Augmented Reality For Preschoolers: Learning Media To Introduce Sex Education

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Info Artikel

Abstract

This study aims to describe how to use Augmented Reality (AR) in introducing sexual education for preschoolers. This AR-based learning media helps provide an interactive and interesting learning experience. In addition, AR-based learning media in the form of flashcards with an application installed on the Andorid-based smartphone supports preschoolers to study their body parts without limitation of time and place. The integration of AR in the learning of preschool children aims to facilitate parents and teachers as the ideal figure to provide sexual education for their children. The method used in this research is descriptive qualitative research method. The data collection technique uses three techniques: interviews, observation, and documentation. The validity of the data was tested using data triangulation techniques and triangulation methods. Data analysis uses a data reduction process flow, data presentation and verification or conclusion. The results showed that through this AR-based media preschooler learned pictures and songs about which parts of the body they should touch, and which should not be touched. The application of this media is not only carried out by teachers at school but also allows it to be used by parents at home. Therefore, parents will contribute actively to introduce sex education to their children.

Introduction

Law number 35-year 2014 concerning child protection that a child is those who are not yet 18 years old, including babies in the womb. This definition is viewed in terms of age. In the other side, in a psychological perspective a person is called a child in terms of the stage of cognitive development. Jean Piaget divides the stages of cognitive development into four stages, namely sensorimotor, pre-operational, concrete operation, and formal operation. The sensorimotor stage occurs at 0-2 years of age, the pre-operational stage occurs at 2-7 years of age, the concrete operational stage occurs at 7-11 years of age, and the formal operational stage occurs at 11-15 years of age (Sujiono & Nurani, 2014). In this case preschoolers belong to the pre-operational stage for their cognitive development. They cosnider a concrete thing for their visualisation in learning thing. They do not only need explanation but also representative example for what they learn. Thus, it is very essential to guide and present a real example for preschoolers in their learning process. It applies not only for general subjects but also when they learn sex education.

Teaching sex education to children especially for preschoolers needs great and serious attention from all parties since the prevelance of child sexual abuse (CSA) in Indonesia is increasing. CSA is defined as the imposition of adults who demonstrate or perform sexual behaviour on children with threat to conceal. It is also accompanied by violence which can cause frightened, feeling under domination, exploitation, and loos of control over their bodies (Indriati, 2014). Centre for Data and Information of the National Commission for Child Protection of Indonesia noted that in 2015 there were 218 cases of sexual abuse, in 2016 120 cases were found and in 2017 there were 116 cases of sexual abuse. In the data, the

perpetrators actually come from the closest environment, such as stepfathers and biological fathers, close relatives and friends (Setiawan, 2017). Meanwhile, based on kompas.com website, it was found that in 2018 cases chiuld abuse cases were found to be dominated by cases experienced by boys, as many as 223 cases (Nugroho, 2018). Furthermore, in an online article written by Cahyadi Takariawan (2017) in 2015, the United Nations International Children's Emergency Fund (UNICEF) reported on abuse against children in the world taken from 190 countries showing that in general, 60% of children in the world have been victims of abuse; physical, sexual, and psychological abuse. UNICEF reported 120 million children in the world were victims of sexual abuse, and only 39 countries are able to legally protect children from the abuse they experience. The increasing cases of child abuse, especially sexual abuse, is clear evidence that children lack knowledge of sex education which should have been obtained from an early age from their parents.

Children in their early, under the age of 6, are vulnerable. One of the reasons is their immaturity of verbal skills. Those children do not have enough vocabulary to be able to explain what happened when CSA occurs. Other aspect such as culture also determines this situation. In Indonesian, mentioning the scientific name of the genitals is considered to be impolite or taboo. Sometimes people use other term to mention it. This would limitthe vocabulary to describe what happened to them. They did not report it because they do not understand what happened and do not have the vocabulary for their genitals and the sexual behaviour in their system of cognitive (Bebbington, dkk., 2011). CSA has long term emotional, sexual, or physical negarive effect on child's life including adult depression, personality disorder. PTSD, drug and alcohol abuse, bulimia and suicidality (Bebbington, dkk., 2011).

The environment is a very important factor to prevent the case of CSA. Parents, teachers, and the community sholud take a part to prevent CSA by providing knowledge to children, in order to make them understand CSA and know how to respond to it (Pandia, Widyawati & Indriati, 2016). Preschooler is a weak object to sexual predators who clearly do not dare to resist. Thus, sex education is really importatnt to be taught by parents and teachers in schools. Sexual education is also a form of parent's concern for the children' future in maintaining what has become his honor. Moreover, some parents are apathetic and do not play an active role in providing sex education for their children early.

In Indonesia, reasearch completed by Wiradjaja, regarding the perceptions and knowledge of parents confirm that parents consider themselves first and school as the second most responsible person for providing sexual education to their children (Pandia, Widyawati & Indriati, 2016). Reasearch by Visi, about knowledge, attitudes, and actions of mother on sexual education in adolescents explain that mothers'knowledge varied. Mother's attitudes towards sexual education tend to be negative, and actions taken by mothers tend to be passive. Some factors, level of education, experience, religious beliefs, as well as social an cultural perspective (Pandia, Widyawati & Indriati, 2016).

The effective method to prevent children from CSA is by teaching them how to protect their private body parts. This can be done if the parents have a good knowledge of sexual education (Major, 2011). In Indirati (2014), the way to do this is by teaching them to cross their arms in their private body parts such as mouth to protect them from forced oral sex, chest to protect them freom sexual touching, genitals to protect them from sexual coercion and also their rectum. Indriati (2014) also mentioned that children's knowledge of sexuality make them understand about it and have some vocabulary to exoress the adult if he or she is treated or seen an adult sex crimes to another child. Though, without being given a basic knowledge of the private parts of the body from an early age, they will have this

knowledge when they enter adolescence. In adolescence they know about sexuality, sexual abuse, and rape. The understanding about forbidden parts of the body that should not be touch inappropriately by the adults, shouting the word "cannot/do not", and tell an adult if anyone done CSA will help children to have self-defence and make the child has control over his body.

Giving sex education for children is responsibility of all parties: parents, teachers, societies, and goverment. The preventive action can be applied is by providing the children sex education since they are childhood especially in Early Chilhood Education or Kindergarten schools. Early Childhood Education teachers are the vanguard in initiating sex education in the lowest level of education (Hasni & Suparno, 2018). It need simple method can make children have simple protection for themselves. There are various ways of teaching sex education. It can be carried out through storytelling, singing, and using appropriate technology-based media or multimedia learning.

Technology especially multimedia field currently developing rapidly is Augmented Reality (AR). Augmented Reality is a technology that combines the virtual world with the real world so that users seem to interact directly with the objects displayed using a mobile device. AR technology is currently starting to spread into various fields including education. Tonni Hidayat (2014) stated that the use of AR as a tool to educate children will provide a new perspective on existing learning media, not only using real objects but also using virtual objects. In addition, the added value of AR-based media is that it is easier to convey and makes information more attractive. In line with Tonni Hidayat, study conducted by Ilmawan Mustaqim (2016) on the use of AR as learning media stated that the use of educational media using AR can stimulate students' mindset to think critically about certain problems and events. In addition, Ilmawan Mustaqim also said that AR learning media can visualize abstract concepts for understanding and the structure of an object model allows AR as more effective media in accordance with the objectives of learning media.

The writers designed AR-based media in the form of flash card. To display the images on flashcard, it can be used camera on each mobile device that has been pre-installed with an Android-based application to project on the image on the flash card. Beside the body object that appears from the flash card, in this Android-based application there is also a song with the same theme (ku jaga diriku) so that this AR-based media is not only visually attractive but also audio attractive.Therefore, this study aims to describe how to use Augmented Reality to introduce sex education for preschoolers and user's perception toward the use of AR based media for preschoolers.

Research Method

This study belongs to qualitative descriptive. Moleong stated that using the descriptive method means that the researcher analyzes the data collected in the form of words, pictures and not numbers (Moleong, 2011). The respondents in this study were 10 preschoolers (PAUD students), 10 parents of students and 1 PAUD teacher.

The types of data collected in this study are primary and secondary data. Primary data were collected by means of information obtained directly from respondents. Primary data obtained from interviews, observations and documentation in the form of field notes. Meanwhile, secondary data were obtained from the results of literature studies, journals, articles, internet and others which aim to become supporting data related to research.

Data collection techniques used in this study were interviews, observation, and documentation. The interviews conducted were interviews using open-ended questions so that the information obtained was complete and in-depth and in accordance with the problem

under study. The second technique used was observation to present a true picture of the behavior, expressions and enthusiasm of the research subjects. The third technique used was documentation in the form of field notes that the researchers used not only to record things that happen to the respondents but also to the surrounding environment including the AR-based media used.

The validity of the data shows that what is observed is in accordance with what actually happened in the field and the explanation of the problem description is in accordance with the actual situation. Data analysis in qualitative research usually uses triangulation. The triangulation used in this study was data triangulation and method triangulation. Data triangulation is used for collecting similar data using a variety of different sources. While the triangulation method is used to compare the interview data with the results of the observations and also with what is in the document (field notes) and other secondary data.

There are three components in data analysis process namely data reduction, data presentation and verification / conclusion. Data reduction is a process of selecting data, focusing and simplifying the data that has been obtained. Data presentation is the process of compiling information, providing descriptions in the form of a narrative referring to the problem formulation that has been compiled as a research question. Verification or drawing conclusion is the process of providing strong conclusions and having clear grounds. In general, the cycle of data analysis can be presented in the following figure. The cycle is adapted from qualitative data analysis by Miles and Huberman.
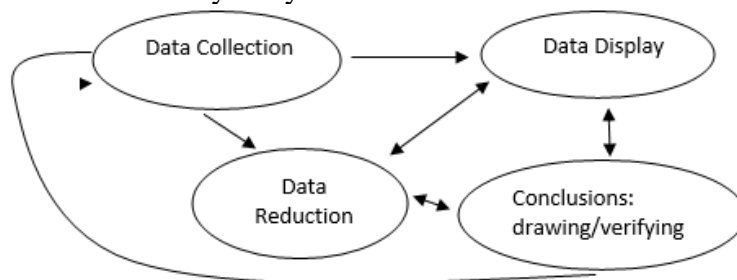

Figure 1. Component of data analysis: Interactive Model Miles and Huberman

Result and Discussion
 Procedure of using AR based media to introduce sex education.

This learning media is a combination of image media or markers presented on a flash card sized 8x12 cm and an Android-based application that includes Augmented Reality (AR) technology. AR is an alternative to combine objects or virtual objects into the user's real environment and then project them in real time (Mustaqim, 2016). This AR technology uses more smartphones where the camera on the smartphone can recognize predetermined images or markers and display digital content on marked images. The first step of using AR-based learning media is by installing"AR Sex Education" on smartphone. Then the display will be as the following:

Figure 2. Icon of AR Sex Education Application
Hardiyantari, dkk (Augmented Reality for Preschoolers: ……………)

After the installation is done, the user can start to operate the application.

Figure 3. Homepage of AR based learning media

After the homepage, the next page is character introduction part. There is back song "Ku Jaga Diriku" accompanied the introduction part. The song lyrics focus on teaching touch and do not touch children part of body.
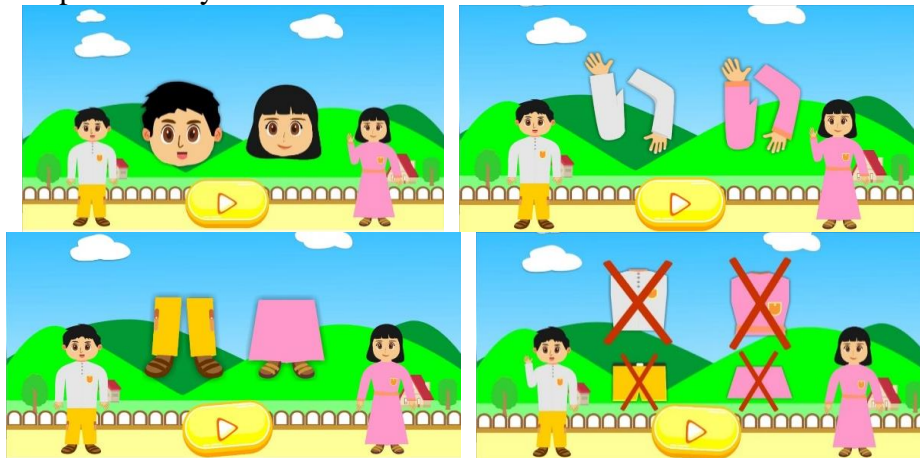

Figure 4. Page of Character Introduction

In figure 3, the character recognition follows the rhythm of the song being played, starting with the lyrics of the song which can be touched, the picture shows which body parts can be touched such as the head, hands and feet. Then when it comes to the lyrics of the body parts that should not be touched, an introduction to the parts of the body marked with a cross. The song will continue to play repeatedly if the user does not go to the next page. Then at the bottom of this character introduction page, there is a play button that is used to go to the next page.

Figure 5. Play Button

After clicking the play button, there will be option page that can be selected by the user. The option consists of material, game and AR scan. The selection page display is as follows:

Figure 6. Option page of material, game, and scan AR selection

In the first option menu, "Mari Belajar" contains knowledge about which parts of the body can be touched and ones should not be touched. In addition, the characters used are not only boys but also girls. The material display in the "Mari Belajar" menu is as follows:
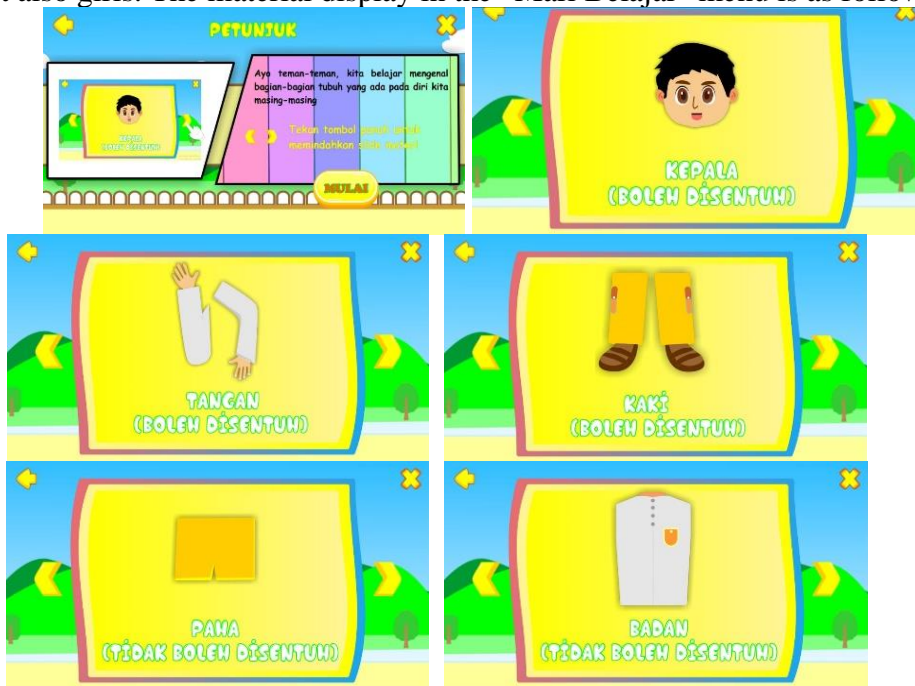

Figure 7. Menu display "Mari Belajar"

Next is the second menu, "Mari Belajar". User can learn by playing and guessing which parts of the body can be touched and should not be touched by clicking the smartphone screen. If true or false will display a specific greeting, like the following.

Figure 8. menu display "Mari Bermain"

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This last menu is the core part in this learning media. It is "Scan AR" in which the users can scan flash card containing picture as marker or object to display the live-liked object.

Figure 9. Menu display "Scan AR" and how to operate.

The following is sample of flashcard used as marker in this AR-based media.

Figure 10. flash card display

Users may click exit icon on the right top corner after they want to stop using the features on the menu. There will be pop up option " ya (yes)" or "tidak (no)" displayed on the screen.

Figure 11. last page display

Respondents' perception toward the use of AR based media

The study was conducted using random sampling. The respondents in this study were 10 preschoolers, 10 parents, and 1 preschool teacher. The respondents from preschoolers consist of 6 males and 4 females of 3 to 5 year in age, while parents were 8 mothers and 2 fathers of 28-35 year in age. Parents were from various work backgrounds: homemaker, teacher, staff, and educational staff. They also had different educational backgrounds: senior high school and bachelor's degree.

Based on the field observation and field note, when the children were given AR for the first time, they gave positive responses and were enthusiast especially when the live-liked

objects appeared. They became more enthusiast when the song "ku jaga diriku/sentuhan boleh sentuhan tidak boleh" was played. This song attracted the children to sing following the melody. Besides, game provided in the media gave illustration for which children's part of body that allowed to touch and prohibited to touch. This game assisted the children to memorize their vital part of body.

Furthermore, the result from the interview with parents, it can be said that they gave positive responses from the use of AR-based flash card media and they also mentioned that this media was very helpful to give easy example for children identifying their vital part of body. They also added that this media is easy to use and communicative since it combined song and flash card to give live-liked objects. In addition, game provided in the media facilitated between parents and children to play together while learning vital part of body. Moreover, teacher stated that AR-based flashcard was so valuable. It would be better to reproduce and spread not only for parents at home but also as educative game equipment at school. She also added that teachers had introduced sex education using song and pictures so far. By utilizing this AR-based media it enriched learning media and knowledge on how to operate this AR media.

In general, responses toward AR based Flashcard were gained from observation and interview can be presented in the following table.

Table 1. Responses toward AR based Flashcard

Data Source	Interview	Observation
Preschoolers		They feel enthusiast to the object shown on the flashcard. They become more excited as the song played and follow to sing the song to memorize "touch and don't touch my part of body".
Parents	They mentioned that it is very helpful to explain which part of body that can be touched and the ones that cannot be touched. In addition, it is easy to use this media and exciting since there is song accompanied.	
Teacher	AR based flashcard is worth it to be published and promoted, so it is not only parents and children use at home but it can also be used as educational tool at schools.	

Based on data taken from interview, observation, and field note, it can be said that the existence of learning media and parents' awareness in introducing sex education to their children would support the success of sex education. Sex education for preschoolers plays important role for them to protect themselves from negative things like child abuse. It is in line with the study conducted by Risty Justicia (2016) that stated the effort to prevent child abuse should be given from the closest related people; parents and teachers by giving advice

to protect children's body and give limitation for touching from others and crime act. That study emphasized on oral advice while in this study the advice given from technology integration by using AR-based flashcard media. The advice was displayed using interactive objects and song.

Introducing sex education for preschoolers early is so essential to carry out as the prevention of child abuse. This action can be performed by parents at home and teachers at school. Anik Listiyana (2010) stated that sex education was parents' main responsibility especially mothers. In her article, she emphasized that mother had strategic role in introducing sex education early to children. In the other hand, considering the trend of parenting recently, it is not only mother but also father who have strategic role in giving sex education.

Conclusion

Based on the results and discussions above, teaching sex education to children, especially preschoolers, is a role that should be carried out not only by teachers in schools but also more importantly by parents at home. This is very crucial to do as an effort to prevent sexual abuse on children. Efforts are made not only by providing personal advice and approaches, but also by utilizing the very significant technological development today that is using augmented reality-based flash card learning media. This AR-based flash card media is developed not only containing live-liked images but also songs that boost children' enthusiasm towards this learning media. Moreover, games accompanied the media create children's learning experience more meaningful.

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