


Maze board design for introducing Javanese vocabulary *krama inggil* in children aged 4-6 years



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ABSTRACT

This study addresses the lack of introduction to the Javanese *Krama Inggil* language among children aged 4-6 years in the environment of RA Hidayatut Thullab located in Trenggalek district, East Java. This decline occurred due to several things, such as the lack of introduction to the Javanese *Krama Inggil* language from an early age, globalization, and environmental factors that could lead to the extinction of the language. This research was carried out as an implementation of efforts to preserve culture through educational games. This research aims to increase children's interest in the Javanese *Krama Inggil* language through educational game. The basis for this research uses data regarding the stages of language development and play stages of children aged 4-6 years. Apart from that, anthropometric data is also used as a basis for designing educational game tools that suit the size of the child's hand so that the child can play comfortably. Interview and observation methods were carried out with teachers at RA Hidayatut Thullab. During the study, interviews were conducted to identify the learning media requirements in schools and how language learning is carried out. Additionally, non-participant observation was carried out for four days to identify problems, such as the children's ability to communicate using Javanese *Krama Inggil*. The research results show that RA Hidayatut Thullab students only use basic Javanese *Krama Inggil* or not at all in their daily activities. The findings of this research highlight the decreasing number of speakers of Javanese *Krama Inggil* due to a lack of early introduction to the language. Therefore, schools need to involve local content as an effort to introduce regional languages to children from an early age. To make the learning process more interesting and enjoyable, media is needed that can help children recognize and learn regional languages.

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1. Introduction

Early childhood is a term that refers to children in the age range of 0 to 6 years. This age is often called the *golden age* [1]. Based on the perspective of psychology and educational science, this is the initial foundation for children's growth and development. The nutrition that children receive as well as stimulation from the surrounding environment makes a huge contribution to the child's subsequent growth and development [2]. A study suggests that some human intelligence develops rapidly at a young age. This development has an impact on intellectual abilities, character, and the ability to socialize with the surrounding environment, while young children who grow up in a good environment will grow optimally both physically and psychologically [3]. As a preparation so that children are ready to socialize with their environment children aged 0-5 years begin to develop language skills. At this age, children begin to be able to speak, pronounce their first words, and understand language better. At the age of 4-6, children can speak almost as well as adults and can use it actively in communicating with the people around them. Children's ability to apply language elements is getting better [4].

Apart from being able to compose words, children aged 5-6 years are also able to be good listeners and participate in conversations, Apart from being able to compose words, children aged 5-6 years are also able to listen well and take part in conversations, so it is common for them to copy the words spoken by adults. So it is not uncommon for children to imitate the words spoken by adults. Based on Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 137 of 2014 regarding the National Standards for Early Childhood Education explains that development language includes: (1) Understanding language. The level of achievement of the expected development is: listening to other people's words (mother tongue or other language), understanding two commands given simultaneously, understanding the story being read, getting to know vocabulary regarding adjectives, hearing and distinguishing internal sounds Indonesian; (2) expressing language. Achievement levels include: children can construct simple sentences in complete structures (sentence main-predicate-adverb), children can communicate orally, and have more vocabulary to express their ideas; (3) Literacy. Achievement levels include: children are able to differentiate various sounds from animals and vehicles, name known symbols, understand the relationship between sounds and letter shapes, and name groups of pictures that have the same initial letter sound.

The language aspect is impacted by the development of time. Language is a vital tool used by humans to communicate and connect with other humans. Through language, humans can convey thoughts, share knowledge, and receive information [5]. However, not only as a means of communication, language can also be used to identify cultural groups. Language not only serves as a means of communication but reflects the social and ethical values present in a society. As globalization advances, language is often influenced by other cultures, resulting in changes in attitudes toward speech and thought. Javanese is one of the regional languages that has been impacted by globalization. As stated in Bhakti's research (2020), the Javanese language is currently starting to experience shifts or changes due to multilingualism or bilingualism [6]. Based on field studies, people tend to use Indonesian instead of using Javanese Krama Inggil to communicate with family levels or with older people, children are starting to be taught Indonesian from an early age by their parents rather than being taught Javanese as their mother tongue. So it is feared that over time this language will be forgotten and become extinct. Javanese is the language used by the Javanese people in Indonesia.

The level of Javanese speech in its practice in life is divided into two categories, Javanese *Krama* and Javanese *Ngoko* [6]. Then the 2 levels of language are divided into several parts, Javanese *Ngoko* is divided into *Ngoko alus* and *Ngoko lugu*, Javanese *Krama* is divided into Javanese *Krama* innocent and Javanese *Krama alus* or *inggil* [7]. Javanese *Ngoko* is a vocabulary that does not contain Javanese *Krama* in it. Meanwhile, *Ngoko alus* contains the terms *Ngoko*, neutral, and *Krama* in its use. Javanese *Krama lugu* is a form of *Krama*, but its level of politeness is lower than *Krama alus* or *inggil*. The Javanese language with the highest level of politeness is *Krama alus* or *Krama Inggil* [8]. Children in Java, especially those who speak Javanese, learn the language from their families. Children who live in rural areas use Javanese more in their daily lives than children who live in cities, but they use Javanese *Ngoko* and they communicate with their elders using Javanese *Ngoko* [9].

Children who live in urban areas are less or even unable to communicate using Javanese *Krama Inggil* because their parents are used to using Indonesian and have not mastered the language in their family environment [10]. Based on field study, generally these children are only taught basic Javanese *Krama*, such as *inggih*= yes, *mboten*= no, *sampun*= already, *matur suwun*= thank you. However, some children are still rarely introduced to other Javanese *Krama Inggil* languages because the level is considered quite complicated even for adults. his is considered inappropriate because Javanese people highly value manners (*unggah-ungguh*), and the Javanese language has levels to be used by certain age groups. Based on preliminary studies, it has been found that many factors cause the decline of Javanese *Krama* speakers in Javanese society. The decline in Javanese speakers is caused by both internal and external factors. An internal factor that may contribute to a lack of understanding of the Javanese *Krama* language among children is the insufficient role of parents in introducing the language from an early age. External factors are affecting the use of the Indonesian language, both in formal domains like education and government and in everyday life.

These factors include the rise of technology and information from sources like television and social media, as well as the influence of Indonesian as a national language. This has led to a decrease in the frequency of use of Indonesian in daily conversations [11]. One of the reasons for the decline in Javanese speakers is the perception of Javanese as an outdated language. Some parents believe that Javanese is less relevant in today's world, and therefore prefer to introduce foreign languages such as English to their children. This has led to a decline in the number of Javanese speakers over time. Apart from the factors above, the decline in *Krama Inggil* Javanese speakers is caused by environmental factors. The environment is less supportive for communicating using the Javanese *Krama Inggil* language and the level of population mobility is increasingly high. The movement of city people to villages and vice versa [12].

Association with non-Javanese speakers unconsciously influences Javanese speakers' communication. To introduce the Javanese language *Krama Inggil* to children, educational games should be designed as educational support tools. This aims to ensure that children know the Javanese vocabulary of *Krama Inggil* to increase their vocabulary. Apart from that, children need to know Javanese as a preserve of regional culture. The educational games will be created as a fun learning medium for children aged 4 to 6 years. The educational game contains Javanese *Krama Inggil* vocabulary which is often found and spoken in everyday life such as adjectives, verbs, colors, names of objects, numbers, and the names of parts of the human body. It is hoped that this game will attract students' interest in learning the Javanese language *Krama Inggil*. In its implementation, the game is designed so that children are involved in playing activities, but still under adult supervision. Through this educational game, children can enhance their cognitive abilities and expand the Javanese *Krama Inggil* vocabulary words

2. Method

This research uses a qualitative descriptive research method. This research method is a method that begins with a process or event and then general conclusions will be drawn from the process or event [13].

2.1. Data Collection Techniques

- Literature Study: carrying out reference searching activities using the method of collecting data from books, journals, research report articles, and sites on the Internet [14]. The data collected is data regarding the decline in speakers of the Javanese *Krama Inggil* language and the factors that influence it.
- Observation: To conduct observations, a set of location criteria was established. Specifically, the observations were carried out at kindergartens located in East Java province, where the teachers and students primarily use Javanese as their first language. based on these criteria, the RA Hidayatut Thullab kindergarten school was selected in Kamulan village, Trenggalek Regency, East Java Province. Observations were carried out using the non-participant observation method, namely the author acted as an observer in the children's activities, how much Javanese *Krama Inggil* vocabulary the children used to communicate with the teacher, as well as the types of learning media that the children liked in foreign language learning activities at RA Hidayatut Thullab. So the author can get data regarding children's ability to communicate using Javanese *Krama Inggil* and what learning media are used in foreign language learning activities at the school. Observations were carried out for 4 days on October 24 – October 27, 2023.
- Interview: A structured interview was conducted with the Head of RA Hidayatut Thullab, to gather perspectives on the importance of teaching the Javanese *Krama Inggil* language in early childhood. The interview was conducted on October 27, 2023. Interview questions included the number of students, learning curriculum, language learning methods used, the child's level of enthusiasm for language learning, types of games that the child likes, and the child's ability to communicate using Javanese *Krama Inggil*.

2.2. Data Analysis Techniques

2.2.1. Content Analysis

Utilize qualitative content analysis to analyze data from literature studies, observations, and structured interviews which are presented in the form of descriptive sentences. The stages of the research can be seen in Fig. 1.

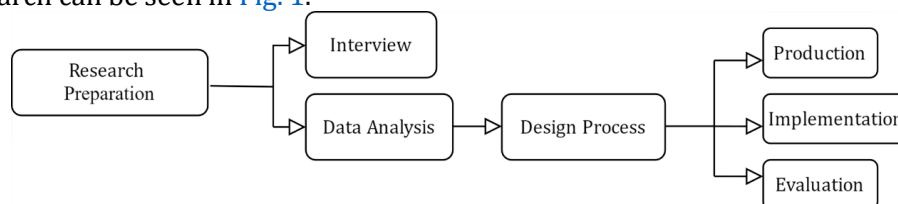


Fig 1. The Stages of the Research

Details of the stages of this research are as follows:

- **Research Preparation:** Looking for schools to make observations regarding how students communicate with teachers, and how much students know the Javanese *Krama Inggil* language during learning activities. The criteria for the schools selected were kindergartens with teachers and students who used Javanese as their first language. The research preparation procedure is as follows: (1) Determining schools with the criteria of having students aged 4-6 years, as well as teachers and students who communicate in Javanese; (2) Contact the destination school that uses local content learning in the Javanese *Krama Inggil* language; (3) Determine interview targets; (4) Design APE according to existing products and field data; (5) Design expertly to produce products that have good validation results; (6) Carry out validation at related schools to obtain appropriate results. Conduct a study of existing literature on the factors that influence the decline of *Krama Inggil* Javanese speakers. regarding levels in the Javanese language, language abilities of children aged 4-6 years, and types of educational game that are appropriate to the language development of children aged 4-6 years. The literature used comes from national and international academic journals that discuss Javanese *Krama Inggil* language education, child psychology, and early childhood education.
- **Interview:** Structured interviews were conducted with Mrs. Miftakhul Khasanah who is a teacher and head of the school at RA Hidayatut Thullab. The interview was conducted on October 27 2023 after learning activities. Interviews were conducted to obtain in-depth information regarding how much Javanese *Krama Inggil* vocabulary children use, the types of games children like and how long they use them, and the factors that cause the decline in Javanese *Krama Inggil* speakers. So through this interview, the author can explore a deeper understanding of the importance of learning Javanese *Krama Inggil* from an early age and the factors that influence children at RA Hidayatut Thullab not to know Javanese *Krama Inggil*.
- **Data Analysis:** At the data analysis stage, an in-depth analysis of potential problems was carried out, and field data was collected through in-depth interviews, observations and literature studies. These data were analyzed using qualitative descriptive methods. At this stage, a needs analysis is also carried out according to the cognitive development of children aged 4-6 years.
- **Design Process:** The process of designing educational game for early childhood children and teachers at RA Hidayatut Thullab is based on data analysis. The design process begins with brainstorming using the SCAMPER method regarding the types of games that are appropriate for the development of children aged 4-6 years, then the results of the brainstorming create macro and micro sketches according to the APE criteria. APE design criteria include level of difficulty, safety, strength, appearance aspects, durability, production time, and production costs. The sketches are weighted based on these criteria to produce the final design.

- Production: The production process of educational game for early childhood teachers and students at RA Hidayatut Thullab. The maze board production process lasts for 25 days starting on March 1 2024-March 25 2024.
- Implementation: Implementation or use of educational game at RA Hidayatut Thullab. Teacher RA Hidayatut Thullab uses a maze board to stimulate children's cognitive development as well as to increase the Javanese vocabulary of *Krama Inggil* through the medium of games.
- Evaluation: Evaluation of the use of educational game to support teaching and learning activities at RA Hidayatut Thullab. The evaluation was carried out by teacher RA Hidayatut Thullab regarding the use of the maze board as a medium for learning the Javanese *Krama Inggil* language. Apart from that, an evaluation was also carried out from experts to determine that the game was feasible and suitable for children aged 4-6 years to play as a language learning medium.

3. Results and Discussion

At RA Hidayatut Thullab located in Kamulan village, Trenggalek district, East Java province, the Javanese language has been introduced, but this introduction is still limited to the habit of politeness in daily activities. The polite habits taught are the use of basic Javanese language such as thank you, yes, no, already, and not yet in Javanese *Krama Inggil*. During the learning process at school, teachers repeat polite habits to children every day. This helps the child to become accustomed to and familiar with these habits. Eventually, children will start imitating and applying these habits in their daily lives. The majority of students at RA Hidayatut Thullab come from Javanese families and are Javanese speakers. However, the students of RA Hidayatut Thullab are not yet proficient in using the Javanese *Krama Inggil* language. This is due to the lack of introduction of the Javanese *Krama Inggil* language in the family environment and children tend to imitate the language spoken by adults in the surrounding environment who do not use the Javanese *Krama Inggil* language. Based on an interview with the head of RA Hidayatut Thullab, it was found that the student's family backgrounds can be categorized into three groups. These groups are as follows: young families, families whose parents have entered middle age, and families who come from Islamic boarding schools.

The young family group is a family whose parents are around 20-30 years old. This family category often mixes Javanese and Indonesian, and sometimes even incorporates English into their conversations due to technological advances and globalization. Then families whose parents have entered middle age usually carry out conversations with children using Javanese *Ngoko* or what is usually called in the Trenggalek district as the market language. The last group of families are from Islamic boarding schools. Many families from this category send their children to RA Hidayatut Thullab due to its location in an Islamic boarding school environment. This family group has become accustomed to having conversations in *Krama Inggil* Javanese within the family environment so that the children from this family group can speak slightly in *Krama Inggil* Javanese. As a result, children in family categories 1 and 2 are not as familiar with the language as children from family category 3. Families belonging to categories 1 and 2 tend to be less aware of the importance of introducing this language, especially if they live in areas where the population generally communicates using Javanese, which has its own level of use. Teachers at RA Hidayatut Thullab believe that it is very important for children to be introduced to their local language from an early age.

Regional languages must go hand in hand with developments over time and technology so that cultural heritage does not experience extinction. Introducing a new language to children does require awareness and support from the family and the surrounding environment. Support and efforts from various parties can help preserve this culture. This is what encouraged the author to conduct research at this school. Usually, the teacher at the school introduces the Javanese *Krama Inggil* language through singing every morning before entering class. In general, learning a language or vocabulary is more effective through singing, vocabulary will be easier to remember, but it is not certain that through singing people who are learning a language will know how to write the vocabulary that is sung correctly. So it would be more effective if

there was visualization in introducing the Javanese *Krama Inggil* language to children. According to field studies, children love to play. At RA Hidayatut Thullab, teachers frequently utilize outdoor learning and educational games during teaching. Based on literature studies, children aged 4-6 years can coordinate hand and eye movements, play group games, listen to stories, and like role-playing. The ideal game for children between the ages of 4 and 6 for language development would be letter cards, which can help increase vocabulary [15]. Students can master a foreign language if they know the vocabulary that can be obtained through learning in deliberate or incidental combinations. Incidental vocabulary learning is very useful for consolidating and expanding knowledge about vocabulary [16]. On the other hand, games that aim to enhance children's hand-eye coordination require toys that have grouping and matching concepts. So, the educational game that is possible to be designed in this research is a game with a make-a-match concept in the form of a maze. Games with the make-a-match concept are a learning model that can train students to think quickly, interact with friends, participate actively in class, and build students' concepts and understanding [17].

This educational game was designed using a cultural approach, Javane *Krama Inggil* language. The design of this educational game is a development of the existing maze game design. The game includes several shoots with shapes using wood materials that adapt to the size of the child's hand and use primary-secondary colors. The maze game contains Indonesian and Javanese *Krama Inggil* vocabulary accompanied by simple illustrations. Furthermore, the Indonesian vocabulary will be connected through a labyrinth path to get to the correct Javanese *Krama Inggil* vocabulary. The objective of this game is to enhance children's vocabulary of the Javanese *Krama Inggil* language by utilizing game media that engage their cognitive abilities to recognize language, shapes, colors, and solve problems. The use of simple illustrations can be a reference for children to find the right equivalent words between languages. Vocabulary cards can be easily removed and installed to align with the vocabulary theme being taught. To ensure that this educational game effectively enhances the vocabulary of Javanese *Krama Inggil* for children aged 4-6, the game's design must align with the language and play stages appropriate for children within this age group. Design aspects were analyzed based on Palgunadi's opinion in Bahri and Haswanto (2020) namely users, functions, activities, operations, ergonomics and anthropometry, appearance, and materials [18], see Table 1.

Tabel 1. General and Specific Design Concepts

Design Aspects	General Concepts	Specific Concepts
User	Children aged 4-6 years	Stages of communication
Function	Increasing the vocabulary of Javanese <i>Krama Inggil</i> for children aged 4-6 years.	Helps in the process of developing communication and vocabulary through play methods with educational themes that attract children's interest.
Activity	Looking for vocabulary translations from Indonesian to Javanese <i>Krama Inggil</i> and vice versa.	Find the right translation through a maze of paths to find the right vocabulary.
Product Operations	Easy to operate by children aged 4-6 years with the help of parents or teachers.	Run the game by looking for the correct equivalent words between Indonesian and Javanese <i>Krama Inggil</i> through a labyrinth path that is run using a crosshair, then the child can say the exact translation of the word they are looking for.
Ergonomics & Anthropometrics	The aim size is designed according to Anthropometric data.	The aim size is designed to suit the hand size of children aged 4-6 years.
Appearance	The form of the game will be simplified so that children can understand product operations. The colors used are neutral colors as a base and primary colors to give a contrasting impression.	The dimensions of the game are simple with each end made blunt and soft so that it is safe for children to play with. Colors consist of bright primary, secondary, and neutral colors. Illustrative images according to the vocabulary theme raised.
Material	Using materials that are safe for use by children aged 4-6 years. Consider ease of formation and method of acquisition.	The material used is pine wood, water-based paint which is safe for children.

Based on [Table 1](#), design aspects based on data analysis, a product design concept is obtained based on appropriate criteria based on the results of the analysis and evaluation of the previous discussion chapter on the design product to be designed. Brainstorming is a method that is based on freedom of thought and aims to produce the largest number of ideas to overcome a problem [19]. The brainstorming used in designing educational games is the SCAMPER analysis technique. Analysis was carried out to look for ideas or innovations in designing make-a-match educational games with the labyrinth concept which is described in [Table 2](#).

Tabel 2. General and Specific Design Concepts

Substitute	Changing materials Changing the maze path
Combine	Combines make a match and maze games Combining illustrations with Indonesian and Javanese Krama Inggil vocabulary
Adopt	adapting themes to daily habits which include objects that children often see, numbers, colors, names of body parts, adjectives, and verbs. adapting the make-a-match learning method to the maze game.
Modify	Increase the size of the game, the size of the game adjusts to the child's body size. Add an aim to find the appropriate word match. Add vocabulary and simple illustrations to the top and bottom of the maze.
Put To Other Use	Increase knowledge about the Javanese vocabulary of Krama Inggil. Increase children's stimulation for problem-solving and cooperation. Can be used by children over 6 years old.
Eliminated	Reduces the risk of one-time play.
Reverse	Vocabulary can be changed and removed.

According to the SCAMPER analysis of the design of "Make-a-Match" educational game tools, the following points were identified: The game is designed to incorporate the "Make a Match" and "Labyrinth" learning methods, which are adapted to literature studies and field studies. The game uses simple illustrations based on the vocabulary theme, and the size of the game can be increased. The location of the vocabulary can also be changed, and crosshairs are used to find the correct vocabulary. Based on the SCAMPER analysis of the design of Make-a-match educational game tools, the points taken are that the game is designed to adapt the make-a-match and labyrinth learning methods adapted to literature studies and field studies, using simple illustrations depending on the vocabulary theme raised, increasing the size of the game, the location of the vocabulary can be changed, and use crosshairs to find the right vocabulary. Considering the results of the analysis that has been carried out in the previous table, criteria are determined which become the visual concept for designing educational games, these criteria include shape, dimensions, color, material, and proportion [20]. As described in [Table 3](#).

Tabel 3. Visual Concept for Designing Educational Game

Visual Concept	Details
Shape	The base of the maze is rectangular with smoothed edges. On the surface on the right and left or top and bottom there are rectangular depressions whose edges are also smoothed as a container for placing wooden flashcard components. Following the 2021 Ministry of Education, Culture, Research and Technology guidelines, all educational game that students will use must have obtuse or curved angles. The aiming component in the maze is formed with animated images from East Java's cultural heritage. The square-shaped wooden flashcard component adjusts the size of the depression on the top and bottom surfaces of the APE product with the edges made blunt and smoothed. Compliant with SNI ISO 8124-1:2010 standards [21]. Equipped with simple illustrations along with writing mentioning vocabulary in Indonesian and Javanese <i>Krama Inggil</i> which are often encountered in daily activities. These components are classified based on their type, namely numbers, colors, names of body parts, verbs, and adjectives which can later be changed according to the theme taught by the teacher.
Dimension	The dimensions of the maze board adjust to the anthropometry of children aged 4-6 years by considering that the maze is designed to be large so that children can play freely. Based on Minister of Education and Culture Regulation No.11 of 2020 concerning Physical DAK, the specifications for the size of the labyrinth board are ± 0.005 m thick, 0.535 m wide, and 0.55 m long.

Visual Concept	Details
	The dimensions of the maze aiming components must not be a length or width smaller than 0.02 m with an inner stem not exceeding 0.06 m. The dimensions of wooden flashcard components or components for vocabulary are length and width 0.08 m x 0.08 m with a thickness of no more than 0.002 m.
Color	The color for the maze base and maze supports is the natural color of pine wood as the main material. The maze aiming component uses primary and secondary colors with a high level of saturation to attract children's attention to increase children's stimulus and development. The wooden flashcard component uses water-based paint to provide image visualization along with Indonesian and Javanese <i>Krama Inggil</i> vocabulary.
Material	The maze base, the aim, and wooden flashcard components are made using pine wood material with a non-toxic finish following the national standard guide SNI ISO 8124-3:2010. Pine wood is one of the materials that are widely used in the construction of educational game equipment. This wood was chosen because it has colors that tend to be bright and strong, has unique fiber, and has a smooth texture so it is safe for children and makes it easier during the coloring process [22]. Wooden flashcards are painted using water-based paint. The color paint used in the labyrinth is a non-toxic water-based paint. According to Yovita et.al (2020), water-based paint contains ingredients that do not produce strong odors and are environmentally friendly, so they are safe for children [23].
Proportion	The composition is semi-modular and the wooden flashcard components can be removed and installed. Consisting of 2 layers of boards, a labyrinth path with 6 points and 6 crosshairs, 130 wooden flashcards consisting of 65 Indonesian vocabulary words and 65 Javanese <i>Krama Inggil</i> vocabulary words.

Based on the visual concept in Table 3, the maze product that will be designed is a maze that has removable wooden flashcards on both surfaces. The maze product is designed by SNI guidelines and the target size is designed according to the anthropometry of children aged 4-6 years. The material used comes from pine wood so it can stimulate optimal development of children aged 4-6 years. By the results of the analysis that has been carried out, a product workflow can be designed as described in the flow chart in Fig. 2. All components involved in the product workflow are an important part of using educational game so it can be ensured that all components need to be designed.

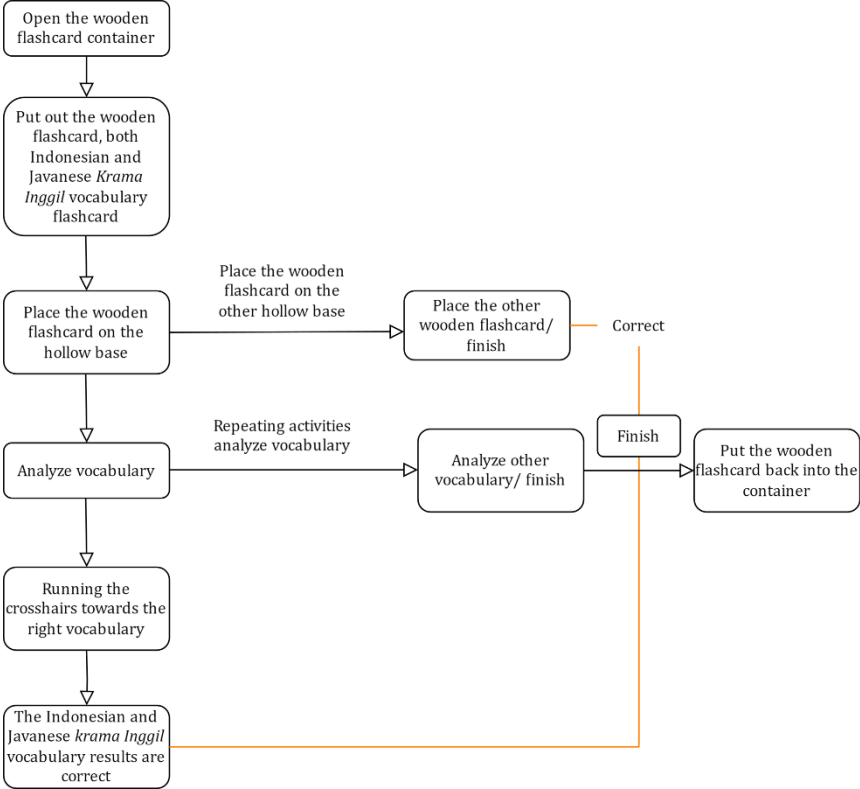


Fig 2. Flow Chart for Playing the Game

The maze board is designed according to the visual concepts formulated in Table 3. The main casing is block-shaped with smoothed, blunt edges. Equipped with aiming components and wooden flashcards containing Indonesian and Javanese *Krama Inggil* vocabulary, as well as simple illustrations. Wooden flashcards can be removed and installed according to the theme being taught. Below is also an image (Fig. 3) attached which will show the design of the labyrinth board with smoothed and obtuse corners, an animated aim of East Java's cultural heritage which was designed based on anthropometric data following national standards for making educational game equipment for children aged 4-6 years.

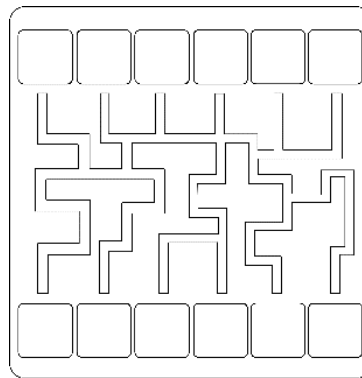


Fig 3. The Maze Board Design Sketch

The maze board is rectangular in shape, designed to suit the height and hand reach of children aged between 4-6 years. The maze consists of labyrinth paths with 6 starts and 6 finishes, with labyrinth paths of varying levels of complexity that cater to the ability of children to navigate them. This design was chosen to ensure that children can play freely and enjoyably with friends. The labyrinth's aim design is an illustration of culture in East Java, including *udeng* or headband, *gunungan*, *reog Ponorogo*, *Penataran* temple, *joglo* house, and *jaran pegon*. see Fig. 4. Illustrations from this culture were chosen because they are in harmony with the vocabulary of the Javanese *Krama Inggil* language, which is the Mataraman dialect used in the East Java area. These areas include Blitar, Kediri, Tulungagung, Trenggalek, Madiun, and Magetan. The Blitar and Ponorogo areas are not native speakers of the Mataraman dialect, but these areas are influenced by native speakers of the dialect because of their close geographical position [24].



Fig 4. The Aim Component Design

The maze board consists of two components, namely the bottom base and the top cover which also functions as a maze path, see Fig 5. The main casing of the game has a natural color from the color of the pine wood used as the main material. However, the overall game material is made of wood. The aim is designed according to the hand anthropometry of children aged 4-6 years. The aim visualization uses forms from East Java's cultural heritage, namely *udeng*, *gunungan*, *Reog Ponorogo*, *Penataran Temple*, *joglo* house, and *jaranan pegon*. The colors used in the aim component are primary and secondary so that they can attract children's attention. 122 wooden flashcards were designed consisting of 61 Indonesian vocabulary words and 61 Javanese *Krama Inggil* vocabulary words. Wooden flashcards are designed in a square shape with smoothed edges as a student activity in foreign language introduction and translation activities. An animation is displayed on the flash card showing the expression of the vocabulary mentioned. Animation plays a crucial role in the field of education as it attracts students' interest

and helps teachers motivate them towards enjoyable learning. Besides, it can convey messages more quickly than other media, making it easier to describe concepts or demonstrate skills that students can readily understand and remember.

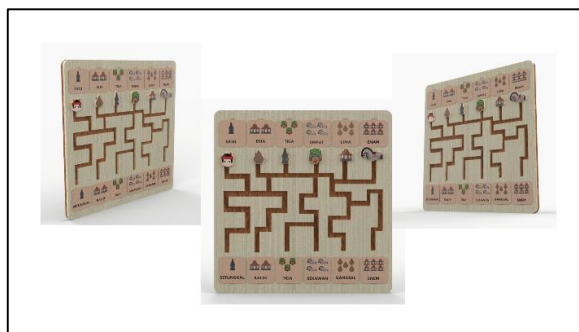


Fig 5. 3D Design of Maze Board

Moreover, animations can stimulate and motivate students' thinking, thereby reducing cognitive load while learning [25]. The font of the alphabet is best to avoid using decorative, distorted, or cursive letter forms when creating letters for children. Apart from that, it is necessary to pay attention to readability factors that influence whether a piece of reading is read by the reader. Two factors affect readability: sentence length and word difficulty, the letters used must have a simple shape, the right thickness, and not clash with the background [26]. The Sassoon Primer font is ideal for children as it is designed specifically for them. The wooden flashcards are equipped with simple illustrations that match the vocabulary contained so that children can match the images and children can find out each translation of the vocabulary as a reward. The wooden flashcards designed consist of 5 types of vocabulary that are often used in daily activities, namely numbers, colors, names of body parts, adjectives, and verbs, see Fig. 6. This is in line with the language development of children aged 4-6 years who can begin to be introduced to foreign languages other than their mother tongue [27]. The use of wooden flashcards also aims to introduce and familiarize children with having conversations in Javanese *Krama Inggil*.

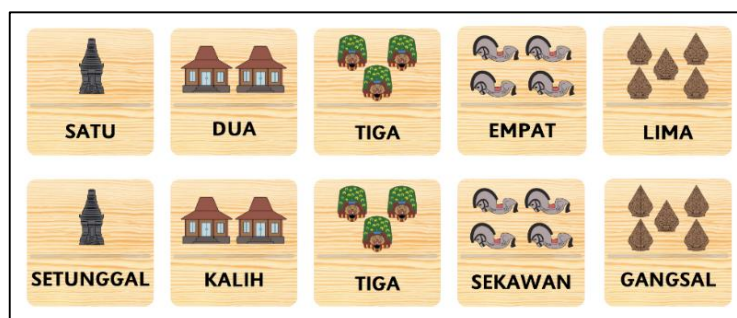


Fig 6. Design of Wooden Flashcard

4. Conclusion

The number of speakers of the Javanese *Krama Inggil* language is decreasing as time goes by. This is caused by several factors, one of which is the lack of introduction to the language from an early age. This maze board is an innovative educational game that uses a cultural approach in the scope of product design. This design is relevant and important to preserve the Javanese *Krama Inggil* language. This game can be an interesting learning medium for children because it involves them in the learning process. In this game, children are directed to match vocabulary with their partner with the help of a teacher or parent. The involvement of teaching staff and parents is a very good step in improving understanding and use of the Javanese *Krama Inggil* language through this game. Illustrative images are also included in the flashcards to help children find out the appropriate vocabulary pairs. An interesting feature of this toy is that the wooden flash cards are removable, so the teacher can adjust the theme to be taught. Through

this game, children can get to know new vocabulary in the Javanese *Krama Inggil* language. The vocabulary in this educational game is commonly used in everyday life so it helps children apply it in their daily routine. The use of the maze and make-a-match concepts aims to stimulate children's cognitive and motor development. This game can be a fun and effective means of stimulating children's development in various aspects, including eye and hand coordination, as well as critical thinking skills. This educational game was designed taking into account the language skills of children aged 4-6 years, national standards for designing educational games, anthropometric data, and the readability of letters of children aged 4-6 years.

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Declarations

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