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EDUGAME DESIGN BASED ON TRADITIONAL GAMES TO STIMULATE EARLY LITERACY IN CHILDREN

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Abstract

Literacy skills of Indonesian students is still very low compared to the students among Asian countries. Therefore, comprehensive steps are needed to overcome this issue. One of the strategies is the development of literacy skills from an early age at the kindergarten level, since the golden period of acquiring language skills is at an early age. The development of literacy skills from an early age at the kindergarten level can be done with interesting media such as mobile games. Mobile games are media that children like and easy to use, including for learning occasions hence they grow and develop in a very fast technological development. Since birth, children have been immersed in a world rich in media. Therefore, this study aims to develop mobile games media based on traditional games to develop early literacy skills of children. The method in this study uses mix method research. Meanwhile, the game developed uses a life cycle method. The research participants involved two kindergarten future teachers. It is ongoing research that will only focus on describing the design of mobile games. The results of this study is a design of mobile games based on traditional games for children to develop literacy skills. In the process, the participants go through some steps, namely, analyse the learning goals, choosing the traditional games that are suitable for mobile games, design the game, FGD with the game developer. Moreover, there are some difficulties in the process, especially in choosing the traditional games which can be changed into mobile games platforms.

Kata Kunci:
bahasa; sastra; budaya

Abstrak

Rancang Bangun Edugames Berbasis Permainan Tradisional untuk Menstimulas Literasi Dini Pada Anak

Kemampuan literasi siswa Indonesia masih sangat rendah dibandingkan dengan siswa di negara-negara Asia. Oleh karena itu, diperlukan langkah-langkah komprehensif untuk mengatasi masalah ini. Salah satu strateginya adalah pengembangan kemampuan literasi sejak usia dini di tingkat taman kanak-kanak, karena masa emas pemerolehan keterampilan berbahasa adalah pada usia dini. Pengembangan kemampuan literasi sejak dini di tingkat taman kanak-kanak dapat dilakukan dengan media yang menarik, salah satunya adalah mobile games. Mobile games merupakan media yang disukai anak-anak dan mudah digunakan oleh anak-anak untuk belajar. Apalagi anak-anak saat ini tumbuh dan berkembang dalam perkembangan teknologi yang sangat pesat. Sejak lahir, anak-anak telah tenggelam dalam dunia yang kaya akan media. Oleh karena itu, penelitian ini bertujuan untuk mengembangkan media mobile games berbasis permainan tradisional untuk mengembangkan kemampuan literasi dini anak. Metode dalam penelitian ini menggunakan metode penelitian campuran. Game yang dikembangkan menggunakan metode life cycle. Partisipan penelitian ini melibatkan dua calon guru TK. Penelitian ini masih berlanjut dan pada artikel ini hanya akan mendeskripsikan design mobile game saja. Hasil penelitian menunjukkan bahwa mobile game dapat dimodifikasi dengan permainan tradisional untuk merangsang literasi dini pada anak. Dalam pelaksanaannya, partisipan melakukan dalam beberapa tahapan, diantaranya, penentuan tujuan pembelajaran, pemilihan permainan tradisional yang akan diubah dalam bentuk mobile games, tahapan mendesain mobile games dan FDG dengan game developer. lebih lanjut, terdapat kesulitan yang dihadapi partisipan terutama dalam menentukan permainan tradisional yang memungkinkan untuk diubah dalam platform mobile games.

Introduction

The illiteracy rate in Indonesia is still very high. Based on data from the Ministry of Education and Culture of the Republic of Indonesia in 2020, the percentage of illiteracy in 2020 is in the position of 1.71 percent or as many as 2,961,000 people (Kemendikbud.go.id, 2021). Including in West Java, the number is still high. For example, in one of the largest regencies in West Java, namely Bandung Regency, the number reached 35 thousand people. In addition to the number that is still very high, literacy problems can be one of the causes of dropping out of school, so many are unable to complete 9 Years of Basic Education. In addition, illiteracy can bring other social problems (Hidayah & Rosleny, 2015). The inability to read and write makes the quality of life of an illiterate low (Jessica et al., 2017). They are considered negative in their environment because of their social status due to difficulty in getting formal jobs. As a result, this can impact their psychology, and the rate of unemployment and crime may also increase.

Given the large number of illiteracy rates, and the high probability of social problems that will arise, comprehensive steps are needed to overcome them. One of them is the development of literacy skills from an early age at the kindergarten level. Because the golden period of acquiring language skills is at an early age (Sulaiman, 2020). Language acquisition in early childhood is a golden period that greatly determines the psychological development of children. So that in the process the right method is needed and according to the level of children's needs (Sulaiman, 2020). According to Zaini (2019) the learning process for children must be done through the play method. Playing has an important role in strengthening exploration and mastery, exercising muscles and mindset, and connecting with others. One of the media that is preferred and makes it easier for children to play is through mobile games that can be accessed using gadgets, because currently gadget users are not limited to adults who can afford to buy or use it, but teenagers and even children who are still at an early age, interested in using gadgets. Lestari et al (2019) in their research explain that the use of gadgets by early childhood is based on a great curiosity about gadgets as new things that are found by children around them. This is as stated by Piaget that there is an internal drive from children to approach and experience directly whatever is around them. So that education is believed to stimulate early literacy in children.

Currently, there is much research on mobile games for children. Research conducted by Octavino and Prakos (2021) which explains that with the Mobile-based Learning Media Educational Game Application, it can attract children to learn the subjects, because the packaging of the material is not boring. With the Mobile-based Learning Media Educational Game Application, the public's perspective on games begins to turn into a positive view, because if used properly, games will become a very helpful media for student learning. This is in line with research conducted by Mulyatun et al (2021) which states that today's games are not just games to fill spare time and hobbies. But also by playing games can increase creativity and intellectuality for the players. When playing games, it also significantly sharpens the analytical power of its users to process information and make the right decisions. So the game can also be used as a learning tool. However, these studies do not specifically explain that mobile games can also be used to stimulate literacy skills in children.

Based on the above background, the research problems to be studied are:

1. How is the mobile game program that can develop the early literacy skills of kindergarten children?
2. How effective are mobile games in developing kindergarten children's early literacy skills?

So this paper will explain two phases of the whole research process, namely mobile game design and mockup design. Two respondents who are prospective PAUD teachers were involved in both steps through interviews and focus group discussions. The game focuses on stimulating two aspects of early literacy, namely logographic and alphabetic skills (Laely, 2013). These skills are considered to be developed effectively through games because the principle of early childhood education is playing (Silawati & Abidin, 2019).

With this statement, it is hoped that this research can achieve the following objectives:

1. Develop a mobile game program that can develop the early literacy skills of kindergarten children.
2. Analyzing the effectiveness of mobile games in developing early literacy skills of kindergarten children.

Gadgets and mobile games are interesting things for children and are now popular games among children. However, not all mobile games have educational value. Many of them contain elements of violence and pornography which are very harmful to their character development. Therefore, efforts are needed to develop mobile games that have educational value, especially in improving children's literacy skills which are currently very much needed. With these considerations, traditional games were chosen as educational game designs because traditional games have been proven to be effective in developing children's skills and are free from elements of violence and pornography (Silawati & Ardiyanto, 2014). So that it is different from other studies, in this study the traditional game of *Congklak* will be used as a reference in the design of mobile games that will be made. With the traditional game of *congklak,* it is hoped that children can get to know one form of Indonesian culture in the form of traditional games while increasing the development of children's early literacy to help children at the next level of education so that they can complete 9 years of education, or even 12 years to come. Then it hoped to improve West Java's human resources in the future, so that by 2025 West Java can become the leading province in Indonesia.

Methodology

Mix method is employed in this study by combining the positive aspects of qualitative and quantitative approach (Miftakhuddin, 2020). However, since it is ongoing research, this paper will only describe the first stage of this research which is the qualitative approach used in describing the design of the mobile games based on participants' perspectives. The identification of the data applies a descriptive method. To identify emerging patterns, the raw data are grouped by the process of data reduction, coding, so that they show in some categories and themes (Parjaman & Akhmad, 2019).

Moreover, the quantitative approach which will be used in identification of mobile games effectiveness in developing literacy skills of children will not be described in this paper. Whereas mobile games development applying Software Development Life Cycle (Dwanoko, 2016) which describes below.

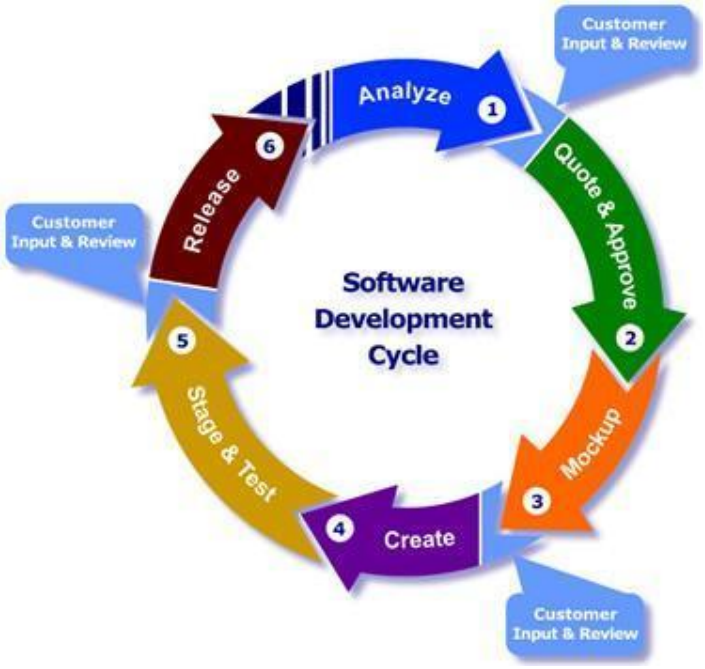

Figure 1. Software Development Life Cycle
[Source: Dwanoko, 2016]

The following are the explanation of each step:

1. *Analyze.* In this step feature analysis, which is needed in game development is conducted
2. *Quote & approve.* The next step is evaluating features from the analysis step to choose which features will be used.
3. *Mockup.* Developing interface and module design to make the implementation more integrated.
4. *Create.* This is the coding process from each mockup.
5. *Stage & Test.* The next step is a testing process based on a functional program.
6. *Release.* The last step is packaging and releasing games.

The six stages are cyclic to produce continuous improvement of the developed games. At several steps, a review by prospective users is also carried out so that the results are more in line with what is needed by the user.

The participants of this study are 2 kindergarten future teachers who will have an interview and FDG forum in designing the mobile games.

Furthermore, some instruments were used in this study, such as: (1) observation (2) field notes, (3) pretest and posttest sheets, (4) interview guidelines, (5) video tape and camera.

This research was carried out for 10 months with details of the implementation stages as follows:

1. Literature Study
2. Game/program needs analysis
3. Design the stages of the game in the game
4. Game/program development consisting of Game/program Design Development, Game display design (Mockup) and pictures, Game/program Coding, Testing, Debugging and Releasing games/programs,
5. Trial games for kindergarten students,
6. Data processing and Conclusion Drawing,
7. Writing papers and submitting to international conferences
8. Evaluation and Reporting

However, this research is still in the on-going project stage and in this paper will be explained about the first stage, namely the pre-research stage which consists of literature study and analysis of game/program needs.

Finding and Discussion

In planning game design, the respondents analyzed the learning goal of language development for children aged 4 to 6 in the Indonesian ECE national core curriculum 2013 since the mobile game will be used in kindergarten learning activities as the learning media. Those goals will be the main consideration in developing the mobile games. The next stage is choosing the traditional games that are suitable for mobile games. Moreover, designing the game was the next step. After that, the participants discussed with the game developer.

Congklak games apply the Software Development Life Cycle method. Since kindergarten students are the target users in this game, therefore the interface design must be developed as attractive as possible and focus on the needs of the user. According to the Breadth-First Search (BFS) algorithm which is a process or set of rules to be followed in path searching that will be used in this game.The search procedure with the BFS algorithm is to conduct searches by visiting each node systematically at each level. (Rahim, 2018).

Congklak games are designed to be played by two players facing each other using one mobile device. A *congklak* board will be displayed containing 2 large holes on the left and right of the player and 14 small holes filled with stones in front of the player. The rules of the game are (1) if the seed is ending in any opponent's empty hole is inside, then the player loses his turn and gives the opponent's turn, (2) if the player is finishing in the empty hole, the player takes all the seeds in the entry hole, endmost the last hole, (3) if the last stone stops in the big hole (Rahim, 2018). If the player wants to repeat the game, he can select the menu to repeat the game, otherwise the game will be finished. Since the main aim of this game is developing literacy skills of children, then there will be literacy games included in the main game. following is the detail design of each step

Figure 2. Prototype User Interface of the Mobile Game *Congklak*
[Source: own screenshot]

Every time you enter a new page or click a button there will be an audio explanation.

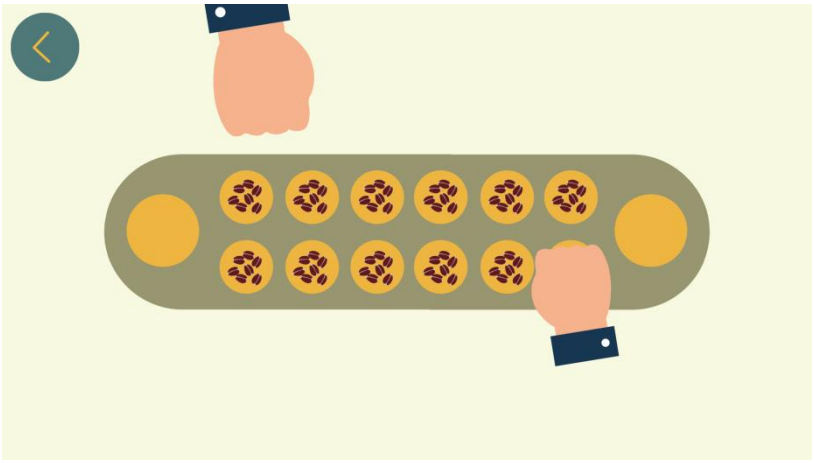

Figure 3. Prototype of the Mobile Game *Congklak*
[Source: own screenshot]

How to Play *Congklak* Tradisional Mobile Game:

1. Children can choose to play in pairs with their peers (2 people) can also play alone with the computer.
2. Each of the small holes is filled with 7 seeds and leave the "house" of both players empty, each player has 1 home each (the big holes on the right and left of the board).
3. Then the two players face each other and make a suit, to determine who will play first.
4. The winner can choose one hole and take all the seeds in the hole on the side of the row.
5. The player moves clockwise around the *congklak* board and places 1 seed in each small hole (including his own "house").
6. When the last seed falls in a hole that contains seeds there will be a game that appears (training the logographic and alphabetic) that the child must complete such as the illustration below:

a. Letter Bread

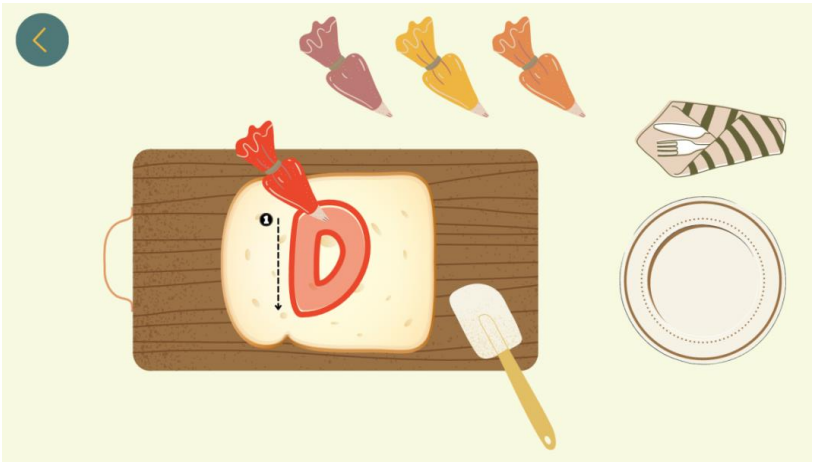

Figure 4. Prototype of the Mobile Games Design 1 : Letter Bread Games
[Source: own screenshot]

Game rules :

1) Children are given instructions to follow the letter pattern.
2) The child chooses the color he likes.
3) The child follows the pattern of the letters on the bread.
4) When finished, the child imitates the sound of the letter.

b. Finding Letters

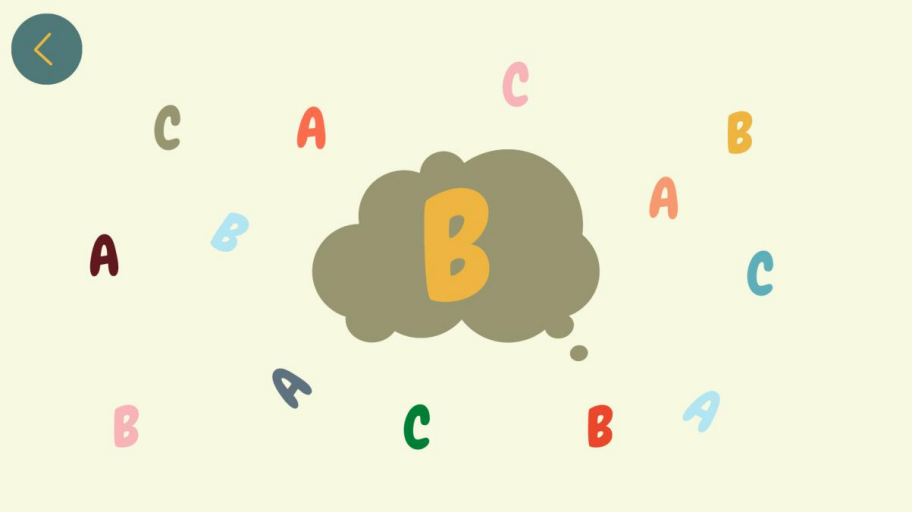

Figure 5. Prototype of the Mobile Games Design 2: Finding Letters
[Source: own screenshot]

Game rules:

1) Children are given instructions to look for letters that have the same shape, for example B.
2) The child looks for and presses / clicks the letter B that has the same shape.
3) Then after success the child must follow the sound of the letter.

c. Letter Pattern

Figure 6. Prototype of the Mobile Games Design 3: Letter Pattern
[Source: own screenshot]

Game rules:

1) Children are given instructions to arrange letter patterns using bottle caps / shells / stones.
2) Children may choose to use bottle caps/shells/stones as they wish.
3) Children make patterns based on the examples listed.
4) When finished, I will mention the letter.

d. Animal Initials

Figure 7. Prototype of the Mobile Games Design 4: Animal Initials
[Source: own screenshot]

Game rules :

1) Children are instructed to find animals based on their initials.
2) The child chooses a picture of an animal based on its initials
3) After success, the child must mention which animal the child has chosen based on its initials.

e. Letter Spoon

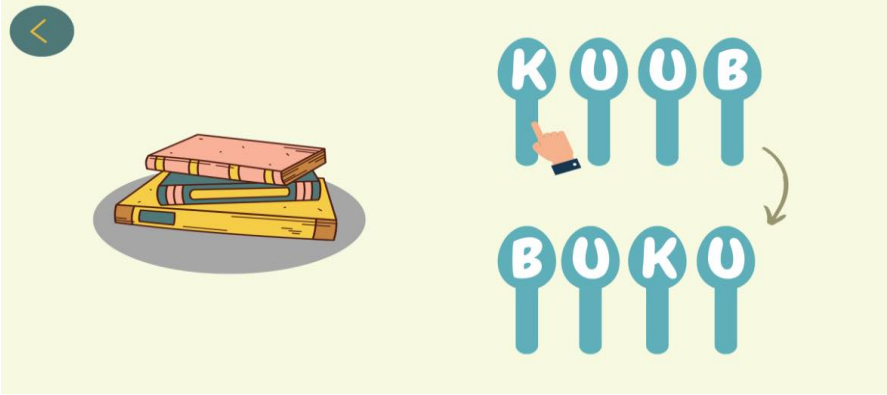

Figure 8. Prototype of the Mobile Games Design 5: Letter Spoon
[Source: own screenshot]

Game rules:

1) The child is given instructions to arrange the letter spoons according to the name of the object.
2) After that the child must say what the letters are.
3) After the child finishes the game (training the logographic and alphabetic) the child can continue the game of *congklak* by continuing or taking back the hole containing the last seed and continuing to put one seed in each hole.
4) If the seed held by the player ends up in an empty hole, the player dies or has to take turns with his friend.
5) When a player dies in his own row, all seeds on the opposite row side will become the property of the player and the seeds will go to his "home".
6) The winner of this game is the player who gets the most seeds in his "house" and the game ends when all the small holes are empty.

Conclusion

Mobile games are something viral in the children's world nowadays. This paper describes the games developed to stimulate two aspects of early literacy, which is logographic and alphabetic skills. Those skills assumed could be effectively developed through games since the principle of early childhood education is playing. Moreover, traditional games are chosen as the medium because it has proved effective to develop some skills of the children. In the developing process, the participants have made some modifications to the games. There are some sub parts of the games to stimulate literacy skills of children such as games of “Letter Bread”, “Finding Letters,” “Letter Pattern,” “Animal Initial,” and “Letter Spoon.”

References

Dwanoko, Y. S. (2016). Implementasi Software Development Life Cycle (SDLC) Dalam Penerapan Pembangunan Aplikasi Perangkat. *Jurnal Teknologi Informasi*, *7*(2), 83–94.

Hidayah, Q., & Rosleny, B. (2015). Pemberdayaan Masyarakat Desa Yang Buta Huruf. *Equilibrium Pendidikan Sosiologi*, *IV*(1), 1–10.

Jessica, V., Halis, A., Ningsi, D. W., Virginia, G. F., & Syahidah, . (2017). Pemberantasan Buta Aksara untuk Peningkatan Kualitas Sumber Daya Manusia Masyarakat Sekitar Hutan Desa Manipi, Kecamatan Pana, Kabupaten Mamasa. *Agrokreatif Jurnal Ilmiah Pengabdian Kepada Masyarakat*, *3*(2), 136. https://doi.org/10.29244/agrokreatif.3.2.136-142

Kemendikbud.go.id. (2021). *Komitmen Kemendikbud Ristek dalam Penuntasan Buta Aksara di Indonesia*. Kementerian Pendidikan Dan Kebudayaan Republik Indonesia. https://www.kemdikbud.go.id/main/blog/2021/09/komitmen-kemendikbudristek-dalam-penuntasan-buta-aksara-di-indonesia

Laely, K. (2013). Peningkatan Kemampuan Membaca Permulaan Melalui Penerapan Media Kartu Gambar. *Jurnal Pendidikan Usia Dini*, *7*(2), 300 - 319. Retrieved from http://journal.unj.ac.id/unj/index.php/jpud/article/view/3877

Lestari, T., Herawati, N. I., Permatasari, E., & Ariningrum, P. R. (2019). Assesmen Literasi Digital Berbasis Perkembangan Anak Usia Dini. *Prosiding Seminar Nasional …*, *2014*.

Miftakhuddin. (2020). Pendekatan penelitian pendidikan : Tinjauan dari perspektif filsafat ilmu. *Jurnal Ilmiah*, *6*(1), 1–7.

Mulyatun, S., Hendrik, Maemunah, Mei, & Wahyuni, S. N. (2021). Pengembangan Game Edukasi Untuk Anak Usia Dini Berbasis Mobile Menggunakan Construct 2. *Jurnal Sisfo Kom (Sistem Informasi Dan Komputer)*, *10*(2), 264–269.

https://doi.org/10.32736/sisfokom.v10i2.1140
Octaviano, A., & Prakos, C. P. (2021). Aplikasi Game Edukasi Media Pembelajaran Berbasis Mobile. *Prosiding Seminar Nasional Informatika Dan Sistem Informasi*, *5*, 200–204. http://www.openjournal.unpam.ac.id/index.php/SNISIS/article/view/9272
Parjaman, T., & Akhmad, D. (2019). Pendekatan Penelitian Kombinasi : Sebagai " Jalan Tengah " Atas Dikotomi Kuantitatif-Kualitatif. *Jurnal Moderat*, *5*(4), 530–548. https://jurnal.unigal.ac.id/index.php/moderat
Rahim, R et all (2018) Congklak, A Traditional Game Solution Approach With Breadth First Search. MATEC Web of Conferences 197, 03007
Sulaiman, Z. (2020). Kajian Pemerolehan Bahasa pada Anak Usia Tiga Puluh Enam Bulan. *Disastra: Jurnal Pendidikan Bahasa Dan Sastra Indonesia*, *2*(2), 110. https://doi.org/10.29300/disastra.v2i2.2968
Silawati E & Ardiyanto (2014) Sundanese Traditional Playings as Learning Strategies in Developing Children's Language Skills, Proceeding UPI-UPSI International Seminar on Teacher Education
Silawati, E. & Abidin, Y. (2019) Bermain dalam Konteks Pendidikan Anak Usia Dini. Bandung: UPI Press.
Zaini, A. (2019). Bermain sebagai Metode Pembelajaran bagi Anak Usia Dini. *TruffuLA: Jurnal Inovasi Pendidikan Guru Raudhatul Athfal*, *3*(1), 118. https://doi.org/10.21043/thufula.v3i1.4656