Parent's Perspective on Educational Games: Phenomenography study in Indonesia

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Abstract

The development of games in Indonesia is quite popular, making games a part of modern people's lives for children and adults. Pros and cons also occur regarding the impact of playing games (commercial games). Games that contain elements of violence can have a negative impact on users. However, there is also a positive impact of playing games, which can improve the cognitive and spatial abilities of a child. Mathematical educational game (in the application), is a game in which there are educational and learning elements, inserted mathematics learning content in the form of questions and material. This study aims to describe parents' perspective on educational games that contain mathematics learning content as instructional media. This research will focus on parents of educators and not educators. The research design uses phenomenography, where researchers want to see parents' perspective on the phenomenon of educational games as instructional media. From the results of this study, obtained a positive perspective of the educational game with some suggest. Keeping in mind the age, playing time and supervision of children, most parents agree that educational games can be an instructional media for their children.

Keywords: Math Education Games, Parents, Instructional media

1. Introduction

The development of games in Indonesia is quite popular, making games become a part of modern people's lives for small children and adults and since 2011, game users have reached 6.5 million people (Martono, 2011; Pramuditya, 2017). A number of studies indicate that electronic games are now a routine part of normal childhood and adolescence (Roberts, Foehr, & Rideout, 2005; Olson et al., 2007; Ito et al., 2008; Lenhart et al., 2008; Greenberg, 2008). Application games made with animation techniques (Pramuditya, 2017).

Pros and cons also occur regarding the impact of playing games. Commercial games are game applications that do not contain learning content in the game. Significant effects of video game play are found in short-term and long-term contexts, and across a wide range of domains (Anderson, 2012). Some parents give a negative perspective to the game, whereas not all games have a negative impact (Ferguson, 2007; De Lisi 2002; Henry, 2013). Games that contain elements of violence can have a negative impact on users (Ferguson, 2007; Haryadi, 2016), harmful effects of fast-paced games on cognitive control (Bailey, 2010), and the phenomenon of video game addiction (Gentile et al., 2011). However, there is also a positive impact of playing games, which can improve a child's cognitive and spatial abilities (De Lisi 2002; Green & Bavelier, 2007; Ferguson, 2007). Then Lynch (2016) says that learning through play can be a good habit for teachers and students in the classroom. Digital games have potential as a learning environment because they are a form of play that motivates learners through entertainment elements (Park, 2012). Digital games has various activity for learning by doing that include competitive, rules, challenge, goals, curiosity, feedback, interaction, interest, fantasy (Prensky, 2001; Kirriemur, 2003; Dickey, 2005; Baek, 2008), motivation (Squire, 2003; Gros, 2007; Asgari, 2008), flow (Chen, 2007), control, and narrative (Dempsey, 1996; Prensky, 2001; Garris, 2002; Kim, 2009). Henry (2013) wisely said that what parents and educators have to do is to respond to and use games to maximize positive impacts and minimize their negative impacts on children's progress.

To solve negative effects of the game, Pramuditya (2017) created a mathematics education game (in the application), which is a game in which there are educational and learning elements and inserted mathematical learning content in the form of questions and material. In

his research, (Feriatna, 2017; Pramuditya, 2017; Rusadi, 2017; Pramuditya, 2018) mathematics education games can also provide positive edutainment for students, namely playing and learning at once. Some educator validators such as teachers and lecturers have validated this educational game product (Feriatna, 2017; Pramuditya, 2017; Rusadi, 2017; Pramuditya, 2018), but there has been no validation from parents on educational games. Therefore, this study wants to find parents' perspective on educational games as instructional media.

Especially, this study aims to describe parents' perspective on educational games that contain mathematics learning content as instructional media. This research will focus on parents of educators and not educators. Educator parents are parents who work as educators in educational institutions, such as teachers, lecturers, and others whereas non-educator parents are parents, who work outside educational institutions. The parents will be asked for their opinions/perspective regarding the phenomenon of educational games as instructional media.

2. Method

The research method using qualitative paradigm with phenomenography design, where researchers want to see parents' perspective on the phenomenon of educational games as instructional media.
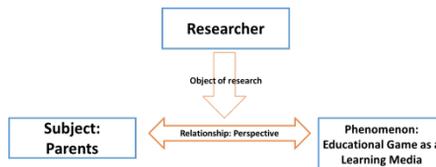

Figure 1. Research Design

According to Feldon and Grehl (2018), phenomenography is a paradigm that emphasizes personal conception as a construct needed to understand the relationship between physical events (phenomena) experienced by a person (research subject) and personal meanings derived from their experiences. In this sense, phenomena are situations or facts that one observes and is the object of perception. In other words, the phenomenon observed in this study is an educational game as an instructional media. The relationship between the phenomenon of educational games as instructional media that is seen by parents is the object observed in this study. According to Akerlind

(Bowden, 2005), the steps that must be taken in conducting phenomenography research are:

a) Select interview respondents
b) Design interview questions
c) Develop interview questions
d) Conduct interviews
e) Conduct analysis
    1) Search for keyword problems
    2) Determine the categories from the description
    3) Determine relationships between categories

The analysis used uses a phenomenography design, that is, the object of the study is to see the relationship (perspective) between the research subject (parents) and the phenomenon that occurs (the impact of the game). The results of interviews both offline and online is a description of parents' responses to commercial games and educational games made in transcripts of interviews. This transcript is then processed into open coding, axial coding and selective coding (Creswell, 2010).

Interview questions are based on the objectives and research questions. The focus of the question is the job of parents, the age of parents, the age of the oldest child, children playing commercial games, parents' concerns, the definition of games, learning content games, educational games as instructional media. Parent's job question want to find information on whether there are differences of perspective, between parents of educators and non-educators. Age of parents and the age of the oldest child provides information that the results of the answers will be better obtained from a longer experience. While other questions, refer to the purpose of the study. The design of the interview can be seen in table 1.

Table 1. Problem Questions

Number of Question	Problems
1	Opinions of children playing games
2	Concern for parents when children play games
3	Definition of games according to parents
4	The opinion of parents when the game contains learning content
5	The opinion of parents when the game

Number of Question	Problems
	becomes an instructional media

3.   Results

Online and offline interviews are held for two weeks. For offline interviews, two parents were selected who work as bank employees and private employees (non-educators) and two parents who work as lecturers (educators). While for online interviews, 50 volunteer respondents were obtained to fill in the open questions raised. Only one respondent was found who gave a confusion of answers, namely about age. The majority of other respondents answered according to questions and understanding questions, and the depth of answers was no different from offline interviews. For example, the question "How do you think about games?"; both respondents offline and online often answer "Yes, good" or "I do not agree." Of course, during an offline interview, the researcher can continue the next question, such as, "What is the definition of good for you?". So, the answers are even more open. However, what about respondents online? Researchers create a system where questions must be answered at least 20 words. So, online answers also avoid the answers "Yes, good" or "I do not agree". Krantz and Dalal (Birnbaum, 2000) say interviews conducted online are valid as long as the instruments made meet two criteria, namely the identity of the respondent and open questions. Information on the age of respondents is presented in table 2.

Table 2. Age Information of Online Respondents

Age of Respondents (years)	Total	Age of oldest child (year)
<20	2	0
20 – 30	14	0 – 7
31 – 40	32	0 – 17
>40	2	10 dan 13

Number of respondents who work as educators and non-educators is presented in table 3.

Table 3. Online Respondent Job

Job	Total
Educator	27
Non-Educator	23

The data obtained by offline and online interviews are then made into interview transcripts. All transcript data then processed assisted by QSDA software to search for keywords and categories (Bowden, 2005).

1) Keyword Problems

All interview transcript documents are entered into QSDA software, which is then made an interview node. The interview node will be divided into six interview question nodes. Then each node is searched for words that often appear. These words will be keywords. The keywords in each question are nouns, traits or work that often appear in the answers to research questions.

Table 4. Keyword Problems

Question	Keyword
1	**Appears 55-92 times:** game, child, play, application, video **Appears 10-35 times:** No, time, good, can **Appears 2-9 times:** may, problems, be restricted, agree, hours, provided, education, generation, lack, during, study, content, forget, make, negative, entertainment, health, dependence, lazy, technology, controlled, addicted, his age
2	**Appears 10-20 times:** Forgot, time, eyes, addiction, study, health. **Appears 2-8 times:** lazy, destructive, radiation, activity, focus, disturbing, motoric, social, neglect, brain, worship, violence, dependence, concentration, eating, weakening, seeing, decreasing, obesity, development, damage, prayer, socialization
3	**Appears 51 times:** game **Appears nine times:** application **Appears 2-7 times:** played, electronic, entertainment, online, media, entertaining, happy, traditional, level,

	refreshing, playing, interesting, fun, technology, audiovisual, real, aiming, addictive, computer, winning, curious, positive, negative.
4	**Appears 70 and 59 times:** learning, content **Appears 3-33 times:** Learning, good, education, very, not, agreeing, more, good, positive, long, alternative, bored, honed, negative, knowledge, happy, source, age
5	**Appears 50-89 times:** Children, learning, learning, education, media, use, facilities **Appears 4-28 times:** no, agree, can, good, very, must, more, bored, lessons, once, may, but, content, interesting, method, gadget, process, fun

For some words like the word "no," it can be an ambiguous word (meaning not singular). The word "no" refers to negative connotations, but during interviews, the word "no" can refer to a suggestion, if the word "no" is combined with other words into a phrase. For example in question 1, there is an answer "... no problem as long as the child can arrange ..." which means giving advice, not a negative connotation.

2) **Category**

According to Strauss (Creswell, 2005), to form categories, first form a combined keyword. The combined keyword is the stripping of all keywords into the main keyword.

Table 5. Main Keyword

Number of Question	Main Keyword
1 & 2	• Limited time • As an entertainment • As education • Addiction and dependence • Disrupting Health
3	• Games in the application • Traditional game • Media entertainment
4 & 5	• Children are not bored • Variation in learning • Content is age-appropriate • Media and learning facilities

Then all the combined keywords are grouped back into categories. The following is a summary of the process of phenomenography categories.
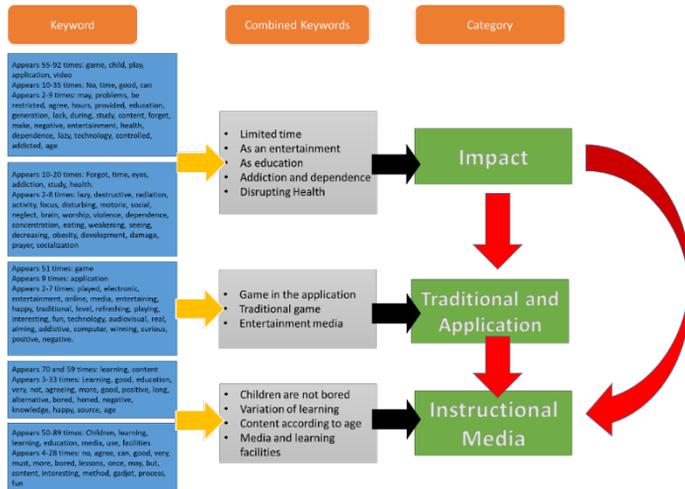

Figure 2. Category Process

The instructional media category is seen as good or not, viewed by impact category. When considering the time, content and age of the learner, most parents give appreciation and positivity. From the process chart, the researcher conducted an in-depth study by sorting respondents' answers to questions related to educational games into several perspectives; there are:
1. Perspective agree to educational games as instructional media
2. Perspective agrees to the educational game as an instructional media while paying attention to the concerns of games for children
3. Perspective does not agree with educational games as instructional media

The description is obtained through sorting respondents' answers using QSDA, and some results are presented in table 6.

Table 6. Sorting Description of Educational Games as Instructional Media

Perspective	Total Respondents	Description
Agree	35	**by DVI 40 years** "*Good, no problem at all. Something new so that the child is not bored. Children are accustomed to using gadget or laptop devices.*" **by YUI 31 years** "*Very good especially in the development of technology now. Learning must also be adapted to the progress of the times without changing the essence of learning.*"
Agree with suggestions	12	**by RUD 39 years** "*Agree, but the game as a learning medium is not enough, so the game must be integrated with the material.*" **by RIA 26 years** "*For games that contain learning content, it is good for sharpening the brain and children's thinking patterns, but still has to be part of it.*"
Disagree	3	**by PUT 39 years** "*In my opinion game as instructional media is not the right choice. I prefer to have active interactions between teachers and students in the form of discussions and choosing real media around us and real games so that children are easy to understand rather than online games.*" **by RUH 36 years** "*Disagree because children only focus on toys. Focus on the fun, not on the lesson.*" **by ARB 18 years, do not have children** "*Disagree, because learning in the*

Perspective	Total Respondents	Description
		educational game has an impact, too, as people begin to forget their responsibilities."

4. Discussion

In the era of digitalization, parents cannot avoid technology. Parents must have good digital literacy to balance the digital literacy of their children. According to Gilster (1997), digital literacy is the ability to understand and use information from various sources when presented through digital tools, as well as the ability to understand how information is generated and communicated in various forms through the creation of critical frameworks for retrieval, institutions, evaluations, presentations, and use information using digital technology tools.

Digital literacy also applies to the learning process. Learning is defined as a change that includes skills, skills, attitudes, habits, and understanding in an individual towards a better direction, as a result of his experience carried out through the process of interaction around individuals. The way a person experiences these changes is obtained through learning theories. In the 19th century, developing the theory of behaviorism, namely how to obtain knowledge with habits. The characters include Ivan Pavlov by observing and measuring the responses of subjects in experiments and learning with habituation and Thorndike (1874-1949) where behavior is a response to environmental stimulus. In the 20th century, learning was characterized by the existence of constructivism theory, namely students build their knowledge to obtain it. 21st-century learning emphasizes technology-assisted constructivism. Students build their own knowledge using technology media. The development of learning technology is also expressed by Dabbagh (2016), where Learning Technologies (LT) is defined as a collection of Web tools, software applications, and mobile technology (smartphones) that are dynamic and emerge by integrating technological features and capabilities and pedagogical sources of the Internet and related information, to facilitate the design, development, and management of learning. One of the innovations of this technology is game-based learning.
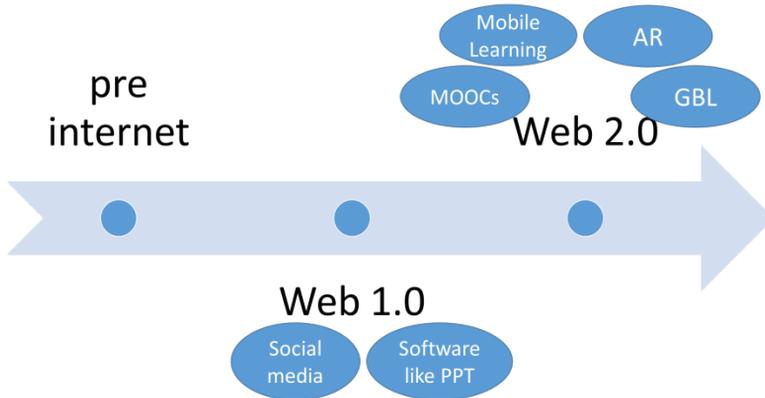
Figure 3. Development of Learning Technology

Game-based learning is one of the effective ways in the classroom by combining learning and fun content in play that is presented through computer applications for learning purposes, not just entertainment, which can increase students' motivation and learning desires (Prensky, 2003; Mayer, 2005; Pho, 2015; Dabbagh, 2016).

Prensky (2003), in his book, tells parents that games are not criminals. Today, children's games not only involve them but also teach them valuable lessons in the learning process they want to learn. Video and computer games are, in fact, an important way for our children to learn to prepare themselves for the life of the 21st century. The most important thing parents need to know about the games their children play is "*What attracts and "glues" kids to today's video and computer games are not violent, or even surface subject matters, i.e. the building, racing, or shooting. Instead, the true secret of why kids spend so much time on their games is that they're learning! And what they are learning is important to their future*". Prensky's statement indicates that games are indeed permissible, provided there is supervision and is known by parents what their children play.

Many parents agree that a game (in the application) is filled with learning content and becomes a learning medium for their children. As stated by VVV, a housewife who works as a staff in educational institutions that her children learn letters through games. Knowledge of letters is felt to be effective through educational media games. Same opinion with VVV, another respondent TNT is a private employee who also teaches private elementary school tutors, saying educational

games are a means of concretizing formal forms of mathematics. Children tend to be more happy with playing and teaching aids, educational games provide both. The respondent ANC, a lecturer, and graduate student, reinforced the two previous respondents' perspective. He said that the educational game is the latest learning application that can be used as a media in understanding abstract mathematical material. It's just that these three respondents agreed, that there was a need for attention to playing time. Playing time is related to health and conditions in the game itself.

5. Conclusion

The conclusion is a positive perspective of the educational game. Commercial games without learning content are things that are not approved for most parents. Others consider that the application game can be a mere entertainment media. The impact in the game, such as addiction, health problems, and socialization of children is the biggest concern for parents. Keeping in mind the age, playing time and give attention to children, most parents agree that educational games can be a media of learning for their children.

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