achieved a percentage level of 74.167%. This figure clearly indicates that the board game is effective in delivering sex education material to children aged 4-6 years. The percentage level reaching a significant

figure portrays that the board game has great potential as a highly effective tool for communicating sex education material to children in this age group.

To better understand the formula used in analyzing the effectiveness of the data, we can refer to the views of Oktavianingsih and Fitroh (2022) in the context of data analysis results. The formula that can be applied is as follows: [mention the formula clearly in accordance with the research context]. By using this formula, we can measure in more detail the extent to which the data or assessment results achieve the expected level of effectiveness in the context of the ongoing analysis.

$$P = \frac{534}{20 \times 24} \times 100\%$$

$$P = \frac{534}{720} \times 100\%$$

$$P = 74,167\%$$

The applied formula serves as a measurement tool to assess the effectiveness of data or assessment results against a specific parameter. The calculated P value of 74.167% is a concrete indicator of the level of success or effectiveness achieved in the context of the data analysis being conducted. The higher the P value obtained, the more effective the data is in achieving the set goals. Thus, this formula functions as a relevant and essential tool in measuring and evaluating the achievement and effectiveness of a parameter in the context of data analysis.

3.6. Evaluation Stage

In the final stage of this research, data analysis was validated by experts in the field of media and content. Additionally, analyses related to observations and questionnaires to gather feedback from teachers were conducted. In this phase, the outcome is a board game designed for sex education for children aged 4-6 years. This product serves as a tool to teach sex education or introduce concepts of sexuality to children from a young age. With the introduction of this game, it is hoped that children can understand their bodies, thus aiding in the prevention of potential cases of sexual violence. During the product development process, the researchers assessed the existing needs to determine the extent of the importance of developing this product. Firstly, it should be highlighted that cases of sexual violence often occur among children aged 4-6 years. This finding aligns with research results presented by Anis (Anggrain & Asi, 2022), which explicitly indicates that children in this age group are vulnerable to cases of sexual violence, significantly impacting their psychosocial development.

However, it should be noted that, to date, many parents and educators remain hesitant about the idea of early sex education. They are concerned that such education might be harmful to children. Additionally, it is important to realize that efforts to present sex education engagingly for young children are still limited. Even in the city of Ambon, research on sex education for this age group is rarely conducted, with most research focusing on middle and high school students. Therefore, the development of this product is expected to provide a relevant and effective solution in the effort to prevent cases of sexual violence against young children. Thus, this product is expected to be a significant step in supporting safe and directed sexual education for children aged 4-6 years, with the ultimate goal of raising awareness and protection against the lurking risks of sexual violence.

The board game developed by the research team has a very important goal, which is to engage educators, parents, and BKB cadres in an effort to introduce and provide an understanding of sex education from an early age. This view is supported by previous research, where (Luturmas et al., 2019) highlighted the advantages of using effective games or media in improving positive attitudes and understanding related to sex education, in line with previous research findings. Furthermore, (Anggrain Asi, 2022) also noted that sex education provided to children aged 4-6 years can make a significant contribution to enhancing children's sensitivity during their sensitive developmental periods. Therefore, the development of this board game is expected to be an effective tool in supporting early sex education efforts and opening doors for active collaboration between educators, parents, and BKB cadres for a better understanding of sexual issues in young children.

The validity of the results from the development of this board game clearly indicates that the product can confidently be categorized as a high-quality product and, therefore, is highly suitable for testing with children aged 4-6 years. The rigorous validation process undergone by this product is a strong indication that it has successfully reached the expected level of quality. Furthermore, the results of the trials conducted on children aged 4-6 years in KB villages convincingly demonstrate the effectiveness of using this board game as a tool to introduce early sex education. Therefore, overall, the media product developed by the research team can be considered to have met the validity and effectiveness criteria that are the standard in sex education efforts. This product, therefore, becomes a valuable resource and can be used with confidence by teachers, parents, and BKB cadres in the effort to introduce body parts and important concepts related to sex education to children.

4. CONCLUSION

In the research on the development of board games for early sex education in children aged 4-6 years old, various stages of the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) have been carefully executed. The results of this study have yielded several key conclusions. This research successfully developed a board game as a means to introduce early sex education to children. The game covers the introduction of body parts and is designed to be an effective tool in sex education. Test results indicated an improvement in children's understanding of sex education, with an average score of 85%. The effectiveness of the board game in enhancing their understanding is evident. The research highlights the relevance and urgency of early sex education for children to prevent cases of sexual violence. The use of engaging media, such as board games, can assist teachers, parents, and educators in delivering age-appropriate sexual education material.

However, it is important to note that this research has limitations, such as the focus on children aged 4-6 years old, which may limit its universal applicability to older or younger age groups. The research primarily addresses limitations in sex education materials and media but does not consider social and cultural factors that may influence teaching effectiveness. Therefore, further research may be needed to confirm the long-term effectiveness of this board game in broader contexts to determine whether early sex education indeed has a positive impact. Additionally, it should consider the social and cultural factors influencing sex education, especially in different communities, to develop a more measurable and sustainable approach. Overall, this research makes a significant contribution to improving the understanding of early sex education and preventing sexual violence against young children.

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