Environmental factors around Primary School students in pornography exposure among electronic Age

Factores del entorno de los alumnos de Educación Primaria que influyen en su exposición a la pornografía en la Era Digital

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Abstract:

In the current electronic age, the trend of pornography exposure to Primary School Students is massively happening. Pornography exposure becomes an important issue to study because it concerns the self-development of tens of millions of Primary School Students in Indonesia. This phenomenon cannot be separated from environmental factors. Environmental factors around Primary School Students in pornography exposure become a focus of this study. Specifically, about kinds of environmental factors, environmental role, dan the process of pornography exposure facilitated by the environment. This study was conducted qualitatively with the use of observation, in-depth interviews, and field notes to collect data. This study finds that there are three kinds of environments around primary school students now. All of these have an important role in causing pornography exposure. Interaction with two or three kinds of environments at the same time

Resumen:

En la actualidad, la exposición de los alumnos de Primaria a la pornografía es cada vez mayor. Esta exposición afecta al desarrollo personal de decenas de millones de estudiantes de Educación Primaria en Indonesia. Los factores del entorno de los alumnos en su exposición a la pornografía son el objeto de este estudio. Se analizan, así, los tipos de factores del entorno, el papel del medio ambiente, y el proceso de exposición a la pornografía facilitado por este entorno. Se ha utilizado la observación, entrevistas en profundidad y notas de campo para recopilar datos en este estudio de carácter cualitativo. Se constata que existen tres tipos de entornos relacionados con los alumnos de Primaria. Todos ellos desempeñan un papel importante en la exposición a la pornografía. La interacción con dos o tres de estos entornos al mismo tiempo, a través de un entorno virtual, facilita la exposición a la pornografía. Esta interacción necesita ser estudiada porque la relación

by involving a virtual environment ends in pornography exposure. Associated with it, this interaction needs to be attention because interaction with a virtual environment cannot happen without physical environment and or social environment interaction. In response to these findings, stakeholders should reduce pornography exposure to Primary School Students simultaneously maximizing their role in changing Primary School Student's behaviour.

Keywords:

Environmental factor; primary school students; pornography exposure; electronic age.

con el entorno virtual no se da sin la interacción con el entorno físico y/o social. Las instituciones escolares deberían reducir la exposición de los alumnos a la pornografía y, al tiempo, maximizar su papel para cambiar el comportamiento de los alumnos.

Palabras clave:

Factores del entorno; estudiantes de Primaria; exposición a la pornografía; era digital.

1. Introduction

Pornography exposure become an important problem in Primary Schools now. Pornography has massively exposed primary school students. As a negative thing, ideally, pornography can be kept away from primary school students. Short et al., (2012) reported that hundreds of children have exposed to pornography. A report from Wright & Donnerstein (2014) shows that hundreds of adolescents have been exposed to pornography in the past ten years old. A report from Price et al., (2016) shows that hundreds of children, boys or girls have exposed to pornography. A report from Murni et al., (2018) also shows that hundreds of primary school students have been exposed to pornography, with more of them exposed since in 1st grade. Then, a report from Hornor (2020) also showed that hundreds of children, boys or girls have been exposed to pornography. The information above has enough to become a base study for the study pornography exposure phenomenon in primary school students. Whereas, this pornography exposure phenomenon cannot be separated from the current condition the of environment.

Studies about environmental factors around primary school students that cause pornography exposure are not been holistically conducted by researchers yet, especially educational researchers. Now, the majority study about environmental factors are limited to two environmental factors that influence pornography exposure. The first is the physical environment factor. This study found that environmental factors that influence pornography exposure are ownership and intensity of use of electronic devices (Fineberg et al., 2018; Herbenick et al., 2020). This study is powered by the increasing of internet-based digital platforms for education (Diningrat et al., 2023; Maisyaroh et al., 2022; Tejedor Calvo et al., 2022). The second is the social environmental factor. This study found that the environmental factor that influences pornography exposure is a permissive environment to pornography exposure (Pons-Salvador et al., 2018; Stanley et al., 2016; Todaro et al., 2018). This can be described in peer facilitating followed by active searching (Sanjuan, 2020). There is the possibility that the existence of the internet facilitates the search for pornographic content (Villagómez León, 2021). Generally, the study above already shows that the environment becomes a reason for pornography exposure. These environmental factors are the physical environment and social environment. However, the studies above do not study virtual environment that could potentially cause exposure to pornography in primary school students. Given that they are currently active in the virtual environment with various purposes and ease of access.

This study aims to answer the research gap above by showing environmental factors that become the reason for pornography exposure happens to primary school students. This study is conducted by answering three research questions. First, how are

environmental factors in pornography exposure to primary school students? This question describes the environmental factors around primary school students when pornography exposure happens. Second, how do environmental factors cause pornography exposure in primary school students? This question describes the environmental factors around primary school students that cause pornography exposure. Third, how do environmental factors facilitate pornography exposure in primary school students? This question describes the process of pornography exposure happens by environmental factors around primary school students. All of the questions above are answered in this study comprehensively.

The first three arguments are the starting point in this study. These arguments are the important things to discuss for the truth. First, physical environment, social environment, and virtual environment are factors that cannot be separated from pornography exposure in primary school students. Second, the environment is a factor that influences something happens. Whereas, primary school students as the individuals who are in the imitating phase, their behaviour cannot separate from the condition of the environment around them. This makes pornography exposure which happens to them caused by environmental factors. Third, the environmental factor gives facilities to primary school students to expose pornography. This makes pornography exposure happen to primary school students. Thus, some the kinds of the environmental factors need to be studied for existence and role in pornography exposure to primary school students phenomenon.

1.1. Primary School Students Environments

The Environment cannot be separated from primary school student's life. The environment facilitates them to get more knowledge (Hashim et al., 2020). It is important for their self-development. Because in primary education grade is a good time to introduce more knowledge and skills (Papastergiou et al., 2020). Environmental factors both physical and social have a major influence on primary school student's self-development (Shi et al., 2019). The physical environment is all of the things that physically be around students and influence their behaviour (Baafi, 2020). The existence of electronic device is an example of a physical environment. It can increase primary school student's skills for understanding and responding to knowledge (Alzubi & Kaur, 2018; Salmerón et al., 2020; Yamaç et al., 2020). The social environment is the existence of the other person who influences student's behaviour (Baharuddin et al., 2007). Friends, parents, teachers, school principals, and other persons around primary school students have a role in developing behaviour (Kozak & Recchia, 2019; Wright & Domke, 2019). Besides both, primary school students also interact with the virtual environment. The existence of a virtual environment allows them to interact the others, things, and knowledge indirectly by IT device (Efiloğlu Kurt & Tingöy, 2017; Mudiono et al., 2023; Rahayu et al., 2022). Internet is an example of a virtual environment. Through the internet, information is easy to access without space and time limitations (Sulistiani et al., 2023). Thus, in the current electronic age, Primary School Students have interacted with three kinds of environmental factors that have an impact on their behaviour.

Primary school students' behaviour which appears as a result of interaction with the environment can be positive or negative. Positive behaviour for example is increasing understanding and skill in social literation (Pinto & Leite, 2020). It is the impact on primary school students' self-quality improvement in academic and social skills (Alsubaie, 2022; Delahunty, 2021; Karakaş & Kartal, 2020). Negative behaviour for example is behaviour to exposed pornography (Fineberg et al., 2018). This pornography exposure causes some negative impacts in the long period (Landripet et al., 2019). Behaviour is influenced by the environmental

interaction model which happens. The environment becomes a determinant factor in primary school student's behaviour change (Bond, 2020). So, environmental interaction needs to be managed properly to form positive behaviour.

1.2. Pornography Exposure

Pornography exposure is seen as a model of contamination of pornography content (Wolak et al., 2007). Whereas pornography content is a matter that violates norms and mores (Peter & Valkenburg, 2016). Instead of being something private, it becomes public consumption (Fallon et al., 2019). Although the consumption of pornography content is done quietly (Tzankova, 2018). Pornography is exposed to individuals via environmental factors. The physical environment is an intermediary in pornography exposure (Herbenick et al., 2020). Besides that, the social environment also be an intermediary in pornography exposure. So, the existence of environmental factors that everyday make interact with primary school students cannot simply ignore related to pornography exposure.

Today, pornography exposure happens easily. Other than the existence of the physical environment and the social environment, it cannot be separated from the ease of getting pornography content. Pornography content is easy to get related to the existence of pornography content on the internet is easy to access by primary school students (Potoglou et al., 2017). This pornography exposure happens to male students (Laconi et al., 2016) and women students (Bőthe et al., 2021). On the internet, pornography content is accessed from more features like chat rooms, webcams, and games online (Efrati & Amichai-Hamburger, 2020). Now, all of them are accessed easily via primary school students' gadgets (Mardianto et al., 2019). Pornography exposure be a risk for children and adolescents in internet access activity, including for primary school students. Ease in internet access also facilitates pornography exposure.

1.3. Electronic Age

The current electronic age makes primary school students use their time to play with their electronic devices. It is in line with the definition of the electronic age as a period when electronic devices began to be used intensively in daily life (Agim & Nwaohiri, 2021). In this era, pornography exposure via internet is increasing. A report from Roche et al. (2023) shows that an increase in pornography exposure via internet happen because of electronic device used to access internet. A report from Cervigón-Carrasco et al. (2023) shows that intensive use of electronic devices also increases pornography exposure. Whereas, increasing pornography exposure also caused exposure freely (Zohor Ali et al., 2021). Some information above shows a fact that pornography exposure in the electronic age is a warning in primary school student's self-development.

Previous study has shown the role of the electronic age in increasing pornography exposure to primary school student. However, all of the information above has not been able to show environmental factors that exist around primary school students when pornography exposure happens. Besides it, also does not explain the forms of pornography exposure to primary school students which happen with the environmental factor background yet. Then, it does not describe the environmental interaction model that happens in pornography exposure yet. Because in the electronic age appear internet access behaviour in primary school students. Whereas, the internet is physically intangible and does not live like a social environment. So, an in-depth study is conducted to describe all of the environmental processes in the phenomenon of pornography exposure in primary school students.

2. Methodology

In the electronic age, pornography exposure massively happens to some aspects of public life. Primary School Institution as user of technology devices does not escape from this pornography exposure. Primary school students in this institution environment are also exposed to some pornography matters intentionally or unintentionally. This case indicated that environmental factor has an important role in pornography exposure to primary school students. Environmental factor has facilitated pornography exposure in primary school students. Environmental factors around primary school students need to get attention significantly. An in-depth study needs to be conducted to study about important role of the environment in pornography exposure. Therefore, this study is conducted with a focus on environmental factors that cause pornography exposure in primary school students.

This study is conducted qualitatively with the use of observation, in-depth interviews, and field notes to collect data. Observation is used to observe the existence of environmental factors around primary school students when pornography / exposure happens. Primary school student's activity in using technology devices was also observed. The in-depth interview is conducted to identify the role of the environment in pornography exposure, identify environmental factors that cause pornography exposure, and identify the process of pornography exposure which is facilitated by the existence of environmental factors. All of these, are related to the electronic age.

Information in this study is obtained from some informants who purposively asked for data related to the focus of this study. Data collection was conducted for six months with involved dozens of 4th to 6th grade primary school students aged 10 to 12 years old as informants. All of the informants are male with a middle social class background from some areas in Kawentar City (Initial Name). They are chosen based on their statement in the preliminary study that they had been exposed to pornography in some methods (find, look, search, share, urge to search, and teach to search), duration, and exposed time (afternoon, evening, and night). They also said that exposed to pornography outside of the school environment and studying time. They are credible informants because they had known and experienced in the condition of being exposed to pornography. The researcher observed, interviewed, and wrote all deep information from them according to the research focus consistently. This research is focused on environmental factors that cause pornography exposure in primary school students.

Questions that appear in this study is about the domain of forms of environmental factor, environmental background in pornography exposure, and the process of pornography exposure. Questions about forms of environmental factors accommodate indicators of the form of environmental factors that exist around primary school students. It includes of physical environment, social environment, and virtual environment. Questions about the environmental background in pornography exposure accommodate indicators of the form of exposure and background of exposure. Questions about the process of pornography exposure happen to accommodate indicators of the role of environment, inter-environmental factors interaction, and the process of pornography exposure facilitated by the environment.

Table 1. Data Coverage

Domain	Data coverage
Form	physical environment, social environment, virtual environment
Background	form of exposure background of exposure
Process	role of environment, inter-environmental factors interaction pornography exposure happen

Source: prepared by authors

Data analysis is conducted in three phases, there is *data condensations*, *data display*, dan *drawing and verifying conclusions* (Miles et al., 2014). In this phase, data is analyzed thematically. The analysis results are theme and subtheme that describe the form of environmental factors, pornography exposure background, and process of pornography exposure to primary school students in the electronic age context. Data is filled in a data analysis application to describe a mapping about the research focus. NVivo 12 Plus is used in this analysis (Dalkin et al., 2021). Associated with an effort to decrease data bias, data triangulation is conducted (Hemphill & Richards, 2018; Morrison et al., 2020). These are collecting information from dozens of informants and repeatedly until data saturation.

3. Results

3.1. Environment Around Primary School Students in Pornography Exposure

The current environment around primary school students has headed to openness and ease of information. Appear a trend for intensive use of technology devices. Technology utilization is carried out in various aspects of life. This trend also happens in primary school institutions. Technology utilization in primary school is conducted with access to various information. Then, to hold online classrooms which massively exist after the Covid-19 pandemic. However, behind the of ease accessing various information, there is information about pornography which ready to be exposed. Finally, pornography exposure happened.

Primary school students as a member of Primary School are also exposed to pornography. They are exposed to the environment which supports for happen openness and easy access to information. The interesting thing is the environment around primary school students which facilitates pornography exposure is classified into three kinds. The physical environment is the existence and ownership of handphone. The social environment is friends who teach them to watch pornography content and lack of supervision from parents. The virtual environment is the existence and ease of access to the internet. These are shown in table 2 below.

Table 2. Kinds of environmental factors which cause pornography exposure

Physical Environment	Social Environment	Virtual Environment
"Yes, I have my handphone." Primary School Student answered. *"(Handphone) is my own."* Primary School Student answered. *Researcher asked, "What factor facilitates you to find pornography?"* Primary school students answered, *"Ease access to the internet and have my handphone."* *Researcher asked, "After you have a handphone, Do you often find pornography content?"* Primary school student answered, *"Yes, I am."* *Researcher asked, "When internet access, what device that you use?"* Primary school students answered. *"I use my handphone for access to the internet*	*"It is taught by my brother."* Primary School Student said. *"First, I was invited for visit to my friend's house. Then we played games online together. Finally, if it's finished, I am invited to watch pornography content."* Primary School Student said. *"Long ago, I was in 3rd grade, I was taught by seniors. And then I was imitated. It's good, I think."* Primary School Student said. *Researcher asked, "Are your parent supervising or assisting you in accessing the internet?"* Primary school students answered, *"Sometimes but rarely."*	*"Usually, it appears. It's often. If I was searching for a live video, I found it."* Primary School Student said. *Researcher asked, "Did you ever access the internet, suddenly appears pornography content?"* Primary school students answered, *"Yes, once."* *"I wasn't accessing it. Just scrolling, suddenly it appears. Suddenly appears a link, then I choose it. I don't know if it's a link to pornography content."* Primary School Student said. *"When I was watching (internet), I was scrolling it's there."* Primary School Student said. *"At this time, I was looking for learning matters in g**gle. I found it."* Primary School Student said.

Source: prepared by authors

These three kinds of environmental factors are shown from the information of forms of the environment that make primary school students exposed to pornography. Points of forms of environmental factors that appear describe that three important kinds of environments need to be attention for their existence. The existence of these three kinds of environmental factors facilitates pornography exposure in primary school students.

3.2. Environment as Background of Pornography Exposure

The environment in the electronic age has caused disruption and trends in various aspects of life. In this context is makes trends in primary school students to be exposed to pornography. Pornography exposure to primary school students is facilitated by the environment. These environmental factors are separated into three kinds. These are physical, social dan virtual. All of these are causes of pornography exposure in primary school students.

Pornography exposure to environmental factors background happens in various kinds of exposure forms. The interesting thing is that all the kinds of exposure forms are started from a finding. This finding of pornography content is caused by an influence on the environment around primary school students. It is seen in Table 3 below.

Table 3. The background of pornography exposure forms

Find pornography content	Find and watch pornography content	Find, watch, and share pornography content
"I wasn't accessing it. Just scrolling, suddenly it appears. Suddenly appears a link, then I choose it. I don't know if it's a link to pornography content." Primary School Student said. *"When I was watching (internet), I was scrolling it's there." Primary School Student said.* *"At this time, I was looking for learning matters in g**gle. I found it." Primary School Student said.*	*Researcher asked, "Did you ever access the internet, suddenly appears pornography content?" Primary School Student answered, "Yes, once."* *Researcher asked, "When you watch, do you watch until the end? Primary School Students answered, "Just a half."* *Researcher asked, "Do you ever access pornography content intentionally?" Primary School Students answered, "I ever watch pornography video."*	*"Yes, I am. I do myself not intentionally. I access the internet for learning matters, this video appears suddenly. Appeared alone. In g**gle c****e I found pornography video. I thought it was a funny video. I watched until the end. I had watched repeatedly. I also share pornography links to my friends. Seen, watched and almost did it with my girl's friends." Primary School Student said.*

Source: prepared by authors

Environment as a background in pornography exposure is shown from information about causes of forms of pornography exposure to primary school students. Points of background in pornography exposure show that environment has a significant influence on the pornography exposure phenomenon. Environmental factors need attention because their existence can exacerbate the form of exposure that happens.

3.3. Inter-Environmental Factors Interaction in Pornography Exposure

Pornography exposure has massively happened to primary school students. Pornography exposure which happens cannot be separated from environmental factors. Environmental around primary school students have taken them to pornography content. It is shown that pornography exposure happens caused of the environmental factors which facilitate.

The role of the environment in facilitating pornography exposure cannot be separated from inter-environmental factor interaction. The end of this Inter environmental factor interaction is pornography exposure in various forms. This process happens in the interaction of a minimum of two kinds of environmental factors with the individual of primary school student. It makes primary school students exposed to pornography. The interesting thing is pornography exposure always happens after interaction with the virtual environment. Relate to it, happen two models of environmental interactions until pornography exposure. These are physic => virtual => pornography and social => physic => virtual => pornography. These are shown in table 4 below.

Table 4. Inter environmental factors interaction in pornography exposure

Physic => Virtual => Pornography	Social => Physic => Virtual => Pornography
Researcher asked, "When you access the internet, are you find pictures, animations, or videos of porn?" Primary School Student answered, "Yes, I am."	*"One of my classmates sent it to the WhatsApp group class, it's a picture and a link. Then I tried to click it and I watched it." Primary School Student said.*
"I had that one time spent many hours. Watched alone continuously with my father's handphone or my friend's handphone or my handphone. I access porn links that I get." Primary School Student said.	*Researcher asked, "Are your friends inviting you to access pornography content?" Primary School Students answered, "A and N. Long ago, N shared links in the group."*
Researcher asked, "When internet access, what device that you use?" Primary School Students answered, "I use a handphone to access the internet."	*Researcher asked, "Does your friend share pornography content to you?" Primary School Students answered, "Once, it's a link (for pornography content)"*
	"First, I was invited for visit to my friend's house. Then we played games online together. Finally, if it's finished, I am invited to watch pornography content." Primary School Student said.
	*"At this time, they are five, with their handphone, F tried to search in y****be. Suddenly, they found porn animation. And then, they forced me to watch it." Primary School Student said.*

Source: prepared by authors

Inter-environmental factors interaction in pornography exposure is shown from information about the process of pornography exposure to pornography exposure. Points of inter-environmental factors interaction appear to show that the virtual environment is a determinant in pornography exposure. When primary school students interact with the virtual environment, pornography exposure happens. This pornography exposure happens in various forms. Because of this, the existence of interaction with the virtual environment needs to be attentive because it is a stimulus in the pornography exposure process.

Inter-environmental factor interaction cannot be separated from primary school student characteristics. They learn from the imitated environment around them. In this context is behaviour to be exposed to pornography. Pornography exposure does not happen to primary school students directly. Pornography exposure happens when primary school students interact with some environmental factors and the last environment is the virtual environment. This environment is only accessible by primary school students after interacting with the physical environment, i.e., handphone. The information above also shows the increase in handphone use in primary school student along with the ownership of handphone. Especially in the current electronic age, the need for technology devices is increasing. It is done to sufficient information need. Whereas in the virtual environment, there is more information of various kinds including pornography. So, this shows that pornography exposure in primary school students in the electronic age is increasing because of the increase in access to the virtual environment via an electronic device that they have.

4. Discussion

Today, primary school students are faced with an era in which technology is used massively. The need for technology devices is increasing. Technology devices also is a need for primary school students. They need it to stay connected to the internet. At the same time, pornography exposure also increases significantly (Guggisberg, 2020). It is related to the increasing internet access activity (Li & Qin, 2018). Whereas the ownership of technology devices is increasing in the primary school student community. The environment around primary school students also influences pornography exposure. There are three kinds of environmental factors. These are the physical environment, social environment, and virtual environment. The current virtual environment is massively accessed by primary school students. The virtual environment gets higher intensity than the others. Primary school students are more prefer to spend their time surfing in internet world (Martínez-Domínguez & Fierros-González, 2022). Related to it, the model of inter-environmental factors interaction which involves a virtual environment produces pornography exposure. It shows that the existence of a virtual environment is a determinant in the pornography exposure phenomenon.

The virtual environment around primary school students needs to be attended. The interaction of primary school students in the virtual environment is an important factor that causes pornography exposure. It is strengthening for some reports and arguments before. Habesha et al., (2015) argue that children who have easy access to the internet get a high risk of easier to exposed pornography. Wright et al. (2019) report that people who are exposed to pornography, watch pornography for the first time online, then their source is the internet. And then Bőthe et al. (2020) argue that this ease of access to the internet will continue to have pornography access. Pornography exposure to children is spread widely (Okutan & Çebi, 2019). So, the virtual environment which is described as the internet is an important finding in massively pornography exposure to primary school students.

This study has found an important puzzle in pornography exposure to primary school students. It has been found that the virtual environment is the last phase in assisting primary school students with pornography exposure. The model of environmental interaction around primary school students happens naturally in the physical dan social environments (Cai, 2021). If this environmental interaction continues to virtual environment interaction, then there is a high possibility for a primary school student to be exposed to pornography. It can be described as two inter-environmental factors interaction models. It is physical environment => virtual environment => pornography and social environment => physical environment => virtual environment => pornography. Whereas in the electronic age virtual environment i.e., the internet is used for various learning needs for primary school students (Arvanitaki & Zaranis, 2020; Kim, 2020; López-Faican & Jaen, 2020; Ross, 2020). Appear means that the virtual environment as a part of an environmental factor not only gives many benefits in the learning activity but also be a stimulus for exposure to pornography.

The finding in this study shows a strengthened for many research before. As found that the existence of the device and intensity of use of the electronic device is a factor that causes pornography exposure (Fineberg et al., 2018; Herbenick et al., 2020). The other factors that cause pornography exposure permissive environment include lack of supervision from parents (Pons-Salvador et al., 2018; Stanley et al., 2016; Todaro et al., 2018) and friends who facilitate to access pornography content (Henry & Talbot, 2019; Rokhmah & Khoiron, 2015). Then important factor in pornography exposure is the internet where there is pornography content with easy to access. Internet pornography is accessible via own electronic device freely (Lestari et al., 2014; Zohor Ali et al., 2021). This finding also strengthens the influence of environmental factors on primary school students. The behaviour of

primary school students is a result of interaction with the environment around them (Bandura, 1977b). It is shown from various forms of pornography exposure which appears. But this finding shows a virtual environment. This environment exists in primary school student's lives but it is not social and physical. This finding is contrary to Baharuddin et al., (2007) who argue that the environment around primary school student influences their behaviours separate into physical and social environments. Besides this, this study also finds an inter-environmental factors interaction model that causes pornography exposure. These models are separated into two models and every model is ended by virtual environmental interaction. So, a new finding is that individual interaction with virtual interaction via various inter-environmental factors interaction models causes pornography exposure.

The virtual environment has appeared as a determinant factor for pornography exposure. Relate to it, this study also shows that interaction with a virtual environment happens if there are interactions with the physical and or social environment. It is shown that the environment significantly influences primary school behaviour. Then, without decreasing attention to the physical and social environment, the existence of virtual environment needs to be attended more intensively. Because primary school students interact with the virtual environment more intensively now (Dennen et al., 2020; Eutsler et al., 2020; Kolnhofer-Derecskei et al., 2017). Pornography exposure needs to be paid attention and countered from the early stage via environmental factors. The influence of environment on an individual's behaviour appears in children as a result of interplay interaction between environment and cognition (Bandura, 1977b). This cognition can be described as perception (Bandura, 1977a). The physical and social environments around primary school student needs to be involved in developing a negative perception of pornography. Negative perception about pornography makes primary school students stay away from pornography exposure. Because of this, higher attention to the virtual environment related to pornography exposure need to be realized while still paying attention to environmental factors and countermeasure involving physical and social environmental factors around primary school students.

5. Conclusions

This study finds that the environment around primary school students in the electronic age is separated into three kinds. These are the physical environment, social environment, and virtual environment. This study also finds that primary school students' interaction with one kind of environment causes pornography exposure is don't right. Pornography exposure happens when there is interaction with minimum of two environmental factors. This study finds two models of environmental factor interaction that causes pornography exposure, these are physic => virtual => pornography and social => physic => virtual => pornography. The model which involves a virtual environment always ends with pornography exposure. Whereas interaction with a virtual environment happens after interaction with a physical and or social environment. Therefore, pornography exposure to primary school students in the electronic age only happens via interaction with many environmental factors which ends with interaction with the virtual environment.

This study gives an understanding of the environment around primary school students in the electronic age. Now, there are three environments which give a strong influence on pornography exposure possibility. These are physical, social, and virtual environments. Their interaction with these kinds of environments in some models simultaneously ends in pornography exposure. Especially after interaction with the virtual environment. This finding shows that interaction with various environments in the context of primary school students has the potential to cause pornography exposure. However, the existence of the environment

that influences students' behavior has a potential effort to be used as media for counter pornography exposure. Which interaction with the environment allows it to be directed at forming an understanding of elementary school students about the dangers of pornography and as a protective barrier. As is the possibility of increasing digital literacy skills through the collaborative interaction of three environmental factors, especially the virtual environment. Considering that the virtual environment is very familiar in the Electronic Age.

This study is limited to the informant and topic. Informants who are involved in this study is limited to students from public primary school institution. Then, the age ratio is also limited to the primary students who are 10-12 years old with the same genders, they are male and middle-class family background. This study is also limited to environmental factors that cause pornography exposure. Whereas environmental factors continue to develop. In line with this, solutions for massive pornography exposure to younger age people need to develop further. Because it is associated with human development sustainability. Based on the limitation above, future studies on this topic should involve informants from religion-based primary school institutions with various ages, grades, genders, exposure times, and social class backgrounds. Further study also should be developed to study specific environmental factors in the distribution of pornography and environmental potentiality as a protective barrier for pornography exposure. So, the sustainability of pornography study can be obtained as an inseparable part of contemporary developments which have an impact on human development sustainability.

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7. Specific contributions of each author

	Name and Surname
Conception and design of the work	Achmad Ryan Fauzi
Methodology	Ibrahim Bafadal, Ali Imron, and Syamsul Hadi
Data collection and analysis	Achmad Ryan Fauzi
Discussion and conclusions	Achmad Ryan Fauzi, Ibrahim Bafadal, Ali Imron, and Syamsul Hadi
Drafting, formatting, version review and approval	Achmad Ryan Fauzi, Ibrahim Bafadal, Ali Imron, and Syamsul Hadi

8. Conflict of interest

The authors declare that there is no conflict of interest contained in this article.

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