Conference Paper

Relationship Between the Information Technology Used and the Cognitive Development of School-Age Children

Dedi Supriadi[1], Yuyun Rahayu[1], Tukimin Sansuwito[2], and Nisa Fauziyah[1]

[1]Lecturer Of The Undergraduate Nursing Study Program, Nursing Faculty, College of Health Sciences Muhammadiyah Ciamis
[2]Lecturer Departement Of Nursing, Lincoln University College Malaysia

ORCID:
Dedi Supriadi: https://orcid.org/0000-0001-5380-3980

Abstract

The drive to increase information technology development and make everything digital has significant implications for education, especially education of school age children (6 to 12 years old). The purpose of this study was to determine the relationship between the use of information technology and cognitive development of school age children. This study has used the quantitative correlation method with cross sectional approach. The sampling technique used was a non-probability sampling method, namely quota sampling. The sample in this study was 100 grade students of SDN 7 Ciamis recorded in 2018, divided into 3 classes. The used of information technology in the very high category was 32 people (64.0%), the used of information technology in the high category was 18 people (36.0%). The cognitive development in the very good category was 11 people (22.0%), the good catsegory was 28 people (56.0%), the moderate category was 10 people (20.0%) and the less category was 1 person (2.0%). There is a significant relationship between the used of information technology and the cognitive development of grade V school age children.

Keywords: information technology, cognitive development, school-age children.

Corresponding Author:
Dedi Supriadi
hdedisupriadi2015@gmail.com

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1. Introduction

Many experts consider school age children (6-12 years) as a period of calm or latent period, where what has happened is nurtured in the previous period and will continue for the next period. This age stage is also known as the gang age, in which children begin to shift their attention and intimate family relationships to cooperation between friends and attitudes toward work or study. By entering elementary school, one of the important things that children need to have is school maturity, not only covering intelligence and motor skills, language, but also other things. Like being able to accept the authority of other figures outside their parents, awareness of duties, obeying rules

and can control their emotions. At this time of school children, children compare themselves to their peers where they are easily overwhelmed by fears of failure and peer ridicule.[1{Gunarsa, 2008 #125;Gunarsa, 2008 #125}]

Regarding the development of children, the development of information technology is also not inferior, the development of information technology is now increasingly rapid, making everything completely digital, so that, directly or indirectly, the development of information technology can affect lifestyle. In daily activities, whether at home, at school or at work, it is ensured that all activities cannot be separated from the use of electronic items. The use of these electronics can simplify work and get outside information and get entertainment. Seeing this shows the vital role of digital in everyday life.[2] The progress that has been obtained by developed nations (western nations) in the fields of science, science and technology in this modern age is actually a continuation of the scientific tradition that has been developed by Muslim scientists in the middle ages. This verse can also relate to the use of advanced technology that currently exists, such as: Computers/Laptops, Mobile Phones, and the Internet. The phenomenon of school-age children using information technology is increasing, not only in big cities, even in areas many children have been indoctrinated by digital technology, many preschoolers already know what cell phones are, online games, even broadcasts. television (TV) is much less educational for children. The results of statistical research show that “as many as 17% of children under 8 years of age in the United States use computers, tablets, and smartphones every day, this figure is one third of the number of children who spend their daily activities reading books by their parents”.[3]

In today’s digital era, children’s development is also influenced by technology and communication.[4] The impact of technology has two sides, there are positive impacts and negative impacts. The positive impact for children is to provide many opportunities for children in various forms of online activities such as entertainment, learning, participation, creativity, identity expression, communication, and the positive impact of using technology on children, namely increasing knowledge, expanding friendship networks, and facilitating communication on children.[5] The negative impact of technology is that individuals become lazy to socialize physically, increasing fraud and cyber crime, cyber bullying, rapidly growing negative content, slander and also widespread defamation, keeping close ones away, neglecting duties and work, wasting time for things that are not useful, decreased learning achievement and also one’s work ability.[6]

Efforts to solve problems, namely teachers in schools must regulate the information technology used to make children smart and at home parents must be more selective in supervising children in the use of information technology. Parents are expected to

be able to choose the right and ideal parenting style for their children, which aims to optimize the child's development. And most importantly parenting is applied to instill religious values in children, so as to prevent and avoid all forms and deviant behavior in children in the future. [7]

The results of a preliminary study conducted by the author at SDN 7 Ciamis by conducting interviews with one of the teachers related to the use of information technology in schools, in schools there are computers, laptops and projectors that are used during the teaching and learning process. The use of mobile information technology for students is not allowed to bring it to school, but teachers who teach often use mobile information technology, therefore sometimes teachers often order children to occasionally open their cellphones for searching during the learning process. When doing an interview with a grade 5 student when doing homework (homework) he occasionally uses information technology to facilitate his work.

Based on this background, the authors are interested in conducting research with the title "The Relation Of The Use Of Information Technology With The Cognitive Development Of School Age Children".

2. Research Methods

This study has used the quantitative correlation method with cross sectional approach. The population in this study were 100 grade students at SDN 7 Ciamis. The sample in this study were students of grade 5 SDN 7 Ciamis recorded in 2018 as many as 100 people who were divided into 3 classes. The sampling technique used is a non-probability sampling method with quota sampling.

Sources of data used in this study are secondary data, namely existing data directly from the value of cognitive development report cards. Data collection was carried out through research instruments, by distributing questionnaires to respondents.

Univariate analysis is an analysis carried out on each variable and the results of research which only produce the frequency distribution and percentage of each variable.[8] Namely the use of technology, cognitive development (report card scores) and age. Descriptive analysis is displayed in the form of a cross tabulation frequency distribution to identify the characteristics of respondents by calculating the analysis according to.[9] Bivariate analysis was conducted to determine the relationship between the independent variable (the relationship between the use of information technology) and the dependent variable (children's cognitive development). In this study, Kendall's

tau-b test was used to determine the degree of closeness or strength of the relationship between these variables.

3. Results

Table 1: Frequency Distribution of Respondent Characteristics Based on Gender

No	Gender	n	%
1	Male	23	46.0%
2	Female	27	54.0%
	Amount	**50**	**100.0%**

The results from table 1 can be seen that of the 50 respondents, the frequency of characteristics based on gender, the majority were female as many as 27 people (54.0%).

Table 2: Frequency Distribution of Respondent Characteristics Based on Grade

No	Grade	n	%
1	V A	25	50.0%
2	V C	25	50.0%
	Amount	**50**	**100.0%**

The results from table 2 can be seen that of the 50 respondents, the frequency of characteristics based on class, VA class is 25 people (50.0%) and VC class is 25 people (50.0%).

Table 3: Frequency Distribution of Information Technology Usage in Grade VA and VC students

No	Use of Information Technology	n	%
1	Very High	32	64.0%
2	High	18	36.0%
3	Enough	-	-
4	Low	-	-
5	Very Low	-	-
	Amount	**50**	**100.0%**

It is known in table 3 that of the 50 respondents the most frequent use of information technology was in the very high category as many as 32 people (64.0%), in the high category there were 18 people (36.0%).

It is known from table 4 that there are 50 respondents for the most cognitive development, namely in the good category as many as 28 people (56.0%). For cognitive

Table 4: Frequency Distribution of Cognitive Development of Students in Grade VA and VC

No	Cognitive Development	F	Percentage
1	Very Good	11	22.0%
2	Good	28	56.0%
3	Enough	10	20.0%
4	Less	1	2.0%
Amount		**50**	**100.0%**

development in the very good category as many as 11 people (22.0%). And for cognitive development in the less category, as many as 1 person (2.0%).

Table 5: Respondents' Frequency Distribution by Age

No	Age	n	%
1	10	6	12.0%
2	11	44	88.0%
	Amount	**50**	**100.0%**

The results of table 5 can be seen that 50 respondents of frequency characteristics based on the age of students in grade VA and VC, the majority are at the age of 11 years as many as 44 people (88.0%).

Table 6: Distribution of the Relationship of the Use of Technology with the Cognitive Development of School-Age Children in SDN 7 Ciamis

		Use of information technology	Cognitive development
Use of information technology	Correlation coefficient	1.000	.651
	sig (2-tailed)		.000
	Total	**50**	**50**
Cognitive development	Correlation coefficient	.651	1.000
	sig (2-tailed)	.000	
	Total	**50**	**50**

The results of the analysis of the relationship of the use of information technology with the cognitive development of school age children at SDN 7 Ciamis, obtained 50 respondents. The results of statistical tests show that the correlation coefficient between the variable use of information technology and cognitive development is 0.651, thus there is a strong relationship between the use of information technology and cognitive development.

4. Discussion

The results of the research in table 3 show that of the 50 respondents the most frequent use of information technology was in the very high category as many as 32 respondents (64.0%). There were 18 respondents in high category (36.0%), there was no category for moderate, low and very low. Age 10-11 years, for the use of information technology in accordance with the stage of development, namely being able to have an agreement that must be understood and lived together and monitor its implementation. As well as utilizing video programs that show various positive experiences that stimulate imagination.[10]

In line with the research of Saputra et al (2017) about the influence of information technology on intelligence (intellectual, spiritual, emotional and social) case study: children, out of 60 respondents, the use of information technology has a good influence on intelligence, intellect, children, spiritual, emotional and social.[11] The use of information technology in school age children can have a good effect on cognitive development, if it is used wisely and is used for the learning process even though the time is limited to only 2 hours for school age children.

Based on the results of the research table 4, it is known that the cognitive development of school age children is mostly in the Good category as many as 28 respondents 56.0%. According to (Yuniarti 2015) cognitive or intellectual development is the development of the mind, which is the part of the brain that is used to know, recognize, understand, and reason about objects.[12] So in this case related to the ability to think, solve problems, make decisions. The results of this study are not in line with Rozali's (2017) as many as 215 respondents showed learning achievement (cognitive development) in the moderate category as many as 153 students (71%).[13] It can be seen that cognitive development is a process of maturing a person's thinking, or the brain that is used to know, recognize, understand, and reason about an object, At the age of 10-11 years of cognitive development there is a period of concrete operational stages where the child begins to think critically, can see the point of view of others and the child begins to be able to solve problems.

From the results of data analysis, it was obtained that Kendall's tau-b correlation coefficient was 0.651 with a significant value at the significance level of 0.000 <0.01 means that Ho is rejected and Ha is accepted, which means that there is a positive and significant relationship between the use of information technology with the cognitive development of school age children. This is in line with research conducted by Devi (2013) which explains that there is a strong relationship between these variables and

the relationship is also very significant.[14] Thus it can be concluded that there is a significant negative relationship between the intensity of using online games with children's learning achievement and there is also a positive and significant relationship between parental supervision of children and children's learning achievement.

According to Syafa'atun Nahriyah (2017) parental supervision in the digital era is very important, parents must increase knowledge about the use of information technology and direct the use of information technology clearly and use information technology wisely.[2] Factors that influence children's development according to Supartini (2014) are hereditary factors (inherited) and environmental factors.[15] Parents supervise the use of information technology at home, if at school the use of information technology is supervised by the teacher. The use of information technology must be accompanied, even though the use of information technology is limited, if it can be directed, the better cognitive development for school-age children. The use of information technology is limited by 2 hours for school age children.

5. Conclusion

Most of the use of information technology for grade V school age children at SDN 7 Ciamis is in the very high category.

Cognitive development in V grade school age children at SDN 7 Ciamis mostly in the good category.

There is a strong and significant relationship between the use of information technology and the cognitive development of grade V school age children at SDN 7 Ciamis.

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