

Educational Games of Introducing English to Early Childhood

Rico Ferdian Gunawan¹, T. Brenda Chandrawati², FX. Hendra Prasetya³

^{1,2,3} Faculty of Computer Science, Game Technology Study Program
Soegijapranata Catholic University, Semarang

¹18n20005@student.unika.ac.id

²brenda@unika.ac.id,

³hendra@unika.ac.id

Abstract— In early childhood, they usually begin exploring many things, such as learning, playing and imitating the behaviour of older people. Children learn to communicate with others and from their peers at a certain age. Children also learn to recognize letters of the alphabet, self-recognition and surrounding objects. The following year, children recognize other languages, such as English. Then, year by year, children start learning many languages, such as English. This educational game will be for English furniture for children. When children play games, they are usually accompanied by parents to guide and teach them to play games. The educational game "Elang" is for learning English using puzzle gameplay. This "Elang" game will introduce fruits, transportation, and family members. Then, children can be through an educational game, when children are playing games, of course, accompanied by their parents to guide and teach them to play the game. The purpose of making this educational game is to use puzzle gameplay that brings the topic of fruit introduction, transportation introduction and family introduction to children. The research methods used are waterfall methods and game testing to collect data from respondents in a survey. The survey was conducted by interviewing parents of children who played the educational game "Elang". The survey results show that the educational game "Elang" introduction to English can be efficient in early childhood learning.

Keywords— early childhood, educational game, puzzle, English.

I. INTRODUCTION

In Indonesia, all circles, mainly among the public, use Android, a technology-based operating system. The importance of technology-based learning media is that technology is now very advanced and developed, and it is easier to learn activities so that learning no longer seems boring. By utilizing technology-based learning media, learning can be done and become more fun. Technology is one of the uses of technology in children's learning, such as the existence of Android as a very effective and efficient learning media; learning anywhere can be done while playing games that can make children more interested in learning because Android can be used as a medium of play as well as learning [1].

Children are the next generation of the nation expected by the family. The role of parents is very important for the growth and development of children. Growth and development in children can reach a tough generation with a strong mentality. One of the responsibilities of parents is to provide education to children through educational institutions [2]. In addition to parents, teachers and the community are also factors to help children develop their potential and talents [3].

English is a language (curriculum) that began to be widely learned and in demand by many institutions or companies. English learning in early childhood begins to be taught how to recognize vocabulary by listening, speaking and writing. Early childhood is expected to master a lot of English vocabulary. Other media of English learning can be done by playing interesting

activities such as song movements, fairy tales, short stories, and the like that are increasingly exciting and meaningful [4].

II. LITERATURE REVIEW

Educational Games

An educational game is a game that is designed and also made to improve thinking, improve concentration and solve problems. In addition, games offer a form of direct learning with a learning-by-going pattern. The learning is obtained from the failure factors that have been experienced by users, thus encouraging users not to repeat mistakes at a later stage [5].

2D Games

2-dimensional games have two sides, namely X and Y or other aliases, namely right, left, and top down. This game is played with limited objects and character movements, such as moving right, forward, left, backward, and up and down. Examples of games in 2D form include block stacking games, airplane defender games, and Mario bros [6].

Canva

Canva is an application or website for the design that provides tools for creating graphic designs and publishing them online. The web can be accessed through the website for those who use a PC or on a mobile phone. This makes it very easy for users to be creative anytime and anywhere. Canva provides thousands of templates that users can use for free, but there is also a paid version with additional tools and more templates [7].

IbisPaint X

IbisPaint X is an application with the concept of "share the fun of drawing", made for communication, enjoying drawing, and developing drawing skills. IbisPaint X brings many features, most of which are usually only available in drawing applications on desktops and Android [8].

Puzzle Game

Puzzle is an educational game that requires patience and perseverance in assembling several pieces of image so that a picture is formed that fits the pieces that can be connected. Puzzles are known as unloading games or puzzles that can hone children's ability to solve various problems using logic.[9][2]

The puzzle game method affects the fine motor development of preschool-age children because when playing puzzles, children can coordinate the child's eye and hand movements [10].

Children's Cognitive Towards Educational Games

Early childhood development includes cognitive, social-emotional, language, physical, motor and moral-religious values. Cognitive is a thinking process that has individual abilities [2]. According to Syukron Al Mubarak and Amini, the method of play can improve children's cognitive skills in recognizing shapes [11]. Play for early childhood is a learning process that has a good impact and is better understood because the benefits of play for children are very good for early childhood cognitive development [12].

The Golden Age in Early Childhood for Educational Games

The so-called "golden age" can only be once and cannot be repeated [13]. So, it means that it is a period that is very influential on the further development of children. Children's life can determine their intelligence development at the age of 0-8 years where development points to a process in a more perfect direction and cannot be repeated [14]. Child development can use educational methods that aim so that early childhood can develop optimally, and the development aims to help children in terms of physical, emotional, cognitive, and social behaviour in children [15].

III. METHOD

The game development method used is using the waterfall method. The development of the "English Education Game" named "Eagle" is carried out with several processes consisting of 7 aspects, namely:

a. Planning

Planning is a plan to create an "English Educational Game" that discusses the overall game creation plan, creation plan, asset creation plan and data retrieval.

b. Analysis

The analysis is a crazy analysis of planning an "English Educational Game" that discusses gameplay that is suitable for children and analysis to design assets to attract children's attention.

c. Assets Design and Game Making Plans

In this aspect, it is starting to know what assets will be made for the selection of colours and designs that suit the child. In this aspect, to started to think about making the game.

d. Assets Design

In this aspect, the start of making asset designs, the assets made are in terms of colouring such as game backgrounds, game buttons, scene loading, puzzle pieces, and material image designs.

e. Game Making

After the asset creation is complete, this aspect starts making the game using a game engine called Construct 2.

f. Game Testing

After the game has been made, start testing the game. The game is played first to check whether there are bugs or not in the game. After the game is checked, start sharing using the link.

g. Operation & Maintenance

Operation and maintenance is the last aspect of the waterfall method. After the game has been made and through the tester aspect, the "Eagle" game is run through a link that is spread using a google form and played by children aged 1-8 years and guided by parents. The game can only be played using a mobile phone with an Android operating system.

Game Development Flow

The game development flow is carried out through several stages, which are as follows:

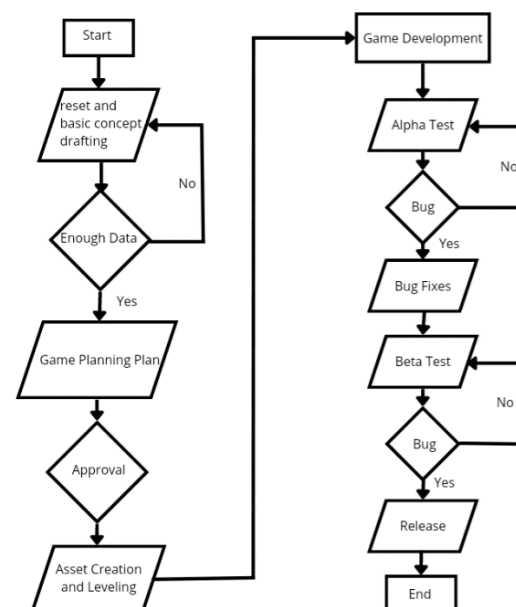


Figure 3.2 Game Development Flow

In the process of developing the "English Education Game" named "Elang" aims to educate early childhood children to start learning English through an educational genre game. With the achievement of this goal, it is hoped that children can understand the game with the guidance of their parents.

The literature review and data collection stage requires a theme that will be used in this game. Because, this game is an educational game that discusses learning English to early children.

IV. RESULTS AND DISCUSSION

Designing English Educational Games for Early Childhood

English educational game called "Eagle" is an English educational game made to attract the attention of young children to play and learn English with material on fruit introduction, transportation and family introduction. Parents guided their children to play educational games in the questionnaire and were given four questions.

A. Gameplay Concept

An educational game is an educational game, and must have an educational concept for early childhood. This game consists of 3 materials that children can choose from. The three materials are Fruits, Transports and Families.

B. Scene Game

The creation of the game "Elang" certainly has many scenes that have been made and become an educational game following the scenes in the game "Elang":

1. Splash Scene



Figure 4.1 Splash Scene Display

2. Loading Scene



Figure 4.2 Display Loading Scene

3. Menu Scene



Figure 4.3 Scene Menu Display

4. Theme Scene



Figure 4.4 Theme Scene Display

C. Asset Game Design

A game must have designs that are made to become a game asset and then paired in a game scene. Here are the types of designs made:

1. Background Design
2. Splash Design
3. Button Design
4. Loading Design
5. Fruits Gameplay Design
6. Transport Gameplay Design
7. Families Gameplay Design
8. Finish Design

D. Hasil Kuesioner dari Wawancara dan dari Google Form

The results that have been obtained are getting six respondents from interviews and from filling out Google forms.

1. Interview

An interview is an interview that his parents shared directly

2. Questionnaire from Google Form

Online interview in the form of an interview using Google form filling

3. Table of Interview Questions and Interview Results

Table 4.1 Questionnaire Results in the Form of Conclusions

No	Question	Conclusion
1	In your opinion, is the game "Eagle" as an introduction to English suitable for children?	It was concluded, according to the respondents obtained, 100% of respondents answered yes because the <i>game</i> "Eagle" as an introduction to English is suitable for children to play.
2	Your first impression (who guides children to play games) seeing the game "Eagle" when played by your child?	It was concluded, according to the respondents obtained, that the <i>game</i> "Eagle" can be played and can educate children to train the right brain; children are also quite interested in the game.
3	What message do you want to convey after seeing and playing the game "Eagle"?	It was concluded, according to the respondents obtained, respondents' messages answered that some were quite good. Some were not good, which were not good because of the relatively rigid gameplay of the game, the lack of game levels and matching on the gameplay puzzle; then quite good, namely the <i>background</i> , images, easy to absorb by children and very fun because children like <i>puzzle games</i> .
4.	What advice would you like to convey about the "Eagle" game?	It was concluded, according to the respondents obtained, that more <i>games</i> could be

No	Question	Conclusion
		added, levels and <i>game</i> selection options, interface refinement and puzzle ease that did not have to fit when matching <i>puzzles</i> .

V. CONCLUSION

Based on research that has been conducted on English educational games for early childhood, the conclusions in this study are:

1. This English educational game is another medium to teach early children English. Early childhood children can learn and play by using English educational games. The English educational game is called "Eagle". Children's attention will be attracted by the existence of educational game media with attractive designs suitable for children. In addition, this game contains English materials consisting of 3 materials, namely materials from the themes of fruits, transports, and families.
2. With this research, the way for children to understand English learning apart from textbooks and also through games so that children can play and learn is by making an English educational game called "Eagle". The material presented is from the theme of fruits, transports and families. Each theme has five different questions and has different mechanisms. It turned out that based on this study, the game "Eagle" is suitable or appropriate as an introduction to English to children, and the game "Eagle" can be played and can educate children to train the right brain in children. Children are also interested in the back sound provided and are very happy with puzzle games.

REFERENCES

- [1] W. Eka Jayanti, E. meilinda, N. Fahriza, P. Studi Manajemen Informatika AMIK BSI Pontianak Jl Abdurrahman Saleh No, and P. Indonesia, "Game Edukasi 'Kids Learning' Sebagai Media Pembelajaran Dasar Untuk Anak Usia Dini Berbasis Android," vol. VI, no. 1, 2018.
- [2] A. Minasari, D. Indraswati, A. Purwasito, and I. A. Setiawan, "Perkenalan Dunia Internasional sebagai Pendidikan Multikultural pada Anak Usia Dini melalui Metode Bermain Puzzle," *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, vol. 5, no. 2, pp. 2124–2133, Feb. 2021, doi: 10.31004/obsesi.v5i2.733.
- [3] N. Veronica, "Pedagogi: Jurnal Anak Usia Dini dan Pendidikan Anak Usia Dini Permainan Edukatif Dan Perkembangan Kognitif Anak Usia Dini".
- [4] M. Herdyastika and M. Kurniawan, "Analisis Perbandingan Implementasi Metode Pembelajaran Bahasa Inggris Inovatif di Taman Kanak-Kanak," *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, vol. 5, no. 2, pp. 1585–1593, Dec. 2020, doi: 10.31004/obsesi.v5i2.902.
- [5] I. Afrianto and R. M. Furqon, "Naskah Diterima : 2 Mei," *Jurnal Sistem Informasi Bisnis*, vol. 02, 2018, doi: 10.21456/vol8iss2pp1-9.
- [6] N. Khairani, J. N. Fadila, and F. Nugroho, "Perancangan Game 2 Dimensi Petualangan Anak Menyelamatkan Orangtua Sebagai Media Edukatif Bagi Anak Dengan Metode Waterfall," *Jurnal Teknologi Informasi*, vol. 5, no. 1, 2021.
- [7] N. U. Putri, Q. J. Adrian, A. Jayadi, J. P. Sembiring, and W. Sudana, "Pengenalan Aplikasi Canva Kepada Masyarakat Dan Staf Pemerintahan Desa Sidosari Lampung Selatan," *Journal of Technology and Social for Community Service (JTSCS)*, vol. 3, no. 1, pp. 63–69, 2022, [Online]. Available: <https://ejurnal.teknokrat.ac.id/index.php/teknoabdimas>
- [8] N. A. Farida and F. Ratyaningrum, "Perancangan Video Tutorial Menggambar Ragam Hias Menggunakan Ibispaint X Di Media Sosial Tiktok," 2022. [Online]. Available: <http://ejournal.unesa.ac.id/index.php/va>
- [9] R. Astuti and T. Aziz, "Integrasi Pengembangan Kreativitas Anak Usia Dini di TK Kanisius Sorowajan Yogyakarta," *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, vol. 3, no. 2, p. 294, May 2019, doi: 10.31004/obsesi.v3i2.99.
- [10] L. Maghfuroh, "Metode Bermain Puzzle Berpengaruh Pada Perkembangan Motorik Halus Anak Usia Prasekolah," *Jurnal Endurance*, vol. 3, no. 1, p. 55, Mar. 2018, doi: 10.22216/jen.v3i1.2488.
- [11] W. N. Nabighoh, M. Mustaji, and H. Hendratno, "Meningkatkan Kecerdasan Logika Matematika Anak Usia Dini melalui Media Interaktif Puzzle Angka," *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, vol. 6, no. 4, pp. 3410–3417, Feb. 2022, doi: 10.31004/obsesi.v6i4.2410.
- [12] R. T. Humaida and S. Suyadi, "Pengembangan Kognitif Anak Usia Dini melalui Penggunaan Media Game Edukasi Digital Berbasis ICT," *Aulad: Journal on Early Childhood*, vol. 4, no. 2, pp. 78–87, Jun. 2021, doi: 10.31004/aulad.v4i2.98.

- [13] D. Lintang Trenggonowati, “Analisis Faktor Optimalisasi Golden Age Anak Usia Dini Studi Kasus Di Kota Cilegon,” 2018.
- [14] A. Fadlan and U. Nopriansyah, “Penerapan Metode TPR (Total Physical Response) Dalam Pembelajaran Bahasa Inggris Anak Usia Dini,” vol. 4, no. 1, pp. 137–151, 2021, [Online]. Available: <http://ejournal.radenintan.ac.id/index.php/al-athfaal>
- [15] M. Firdaus and E. Muryanti, “Games Edukasi Bahasa Inggris untuk Pengembangan Kosakata Bahasa Inggris pada Anak Usia Dini”.