

Puzzle Design for Enhancing Bible Story Learning for Children 4-6 Years Old

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ABSTRACT

In the contemporary era characterized by novel distractions and challenges, we frequently observe the diminished comprehension of biblical narratives within religious education settings, including St. Gabriel Sunday School. Despite ongoing efforts to convey religious messages in a creative and captivating manner, numerous children encounter difficulties in comprehending and internalizing the moral teachings encapsulated within the scriptures. This presents a pertinent inquiry regarding the most effective strategies to engage the younger generation with religious messages in this rapidly evolving and intricate global environment. The primary objective of this research is to design an educational puzzle as a medium for acquiring biblical narratives for children aged 4 to 6 years. Utilizing the SCAMPER (Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, and Reverse) design methodology, this research identifies and develops puzzles that are engaging and facilitate children's comprehension of biblical narratives. The puzzle is meticulously crafted to enhance children's engagement and proficiency through an interactive and enjoyable learning experience. The anticipated outcomes of this research include the development of an effective and engaging educational puzzle tailored for children aged 4 to 6 years, thereby supporting their biblical knowledge and overall development.

KEYWORDS

4-6 years old,
Toys, and
Beam

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INTRODUCTION

Early childhood entering the golden age must be trained to understand every basic concept. Cognitive skills are scientific skills that play an important role for early childhood to be able to associate basic skills with learning activities (Irawan et al., 2022). Children need to get cognitive stimulation because it can directly stimulate other developmental developments, such as moral and religious, language, physical-motor, social-emotional, and art (Salsabela & Suzanti, 2022).

Play is the best way to fulfill these stimulation needs as an interactive, immersive, explorative, and active method of mental operations (Moyles, 2014). Motor movements will make children direct meaningful freedom and make children become calmer, happier, and feel satisfaction (Izzaty, 2017). The phenomenon of early childhood is an important concern in the world of education and child development. In this early period of development, children can quickly acquire basic abilities that become the foundation in the next stage of development (Shonkoff & Phillips Deborah A., 2016). Playing puzzles can help develop children's cognitive skills, including the ability to think critically, solve problems, and think creatively (Mulyana & Nurcahyani, 2022). When acting, affective guides cognitive and psychomotor, while when forming, cognitive integrates with psychomotor for affective

formation (Wikarya et al., 2018). In the process of teaching and learning activities, one of the Sunday Schools in Bandung, uses a puzzle in the form of paper pieces as one of the learning media for Sunday School children, in order to train children's cognitive skills and teach children to solve a problem.

Sunday School is a school activity that teaches religious lessons to young children held on Sundays. Activities carried out in Sunday School are singing together, reading the Bible, listening to Bible stories, and doing creativity related to the Bible story on Sunday. In the church of St. Gabriel, located in the Bandung area, there is a Sunday School, namely the Children's Faith Development of St. Gabriel. In the Sunday School, there are 3 class divisions, namely class A for children aged 1-3 years who are still accompanied by parents, class B for children aged 4-6 years who start learning on their own without being accompanied by parents, and finally class C for children aged 7-9 years.

In delivering Bible story materials each class is different, when in class A the delivery usually uses a video shown through a projector, it can also use props such as dolls, or it can also be through the display of pictures, in class B the delivery of Bible stories can also be through pictures, videos, as well as tools that support Bible stories, also the coach lets the child explain what is known through a picture, while class C rarely uses videos and more often explains the material directly by discussing. St. Gabriel's Children's Faith Formation applies several media to convey some gospel stories such as puppets, printed pictures, or videos shown through a projector. In class B because they are entering the period where they are no longer accompanied by their parents. According to the Sunday school teacher, in trying to begin to understand the Word of God, children cannot understand well if the coach only conveys through stories, media is needed that can attract their attention, so that children can focus their attention on the coach who is telling about Bible stories. Because not all classes in the Sunday School have facilities such as projectors due to their limited availability, there is a need for tools that can make children interested in listening to Bible stories, because if only explained by the coach, the Sunday school children cannot understand the contents of the story well, it would be better if the children could participate actively in teaching and learning activities in Sunday School, so that children have a sense of interest and curiosity about Bible stories. Children can also actively participate in listening to Bible stories.

With the limitations of the media owned by the Santo Gabriel Children's Faith Center, therefore in this research making toys that support children's teaching and learning activities at the Santo Gabriel Children's Faith Center, the purpose of making this game, so that children can understand the contents of the story by doing an activity by playing together in order to increase the curiosity of children in the Sunday school, which makes children trained to think while playing also understand the contents of the story through the game that will be designed

METHOD

According to Sugiyono (2014), a qualitative approach refers to a way of research that focuses on realities, phenomena, or symptoms that can be grouped, but still in a concrete context, can be observed, assessed, and have a cause-and-effect correlation. The application of qualitative methods in this study is to explore the phenomenon of Bible stories experienced by children aged 4-6 years adaptively by using observation methods of children's learning and social activities, interviews with mothers and parents of teachers and educators, and literature studies. The case study method is a description of the various aspects of an individual, a group, an organization, a program, or a society. The case study approach is used to understand the phenomena that will be studied complexly, the case study in this research was conducted at the Children's Faith Development of St. Gabriel Church Bandung to children 4-6 years old or grades 1-2 SD. This is driven by the selection of locations close to the researcher so as to facilitate the process of data collection to testing, with this research will run more effectively.

In order for APE to facilitate the learning process of children aged 4-6 years effectively, it is very important to design game tools that are in accordance with the stages of play of children aged 4-6 years as described, namely the constructive play stage. In terms of design methodology, the SCAMPER approach plays an important role in the creation of this APE. This method is used to establish purposeful modifications of similar products by using a checklist of possible changes that

include *Subtitute, Combine, Adapt, Modify* and *Put to Anothe Use*.

Table 1. Analysis SCAMPER
 (Source: Author's Data, 2024)

No	SCAMPER	Deskripsi
1.	<i>Subtitute</i>	a. Replace plastic materials used in similar products with natural materials such as wood. b. The concept of block puzzles to find out shapes, will be futher varied.
2.	<i>Adapt</i>	a. Adapting the use of block arrangements for play. b. Adapted the ocean puzzle activity to use magnets to attach the puzzles. c. The magnetic puzzle activity is adapted to create a stoty-shaped puzzle that children will arrange according to the activity cards that have been made.
3.	<i>Modify</i>	a. Instead of just a regular geometry puzzle, children will learn the shape of the shape, according to the theme that will be designed.
4.	<i>Put to Another Use</i>	a. The idea of using a magnetic puzzle. Instead of being used for the jigsaw puzzle concept, it is used to match pictures to activity cards that have been designed according to the Bible story.

Through the results of the review, analysis of similar products, and the SCAMPER method, this analysis focuses on designing a play tool that is not only suitable for children's play stages, but also integrates Bible stories through interactive and fun activities.

RESULT AND DISCUSSION

1. Visual Consept

Table 2. Visual Concept of APE Design
 (Source: Author's Data, 2024)

Visual Concept	Deskripsi
Shape	a. The main casing of the product is a simple block shape with smoothed edges. Equipped with a storage compartment inside to store other APE components and a playing field above the compartment lid. In accordance with the criteria for APE according to Puspitasari (2021) regarding Simplicity and Multifunctionality. b. Uses a variety of basic geometry shapes that can be arranged with each other. c. The activity card is formed as a square field with smoothed edges. Equipped with illustrations of game instructions that illustrate the arrangement of puzzle components, this is in line with the characteristics of APE that are suitable for children aged 4-6 years according to Luqmansyah. 4-6 years according to Luqmansyah (2023) about relations and classification. d. The mirror component is in the form of a simple square plane embedded in a binkai with smoothed edges. and can be installed above the playing field on the lid of the case, in accordance with the characteristics of APE suitable for children aged 4-6 years by Luqmansyah (2023), about the involvement of eye and hand coordination.

Dimention	<ul style="list-style-type: none"> a. Length x Width x Height of the APE when the casing compartment is compartment closed does not exceed 50 cm x25 cm x 4 cm. b. The dimensions of the puzzle components of figures and animals do not have a length or width smaller than a coin or at least 3 cm in diameter. Referring to research on the risk of accidental consumption by (Hanba et al., 2016). c. Based on consideration of the size of the compartment in the main case, the dimensions of the activity card do not exceed 20 cm x 20 cm. d. Based on the consideration of the size of the compartment in the main case, the block game does not exceed 25 cm x 10 cm x 2 cm.
Color	<ul style="list-style-type: none"> a. The main case of the APE has the color and texture of the pine wood used as the main material. In accordance with Montessori's theory of color attention direction. b. Puzzle components use primary and secondary colors with a high level of saturation. In accordance with the color principles of APE according to (Purnama et al., 2019), and as researched in Bahri & Haswanto, 2020. c. Activity cards use white and green/gray on the main body, and use primary and secondary colors that match each puzzle component depicted.
Materials	<ul style="list-style-type: none"> a. The main case of the APE and its tangram puzzle components are made using pine wood material with a non-toxic finish According to Lefteri in (Bahri & Haswanto, 2020), pine wood is a commonly used material in the construction of educational game tools. This wood is often chosen because of its distinctive texture, easy to obtain, and simple processing techniques. b. Activity cards are printed using art carton material.
Proportion	<ul style="list-style-type: none"> a. The main case is large enough that the compartments inside are able to store all the other APE components. b. The puzzle components are different in size from each other despite having some similar shapes. c. The activity cards have similar proportions to regular game cards. d. The mirror component is large enough to show the reflection clearly but not too large to be easily arranged on the playing field on the compartment lid.

2. Product Workflow

In accordance with the results of the analysis that has been carried out, the operational flow of the product can be designed as described in the flow chart in Figure 1. All components involved in the operational flow are crucial in the use of APE so that all components need to be designed.

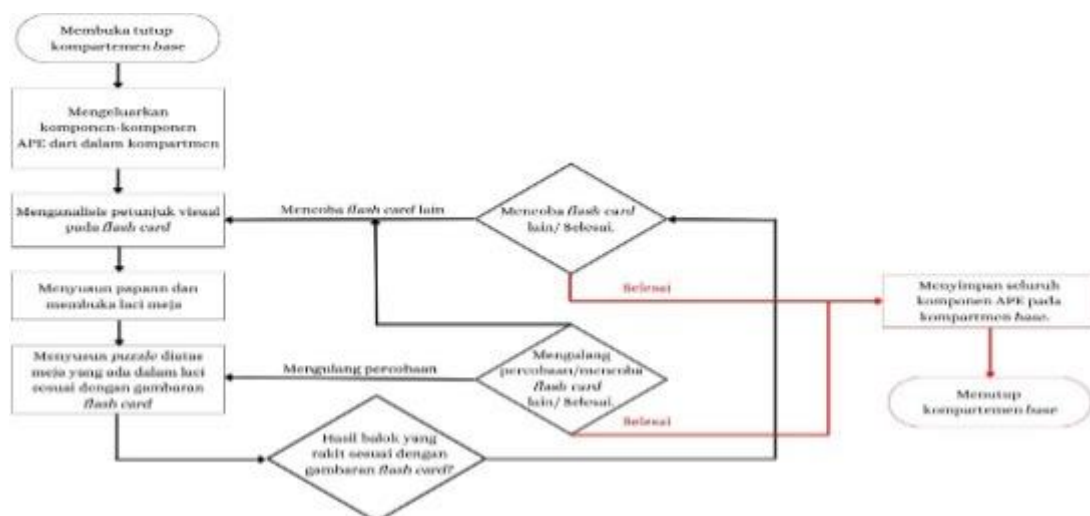


Figure 1. Product Workflow



Figure 2. Final Sketch

In developing experiences during play, play cards are designed to help children coordinate their eyes and hands, train their imagination, and imitate shapes. Playing cards are made to train reading as well as following the puzzle according to the playing cards that have been made. The size of the playing card has an A6 size divided into 4 books, namely, the guidebook, the story of the Prophet Moses, the story of the Prophet Noah, and the story of the Prophet Daniel.



Figure 3. Guidebook



Figure 4. Prophet Musa Story



Figure 5. Prophet Noah Story



Figure 4. Prophet Daniel Story

3. Prototyping

According to (Luqmansyah (2023) the provisions of toys that are safe to use for children are;

- Material criteria are safe for children, clean, odorless, not harmful to health, not rough, and not rusty.
- Size and shape are designed with ergonomics for children. The angle is not sharp (minimum 0.3 mm), not pointed (minimum 2 mm), the size is not too small so that it is easily swallowed.
- Broken toys are repaired or replaced immediately to prevent injury to children.

The following are the author's findings regarding the materials used in this design. According to Leteri (2014) pine wood is used because it has a strong structure, rigidity, stability, and minimal shrinkage.

4. Product Testing

The trial involved 12 young children (4-6 years old). Accompanied by a teacher, the children were engaged in planned activities. Intensive observation of 5 children was selected as a sample to get a comprehensive picture of the children's concept understanding. The names of the children were disguised so as not to violate the rights of the children, initials were used.

Table 4. Product Testing

Name	Description
Des (4 Years Old)	<ol style="list-style-type: none"> Des is very easy to guide and follows the coach's directions well and can complete 1 card out of 3. The first component Des touched was the puzzle pieces. His main interest lies in manipulating the pieces, choosing to arrange them according to the activity cards that have been created. After playing freely with the puzzle pieces, Des is curious about the other components of the APE such as the table cover and activity cards. After opening the activity card container, Des interacts with the cards in order as they have been arranged. Destan also tries to put the activity cards into the stacking table. Despite the condition of the APE components scattered on the floor, he shows productive behavior in following the game procedures.
Daf (5 Years Old)	<ol style="list-style-type: none"> Dhaf can be less well guided, but he assembles his own toys by looking at the activity cards on the APE. Dhaf can distinguish the characters in the puzzle and can tell what character he is holding. Dhaf can understand the flow of the game that has been practiced by the designer, and understand the description on the activity card. During the game, Dhaf chooses to look at the answer card together with the question card to solve the puzzle. Dhaf can clean up the puzzle that he has played neatly.
Kim (4 Years Old)	<ol style="list-style-type: none"> Kim was well guided, she practiced each step explained by the designer coherently while listening. Kim can distinguish the characters in the puzzle and know which character she is holding.

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| | <ol style="list-style-type: none">3. Kim keeps the puzzle pieces in the compartment of her drawer, she can follow the game flow well.4. During the game, Kim chooses to look at the answer card together with the question card to solve the puzzle.5. Kim can put the puzzles she has played back in their original place neatly. |
| Fen (6 Years Old) | <ol style="list-style-type: none">1. Fen was very orderly during the guide, listening carefully to the designer's explanation and asking insightful questions about the function and meaning of each component of the Bible puzzle.2. Fen can understand the storyline in the Bible puzzle, he follows the story depicted and can relate the picture to the Bible story told by the designer, showing an understanding of the story.3. During play, Fen focuses on the story picture to complete the puzzle.4. Fen is able to understand the shapes and images in the Bible puzzle, he can identify the characters and objects in the picture according to the Bible story.5. Fen shows high interest in the story in the puzzle, he often says what animals or objects he recognizes from the puzzle arrangement he sees, showing a deep understanding and engagement with the Bible material. |
| Mar (6 Years Old) | <ol style="list-style-type: none">1. Mar was very orderly during the guided tour, listening carefully to the designer's explanation and asking insightful questions about the function and meaning of each Bible puzzle component.2. Mar did not have one component that was the center of attention, he paid attention and interacted with the puzzle as a whole throughout his play session, showing an even interest in each piece.3. Mar shows excitement each time he completes an activity card, but he gets bored with the picture given, as it is too easy for him to complete the puzzle.4. Mar is able to understand the shapes and pictures in the Bible puzzle, he can identify the characters and objects in the picture according to the Bible story.5. Mar shows high interest in the story in the puzzle, he often says what animals or objects he recognizes from the puzzle arrangement he sees, showing a deep understanding and engagement with the Bible material. |
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The analysis data showed the subject had excellent adaptation and comprehension of instructions. In the game, the subject completed the task quickly, on average within 1-2 minutes, signifying high concentration and effective visual processing. The subject understood the rules without re-explanation, indicating strong instruction comprehension. The level of focus indicated good cognitive development, especially in problem solving and rule compliance.

CONCLUSIONS

This research focuses on the design and development of an educational game tool (APE) "Bible Puzzle for Kids" designed to stimulate the cognitive development of children aged 4-6 years. It uses brightly colored wooden puzzle pieces depicting Bible stories, such as Noah's boat and animals, complemented by difficulty-graded activity cards.

Responses from children were positive, especially in terms of motivation and understanding the correlation between activity cards and puzzle pieces. However, 4-year-olds had difficulty with the complex gameplay and the large number of components, and found some of the activity cards too difficult. Puzzles also tended to clutter the play area and the number of pieces was sometimes insufficient.

While 5-6 year olds were attracted to the story depictions, 4 year olds found the concept too complex. Modifications are needed to make the APE more friendly for younger children, so that the benefits can be felt by all target age groups.

Suggestions for future researchers The activity cards need to be redesigned to accommodate all ages, with a more appropriate order of difficulty. Elements such as magnets or Velcro can be added to the puzzle and the base to keep the pieces stable. Illustrations and instructions on the activity cards should be made clearer, and variations of Bible stories such as “Jonah and the Big Fish” or “Creation of the World” should be added. Puzzle materials should be safe, durable, and able to withstand moisture and impact. Future research could be extended to a larger age group, given older children's interest in stories. A more informative and safe design is also needed to prevent any untoward incidents.

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