

Junior High School Students' Experiences of High Technology Based Learning in Indonesia

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Abstract. This study aims to understand the meaning of high technology utilization in learning for early adolescents. High-Technology Based Learning (HTBL) is a phenomenon in every country today. However, the side effects of the use of high technology in education are troubling, especially for early adolescent junior high school students, who are still labile. This article tries to explore the meaning of HTBL in junior high school in Yogyakarta. The researchers used a phenomenological approach in collecting the data in this study in line with the idea that the people who understand the meaning of an experience are themselves, the subject of the phenomenon. Participants were chosen using purposive sampling with the following criteria: junior high school students, 11-13 years old, living in Yogyakarta and experiencing HTBL at school. The results of the research show that for junior high school students: 1) HTBL is more fun and more accessible; 2) adult guidance is necessary as a means of raising self-awareness. We suggest collaboration between parents and teachers in the implementation of all HTBL processes at school and home since they play significant roles in the use of HTBL for students.

Keywords: high-tech; adolescents; phenomenology

1. Introduction

High-tech or high technology is the newest, most advanced technology that can be found today (Cortright & Mayer, 2001). In the era of industry 4.0 (Vuksanović, Vešić & Korčok, 2016; Erboz, 2017), society is very familiar with high-tech. The most advanced technology that can be found today is Information Technology (IT) that has affected many aspects of human life and it has succeeded in changing today's education paradigm (Vivekananthamoorthy, Shanmuganathan & Sharmila, 2009; Newell, 2014), so that it incorporates technology more fully. This

new paradigm needs a responsive mechanism that is different from those of the past (Tomozziab & Topalã, 2014) organizationally and individually, to achieve holistic, innovative, and sustainable solutions (Morrar, Rabeh & Arman, Husam, 2017). In the context of education, the organizations and individuals referred to in this paper are the schools, school's management, government, society, parents, and students.

In developing countries such as Indonesia, society has begun to utilize IT extensively in daily life. This is illustrated by the data which indicate that Indonesians use the internet for an average of almost eight hours a day (Kemp, 2020). Unfortunately, the development of the educational system in its new digital direction is still in its early stages, and use of digital IT has not yet penetrated every layer of education in every region evenly. There are some well-advanced regions such as Yogyakarta, Jakarta, and Bali. However, some regions do not yet utilize high-tech. These regions are categorized as 3T [*Terpinggir, Terdalam, Terluar*, or marginalized, deepest, outermost] regions. Hasthoro & Ambarwati (2016) stated that a marginalized region is defined based on the social condition, economy, culture, and the area, which are below other regions in terms of a variety of measures. These 3T regions include 26 provinces and 142 cities.

The distinct differences in the social conditions of different regions in Indonesia (Daerobi & Suyono, 2019) is a serious matter for the Indonesian government. Moreover, it relates to the uneven development of science and technology that has resulted in uneven development of human resources, which directly affects national development. Therefore, the Indonesian government is trying to structure, equalize, and improve the quality of education, including educational policy by implementing HTBL in the regions. Unfortunately, the transition of the educational model from manual to digital form in schools in particular regions in Indonesia raises some problems. Besides the lack of facilities, the attitude of students toward high-tech and digital communication devices or gadgets is still worrying. Most junior high school students in Indonesia are in their early adolescent period (Papini, Farmer, Clark, Micka & Barnett, 1990; Malin, Indrawati Liauw & Damon, 2017). People think that early adolescents still consider entertainment to be the primary function and purpose of high-tech and gadgets. This perception has raised fears among parents regarding the adverse effects of technology for their children (Hollingworth, Mansaray, Allen & Rose, 2011; Hind, 2017). Therefore, many parents in Indonesia are reluctant to support the utilization of high-tech at school and home.

Schools, as the catalyst for education (Hammer, 2016), need to find strategies that can synergize the potential of children, parents' support, and the school (Ainscow, Muijs, Daniel & West, 2006), especially in terms of the use of IT in learning. The trajectory towards its use is aimed at improving the quality of education in line with the demands of the time. It is necessary to understand that education is not a generic concept; it is part of the process of life, wherein there is a realization that it is essential to pay attention to values for the sake of the sustainability of individuals or communities through experiences (Dewey, 1963; Chambliss, 2003).

Therefore, adults should be willing to listen to adolescents concerning the use of high-tech in learning based on adolescents' experiences of HTBL implementation.

The utilization of high technology in learning is proven to improve the academic competences of students (Basri, Alandejani & Almadani, 2018); however, the impact of the implementation of HTBL for junior high school students in developing countries has not yet been clearly understood. This article aims to explore the meaning of HTBL experienced by early adolescents in a developing country to fill about a gap in our understanding of this issue. The researchers hope the results of this research can be used as a supplementary source of knowledge for parents and teachers. It is hoped that the research will help teachers and parents in deciding on how to use high-tech in the process of learning at school and home for junior high school students, especially for students in a developing country such as Indonesia.

2. Research Problem

The development of the educational system in a new digital direction in Indonesia is still in its early stages. In contrast, the digital roles of modern information technology have not yet penetrated every layer of education in every region evenly because there are differences in the development of each region. There are some well-advanced regions such as Yogyakarta, Jakarta, and Bali. However, some regions do not yet make much use of high-tech. These regions are categorized as 3T [*Terpinggir, Terdalam, Terluar*, or marginalized, deepest, outermost] regions. Thus, students across Indonesia have not had the same opportunities in terms of utilizing information technology in learning. Some of them are already familiar with HTBL while many of them have not encountered it at all. Of the various problems that exist, this research focused on exploring how junior high school students interpret their experiences of HTBL. We hypothesize that junior high school students in Indonesia have positive impressions of the use of HTBL in their learning processes. The purpose of this study is to explore the HTBL experiences of junior high school students in Indonesia. The research question is: How do junior high school students interpret their experiences of HTBL?

In this research, there is no intimate relationship between the researchers and the participants. There is only a professional relationship between the researchers and their sample participants. The role of the researchers is solely to collect data through individual in-depth interviews and analyze the data according to a pre-established framework. As lecturers and researchers in Indonesia, the researchers chose this topic because they felt responsible for participating in building a civilization through research relating to education. This empirical research is a part of comprehensive analysis that focuses on the psychological readiness of middle school students to use high technology in learning, with a particular focus on the use of gadgets compared to the use of PCs in developing countries. To measure the level of psychological readiness of students, data were needed relating to the meaning given to such technology in the minds of students. Therefore, the initial step undertaken by the researcher was to conduct qualitative empirical research in order to explore the data in depth.

3. Research Design

The research followed a qualitative research (Creswell, 2009; Creswell & Creswell, 2013), using a phenomenological perspective (Moustakas, 1994; Wolff, 2012). The phenomenological perspective always perceives the essence of the data's meaning to come from the first-person perspective, obtained from dialog. In this context, students are the people who experience the process of HTBL. Hence, they are the most knowledgeable people to inform on the meaning for them of experiencing IT-based learning and to identify the effects on their lives.

The researchers obtained information about children in junior high school from the management of Kampung [hamlet] Joho, Yogyakarta, Indonesia. Later, the obtained information was followed up by visiting the Joho mothers' community activity and asking the parents whose children were at their junior high school and had IT implemented in the classroom. In Joho hamlet, 11 children were attending junior high school and already using IT in their classes. After obtaining the names of the students, researchers visited the parents of the children to ask for permission to interview their children, handing out a letter stating that all the participants' private data would be kept confidential. Out of the 11 children whom researchers asked, only seven children were willing to be interviewed and given permission to be participants in the research.

The research was approved by the Universitas Negeri Yogyakarta and the school where the participants study. Additionally, we were granted permission by the participants' parents through written informed consent to secure the participants' confidential data. We also assured participants that their identities in the study would be altered to codes to protect their privacy.

4. Instrument and Procedures

The data source in this research was the experiences of junior high school students in Yogyakarta, whose school conducts HTBL, mainly in IT-based learning. The participants in this research were seven students, three boys, and four girls. To determine the number of data sources in this research, the researchers referred to Langdrige (2007), who stated that for qualitative research, 3-7 participants is sufficient because each participant will give plenty of data.

The researchers obtained the data for this research through in-depth individual interviews at each participant's home. Each participant was interviewed once for 45-60 minutes. Researchers summarized the results of each interview and rechecked the interview results with each participant before analyzing and publishing them to ensure the validity of the data. Besides that, the researchers also performed a second interview with some of the participants to crosscheck any unclear data. A phenomenological study, usually but not always, is a qualitative research project designed to better understand individual experiences of a phenomenon. Therefore, open questions are suitable to elicit more understanding of particular topics rather than trying to define or identify the cause of a phenomenon (Langdrige, 2007; Moustakas, 1994).

The interview guide comprises two main questions, given below:

- 1) Please tell us about your experience of HTBL, whether using PCs or gadgets. Could you tell us more about that?
- 2) Please tell us about your feelings when experiencing HTBL using PCs or gadgets or laptops. Could you tell us more about that?

The data analysis technique used in this research was modified phenomenological data analysis by Moustakas (Moustakas, 1994: 119-152; Zeeck, 2012: 39; Shosha, 2012: 34-41), which consists of six steps of data analysis, as follows: 1.) researcher conducts transcription; 2.) identifying all relevant data; 3.) reducing transcendental phenomenology; 4.) the invariant constituent which is the unique quality from the prominent experience of each participant is identified and all of them are arranged into themes that may point to general themes for every participant; 5.) validating the invariant constituent; 6.) arranging the individuals' structural description. Then the data are described using individual textural description (ITD) to develop a composite description of the essence of all of the participants' experiences.

5. Findings

From the result of the interviews with seven junior high school students in Yogyakarta, the researchers found some themes relevant to the meaning of IT implementation in the process of learning. The themes are: 1.) HTBL keeps me awake; 2.) using computers in learning has to be focused, using gadgets is much more fun; 3.) I know that I have to be self-controlled (in using gadgets), but still, it is hard to do. Below are the individual textural descriptions of early adolescents' experiences.

Theme 1: HTBL keeps me awake.

The participants stated that learning using gadgets is fun. One of the things which they identified as fun when using high-tech was that they felt that learning using high-tech was more interesting than just listening to a lecture. Besides that, they felt more comfortable about obtaining the learning materials that were being studied. The statements of P1 as follows:

"At my school, not all teachers can use high-tech. Some teachers just speak in all the classes. Well then, I get bored..., when students get sleepy, we are scolded, but they just keep talking by themselves in front of the class. That's the old ones, hehe, as old as my mom. However, the young teachers are fun when teaching..., moreover when we are permitted to use our gadgets... (A little pause) ... When using gadgets in learning, it's more fun. I don't get sleepy... Hehe... We can also do some other stuff with it. My friends are just the same. While studying, they watch pictures of some artists or peek at social media" (P1, Line 9-17).

The feeling of fun when using gadgets or high-tech in the learning setting was also felt by P2. The notion can be seen in the statement of P2 as follows:

"There is a prohibition of bringing gadgets at my school, except for particular days when it is a must to bring one, a gadget or laptop for learning. Outside those particular schedules, we are prohibited from bringing any gadgets. Sometimes when my parents couldn't pick me up,

well, we had to bring the gadget; therefore, we must entrust our gadget to be kept by the class's teacher. It is fun for learning using high-tech. We can find many things: is it something around me, in the other regions, or even something outside the country? Also, I can watch Instagram, just a brief surf, so I don't get caught by the teacher hehe (smiling)... The gist is, it is fun. Sometimes I also get serious when studying; there are many questions asked by the teacher, and every answer can be found with high-tech. I like to find it at brainly.com. Every lesson is there; it's totally different from the manual style of learning. Always having speech lectures, it's boring. Actually, sometimes I also take a chance to watch social media while in the class when we're using gadgets (blushing)" (P2, Line 12-19).

P5 also described their feelings which of fun when learning using high-tech. Moreover, exams using android have already been implemented at their school. For P5, learning using high-tech can increase the motivation to study, also the motivation to socialize on the internet.

"Well, we are happy to use high-tech and gadgets. Every matter learned is in high-tech. We also don't need to write manually, just search on the internet, copy, paste... done. When the exams are coming, it's simpler, right. The results of the exams can be seen immediately; there is no need to be wondering any more about the result. Nevertheless, not everything must be using high-tech, some still are done manually; for example, math. We still have to write and count manually. If we don't learn how to count, then how it would be?" (P5, Line 17-24).

In another statement, P5 also explained:

"In the process of learning, using high-tech, I became motivated to study. Everything got simple. Besides that, I can also make more friends on the internet. However, my social media accounts still can be seen by my parents, so I'm not freely playing on the internet. My parents know all the passwords of my accounts, even my android password too" (P5, Line 29-33).

P7 also made a similar statement to the other participants. P7 admitted that learning with gadgets gave them different impressions compared to the traditional learning process, which they usually experienced. Below is P7's statement that shows a change of perception about learning when experiencing learning with high-tech.

"I felt happy because the learning at school right now is more fun compared to when I was at elementary school. Now, I can often use the smartphone and the internet for learning. I don't need to keep listening to teachers' lectures, but I also can look for learning materials on the internet by myself. It is more fun and interesting" (P7, Line 24-29).

Theme 2: Using computers in learning has to be focused, using gadgets is much more fun.

The participants stated that learning using gadgets also involves many distractions in the process of education. They become distracted and play on social media while learning. It is different for students who are using PCs or laptops. They are more focused on the lesson rather than trying to steal some time to surf social media.

P1 explicitly explained the process of learning and their attitude towards the use of gadgets compared to laptops or PCs. P1 admitted that the use of gadgets distracts them from being focused on the study. It is too tempting to use gadgets for other things besides learning. Below is P1's statement which illustrates this:

"Sometimes, the teachers ask me to bring gadgets or laptops for learning at school. From what I experienced, using the gadget is much simpler and easier to carry, and it's also easier to be played with. Even though I didn't have any intention to play, sometimes my friends ask me to play with them, stealthily playing games together in the class" (P1, Line 25-29).

Despite studying at a different school to P1, P3 said something similar regarding the use of gadgets and laptops or PCs. Below is P3's statement regarding a comparison of using computers and gadgets in learning.

"Well, compared to using gadgets, I became more focused when learning using a laptop because we can't haphazardly open any application. The teacher also can watch what we do in the class. However, using the gadget is simpler; many apps can be used and downloaded" (P3, Line 16-18).

P4 also stated that students are more comfortable using gadgets than computers. However, in terms of the success of the learning, they admitted that using computers makes them more focused. They also like gadgets more than laptops because they are less complicated and more comfortable to carry. In contrast, a laptop is quite heavy. Below is one of P4's statements comparing laptops and devices:

"I like to use the gadget more; it's easier to use and to carry. If using a laptop, even if it also high-tech, sometimes the WIFI at school is turned off or not reaching our class, it's bothering. There is also a case, hmmm... If I want to open social media, I would likely be scolded by the teacher; they can properly see what we do. We can't also download new apps. So, when there is a time that we must bring a device, I prefer bringing my gadget. A laptop is heavy, but in terms of learning, it's better to use a laptop. There is a smaller chance of deviating by playing on social media because we are being watched. At home, too, I am restricted in terms of using gadgets, but it is okay to use the PC. My mom said that it is better for my eyes" (P4, Line 27-33).

Theme 3: I know that I have to be self-controlled, but still, it is hard to do.

Early adolescents are aware that they ought to be self-controlled so that they do not misuse gadgets. However, they still find this hard. The desire to exist and communicate with their friends through social media is a major factor that leads to the misuse of gadgets. Some students see gadgets as mere entertainment for playing on social media or games; hence they are unable to control themselves. The participants admitted that the temptation to use the technology in unhealthy ways does not have a positive effect on their self-development and is caused by an impulse to want to be the same as their friends. They do not want to be left behind by their friends. They were afraid of being regarded as an unsocial person. Therefore, even if the school prohibits students from bringing gadgets except occasionally, students still sneakily bring their gadgets for the sake of socializing with their friends.

P2 admitted that they had been addicted to their gadget since junior high school. P2 loved to surf the internet with gadgets, watching videos on YouTube and any other apps. Below is P2's statement:

"My mom has been prohibiting me from playing with HP (Handphone). I didn't get a chance to play it. However, since junior high school, the school often asks us to bring gadgets with us... Because of that, I got encouraged to explore the gadget more. I like to watch videos, social media, chatting with my friends, and many more" (P2, Line 25-28).

P5 also felt in a similar way to P2. They often could not be self-controlled when using high technology. They would rather play with the gadget than study with it. The following is one of the participant's statements regarding this issue:

"Well, for me, my mom and dad want me to study, my teachers also want me to study through this gadget, not playing. I am often told that I ought to manage my time. There is also an agreement between my parents concerning the time I can use the gadget and me, I learned to conduct self-control, but still, I can't. It's hard to do... I also need something to play, need entertainment, playing games with my friends, or just watching videos on the internet. I also need those so I can make friends" (P5, Line 78-82).

Another participant also spoke about the process of learning self-control and time management in using gadgets. P7 explained:

"I often get scolded when playing gadgets. I can't play too long, except for browsing learning materials. However, sometimes, I still tried to steal some occasions. My friends play it (gadget). I want to do the same" (P7, Line 32-34).

6. Discussion

The results show that students experience a positive impact from IT-based learning. However, early adolescents also realized that high technology has been affecting them negatively. Based on Moustakas (1994), the researchers conducted further data analysis of the data from the entire group of individual textual descriptions, which then developed into a composite description. The meaning and the invariant themes from every participant were intricately identified to obtain a focused image of the entire group's overall experience.

IT-based learning is more comfortable and more fun for early adolescents.

Minimizing drowsiness and being more comfortable finding study materials were the two most prominent factors that adolescents identified in the use of HTBL. This is in line with Vasallo and Warren (2018) who showed that the use of computers can be extremely helpful for students in developing their skills in particular academic subjects. The use of modern devices such as smartphones, tablets, or gadgets offers various advantages in learning (Disterer & Kleiner, 2014). Technology could be a factor in academic achievement and motivation to stay longer at school (Harris, Al-Bataineh & Al-Bateineh, 2016). The use of high-tech for junior high school students is more likely to be interpreted as a positive thing in the learning environment. For junior high school students who tend to have a high desire to play, HTBL becomes a medium through which to cope with their boredom (Raja & Nagasubramani, 2018).

The statements of the participants about their experiences of HTBL at school demonstrate that the participants considered the use of high-tech to be more comfortable and more fun. This indicates that early adolescents are in a transition period in which they want everything to be fun for them (Swartz & Wilde, 2012; Emmons, 2012). Parents and teachers need to respond to this situation wisely in the context of early adolescent students' education. Besides providing a safe high-tech environment (Hogan & Strasburger, 2018), teachers and parents need to improve their communication skills appropriately to understand what adolescents desire from their parents and teachers. In such a context, behavior related to high-tech utilization would become more directed and positive (Ardies, De Maeyer, Gijbels & van Keulen, 2014).

The enthusiastic responses of the participants regarding HTBL demonstrate that, fundamentally, technology was considered to be a medium that can relieve the psychological burden of students. This is because it minimizes the need for students to keep listening to teachers' lectures intensively. It also allows them to actively gather learning materials independently. This should be encouraged by teachers and parents because junior high school children fundamentally have the potential to become independent learners.

Adults' guidance is more important than their control over the usage of IT.

The revealed facts showed that the participants regarded gadgets and high-tech merely as entertainment. Hence, they admitted to trying to steal some time to open non-learning sites during learning sessions. This matter needs to be addressed by parents and teachers. Gadgets with internet access have the potential to be misused by adolescents. For example, adolescents could access content with violence and pornography. The misuse of gadgets can have a negative effect on children's and adolescents' psychological development (Flood, 2009). Therefore, the use of gadgets by early adolescents needs to be accompanied by guidance from parents.

Awareness raised among early adolescents on HTBL may result in self-directed behavioral control. This corresponds with the idea of Hommel and Wiers (2017), that the congruity between actions and understanding of humans in terms of ethical codes is an effect of their perception arising from the match between their intention and actions. For students who regard gadgets as mere entertainment, the school needs to come up with a solution by utilizing computers (PCs or laptops) rather than gadgets. Some studies support this finding, demonstrating that gadgets result in more unexpected distractions in the process of learning in comparison with computers (Langmia & Glass, 2014; Ugur & Koç, 2015). Therefore, schools need to develop educational strategies to increase students' awareness about the importance of HTBL and its advantages in the future.

The data gathered in the interviews reflect facts, knowledge, and the experiences of the participants regarding the phenomenon; these adolescents' perspectives may differ from adult thinking on the same issue. The data offer novel information regarding HTBL for early adolescents. It is hoped that the research will help schools and teachers to understand more about the most appropriate HTBL and/or IT-based learning methods for early adolescents (Li, Snow & White, 2015).

The findings from this research demonstrate that parents and teachers face a challenge in terms of providing guidance to junior high school students, who are also early adolescents, about the dangers of the misuse of gadgets and high-tech to prevent them from experiencing the negative effects of technology. Guidance can come in the form of advice and role models, and also when early adolescents internalize religious and moral values, and social values in their daily lives.

Teachers and parents should be adapting to changes in technology. Technological advances easily change the behaviors and perspectives of adolescents because children adapt quickly to technology (Gaidhani, Arora & Sharma, 2019). Teachers and parents tend to be slower in adapting to technological advances (McDaniel & Radesky, 2017). Therefore, it is not surprising if, between parents and children, there is always a generation gap that makes it difficult for them to connect. Based on this notion, teachers and parents who already have a particular lifestyle and have already adopted a mindset towards technology need to make a serious effort to escalate their adaptability to be able to accompany their children in the process of the technology revolution. Technology is like two sides of a coin. There are beneficial and adverse impacts on the growth of adolescents. Therefore, teachers and parents should be able to increase the positive impacts and reduce the negative impacts of technology by strengthening their own skills and competency in terms of technology (Mundy, Kupczynski & Kee, 2012).

7. Conclusion

High-tech contains various educational instruments needed to support students' educational processes (Gudanescu, 2010). However, it is necessary to adjust the use of a variety of technology according to the psychological development of students. Teachers and parents need to realize that, in the digital era, the utilization of high-tech is a certainty because it is a basic necessity to adapt to the changing times. Parents and teachers must give more space to adolescents. It is more important for teachers and parents to guide adolescents (Laitonjam & Singh, 2014) to enable them to manage themselves in a health way. This research shows that gadgets, as an example of high-tech, have more negative effects than various other high-tech devices. Therefore, schools need to elaborate on regulations that direct the use of technology besides gadgets, to prevent the learning tasks from becoming a cover for being dependent on gadgets. This approach also needs the support of parents in its execution, as parents must always be prepared for changes in the world of education. In this context, collaboration between parents and schools is essential, whether in terms of the planning or implementation of approaches. Collaboration is necessary because, in addition to an understanding of the negative and positive effects in the implementation of HTBL, gadgets are also continuously in use both at school and at home by adolescents.

8. Limitations of the Research

This study involved qualitative research that was intensely influenced by the participants' cultural environment. Thus, the results of the study cannot be generalized. However, the results can be used by researchers, parents, and teachers operating in similar contexts.

9. References

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