The Effect of Digital Literacy on the Risks of Children Dropping Out of School During the Covid-19 Pandemic

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Abstract:
The Covid-19 pandemic has negative implications for all aspects of life, including aspects of education. It is feared that the transition to a distance learning system (PJJ) that adopts digital technology will reduce students' learning abilities (learning loss) and potentially increase the risk of dropping out of school. This study aims to study the effect of digital literacy on the risk of dropping out of school for children aged 7-18 years during the Covid-19 pandemic. This study used a quantitative approach that using secondary data of Susenas 2021, Podes 2021, and IP-TIK 2021 publications with 250,921 samples of unit analysis being individuals aged 7-18 years with school status in the academic year (2019/2020) at the elementary to high school levels. Data analysis was performed using descriptive methods and multilevel binary logistic regression. The results of the analysis show that digital literacy as a proxy for digital access (use of mobile phones, computers/laptops, and internet access) has a negative significant effect on the risk of dropping out children of school. Childrens that have higher the digital literacy will have the lower the risk of dropping out children of school. The significant control variables were sex, school level, employment status of the head of household, length of schooling of the head of household, household expenditure quintile, and classification of residence. While the contextual (regional) variable that has a significant effect on the risk of dropping out of school is the information and communication technology development index (IP-TIK).

INTRODUCTION

The outbreak of the Covid-19 pandemic that originated in mainland China, Wuhan, has not only had an impact on the health and economic aspects of society but has also overhauled the existing education system. Various social restriction policies for the community were taken as a preventive measure for the spread of Covid-19, one of which was by closing educational facilities, starting from preschool to tertiary level. Learning that was previously carried out conventionally through face-to-face must be changed to a distance learning system (PJJ) or online learning using digital device and internet acces. In Indonesia, the PJJ policy is implemented according to the letter of the Minister of Education and Culture Number 4 of 2020. PJJ is considered an appropriate alternative method to ensure the continuity of learning safely amid the covid-19 pandemic (Herliandry et al., 2020). However, it is undeniable that in its implementation, PJJ is considered not effective compared to face-to-face learning directly. Even the World Bank in Yarrow et al., (2020) estimates that the effectiveness of the PJJ method is only 33

percent compared to face-to-face learning. This is because not all students have the same opportunity to use digital devices due to limited digital devices, lack of internet connectivity for online learning, and lack of digital literacy (Yarrowriaz, Noah Bhardwaj, 2020). UNICEF in its report stated that PJJ in Indonesia made almost 50 percent of parents feel worried due to limited access to the internet and inadequate digital devices and the lack of time and capacity of parents to accompany their children during PJJ.

A number of households stated that they had temporarily stopped their children's education and 20 percent of households were forced to stop their children's schooling (Unicef, 2021). Though, according to Jehangir & Ahmed, (2021) the transition to online learning systems by adopting digital devices that can be so fast and sudden during the Covid-19 pandemic can result in decreased student participation in school which is feared to reduce children's learning abilities (learning loss) and increase the risk of dropping out of school. Globally, the shock caused by the Covid-19 pandemic resulted in around 11 million more children dropping out of school from primary to secondary education (Azevedo et al., 2021) and according to data from Kemendikbud, (2020a) shows that since the pandemic occurred, the dropout rate in the 2019/2020 school year has tended to increase, namely 157,166 people with the largest percentage at the elementary school level. It is feared that there is a potential increase in the dropout rate which will lead to other more complex social problems such as the risk of early marriage, increased child labor the decline in the quality of human development, and the impact on the national economy in the long run (Hanushek & Woessmann, 2020).

On the other hand, the COVID-19 pandemic has also accelerated the digital transformation of education. The existence of technological disruptions that are growing rapidly, changing the way to acquire knowledge and convey knowledge in the learning process. In ancient times, students got limited knowledge from the material presented by the teacher in class. However, nowadays students can get knowledge from anywhere, for example from the internet. Especially during the Covid-19 pandemic which resulted in limited space for teacher and student activities. The existence of technology helps the learning process to still run even in the pandemic era (Wahyuni et al., 2021).This condition seems to force digitally transformed teachers and students to conduct learning from home using digital devices. Technology integration and a variety of innovations are hallmarks of online learning (Banggur et al., 2018). Online learning can encourage students to establish learning independence and also help improve interaction between students.

Meanwhile, the benefit of online learning methods for lecturers is that it will indirectly impact the professionalism of the work by changing the conventional teaching style to be more modern. also, lecturers can assess and evaluate each student's learning improvement more efficiently with the online learning model (Amin et al., 2021) . Based on a BPS survey in July 2020, 73 out of every 100 educational institutions have changed the way they operate and adapted to the pandemic. The teaching and learning process that switches to online does not only occur in Indonesia. In the Policy Brief: Education during Covid-19 and Beyond published by the United Nations, the phenomenon of learning from home occurs in

more than 190 countries in the world and its impact is felt by 1.6 billion students, 94 percent of the world's student population. (United Nations, 2020).

The sudden learning transition that adopts digital devices with the PJJ method results in students and teachers having to adapt to existing limitations. In PJJ, the ability to use digital devices (digital access) is certainly important because it can be a means of connecting between teachers and students. However, the existence of digital devices needs to be supported by good digital literacy in order to provide maximum benefits. Therefore, digital literacy is a major factor in the effectiveness of PJJ implementation. According to Ozdamar-keskin et al., (2015), states that the most basic understanding of digital literacy regarding how to use technology systems needs to be trained and improved for teachers and students so that digital learning can be more effective.

If students and teachers already have a good understanding of digital literacy, then concerns about learning loss problems and increasing dropout rates during a pandemic can be minimized. Digital literacy is also related to the ability to browse and search for information online, such as managing and evaluating information (Law et al., 2018). This opinion is in accordance with Guitert & Romeu (2009) which states that digital literacy includes the ability to find information from the internet, process and produce digital information, convey information, communicate skills in an online environment, design and manage virtual projects. With regards to the ability to access and read digital books, digital literacy allows a person to access books and other reading resources via the internet to read and download digital books on various devices such as laptops, smartphones and tablets (Railean, 2015).

This research looks at and explains what factors influence the risk of children dropping out of school during the Covid-19 pandemic. Several previous studies have been carried out to look at the determinants of dropping out of school both in Indonesia and other countries. However, most of these studies only looked at the socio-economic and demographic characteristics of households in influencing the risk of dropping out of school, especially under normal (pre-pandemic) conditions. Research that looks at the characteristics of children, especially related to children's digital literacy skills on the risk of dropping out of school, is still very limited. This is possible because the use of digital devices as learning media is still minimal, especially before the Covid-19 pandemic (Okumu et al., 2008). However, the Covid-19 pandemic has resulted in a higher risk of children dropping out of school due to the learning transition that requires children to use digital devices.

Meanwhile, the reality is that not all children have the same opportunity to access digital devices due to many factors. The ability to access digital can support the development of digital literacy skills which are considered an important key in making learning during the Covid-19 pandemic effective. Therefore, this study wants to see how much influence digital literacy has on the risk of dropping out of school for children during the Covid-19 pandemic, where digital literacy in this study is proxied by basic digital access skills in using digital devices such as mobile phones or computers/laptops and the ability to access the internet. In addition, this study also wanted to see whether there were differences in the factors that influenced dropping out of students at each school level from elementary school to high school

METHODS

This study used a quantitative approach. Creswell (2010) explained that the quantitative approach is a measurement of data carried out in quantitative and objective statistics through scientific calculations derived from a sample of people or residents who are asked to answer questions about the survey to determine the frequency and percentage of their responses. The data used in this study is secondary data derived from National Socio-Economic Survey (Susenas 2021), Village Potential Data Collection (Podes 2021), and publication of Communication Information Technology Development Index (IP-TIK 2021) from the Central Bureau of Statistics (BPS). The use of Susenas data that collecting in March 2021 as individual data is very relevant to the purpose of this study because it can capture information related to children's educational attainment or school status before and at the start of the Covid-19 pandemic.

Susenas March 2021 consist of 34,500 of census block of 34 province which the sample of Susenas 2021 for district estimates is 345,000 households. IP-TIK 2021 publication data is used as contextual data at level of province because it provides data related to ICT growth and development between regions (provinces). The IP-TIK conceptual framework is based on a three-stage model, namely ITU 2009, namely: ICT readiness (ICT readiness) which reflects the level of infrastructure related to networks and access to ICT, ICT intensity (ICT intensity) which reflects the level of ICT use in society and ICT impact (ICT impact) which reflects the efficiency and effectiveness of using ICT. Furthermore, data from PODES 2021 data collection in the form of the existence of a BTS (Base Transceiver Station) tower is also used as contextual data at level of district because it represents ICT infrastructure or physical facilities in an area (district).

Technical analysis using descriptive analysis and inferential analysis with multilevel binary logistic regression. The observation unit in this study is limited to households with school-age children (7-18 years) while the research analysis unit is all school-aged individuals (7¬-18 years) who were still in school in the academic year before the Covid-19 pandemic, (2019/2020) at the elementary to high school levels with a total of 250,921 unit analysis. The dependent variable in this study is the school status of children who are differentiated into dropping out and not dropping out of school.

The definition of dropping out of school refers to the BPS concept, namely children who in the school year before the covid-19 pandemic (2019/2020) were still in school at the elementary to high school levels but in the current school year (2020/2021) the status is no longer continuing school and have not graduated from high school. Control variables consist of individual characteristics, namely school level and gender, household characteristics consist of the employment status of the head of the household, length of schooling of the household head, household expenditure quintile, number of household members, classification of residence, and area location. Meanwhile, contextual (regional) variables consist of the ICT development index (IP-TIK) at province level and the ratio of BTS towers at the district/city level.

RESULTS & DISCUSSION

As previously explained, the unit of analysis in this study is children aged 7-18 years who are still in school in the 2019/2020 academic year at the elementary to the high school level. Overall, the number of samples included in the analysis unit category was 250,921. Of these, it can be identified that the proportion of children who have dropped out of school is 2,916 or 1.16 percent, while children who have not dropped out of school are 248,005 or 98.84 percent as presented in the following table 1:

Table1. Distribution of sample units of analysis

School Status	Total	Percentage
(1)	(2)	(3)
No Dropout	248.005	98,84%
Dropout	2.916	1,16%
Summary	250.921	100,00

When viewed according to individual & household characteristics, in table 2. it can be seen that in general the distribution of the research sample is dominated by children who can have 1 digital access (57.18 percent), are male (51.15 percent), and have junior high school education/ equivalent (53.8 percent). When viewed according to household characteristics, the sample distribution is dominated by households with heads of household working in the informal sector (56.83 percent), households with quintile 2 (45.68 percent), with more than 4 household members (55 .96 percent), live in rural areas (59.86 percent) and are located in the western part of Indonesia (56.34 percent). When viewed from the numerical characteristics of households, the sample distribution has an average length of schooling for heads of households of 8.65 years. Meanwhile, if viewed from the characteristics of the region, the average ICT development index is 5.667 and the average ratio of BTS owned in districts/cities is 1.25.

Table 2. Distribution of Units of Analysis According to Individual Characteristics, Households, and Regions

Variable	Category	Sum	%	Min	Max	Mean	Standar Deviasi
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Children characteristics							
Digital acces	No acces	83.655	33,34	1	3	1,761	0,609
	1 acces	143.472	57,18				
	2 acces	23.794	9,48				
Sex	male	128.348	51,15	0	1	1,488	0,499
	female	122.573	48,85				
School level	elementary	134.999	53,8	1	3	1,678	0,806

	junior highschool	61.686	24,58				
	senior highschool	54.236	21,61				
Household characteristics							
Working status head of household	No Work	13.700	5,46	1	3	2,322	0,572
	Informal	142.602	56,83				
	Formal	94.619	37,31				
Expenditure quintile	quintile 1	73.937	29,47	1	3	1,954	0,736
	quintile 2	114.620	45,68				
	quintile 3	62.364	24,85				
Number of family	<=4 person	110.504	44,04	0	1	1,559	0,496
	>4 person	140.417	55,96				
Residence classification	urban	100.723	40,14	0	1	1,598	0,49
	rural	150.198	59,86				
Location province	KTI (Kawasan Timur Indonesia)	109.542	43,66	0	1	0,563	0,496
	KBI (Kawasan Barat Indonesia)	141.379	56,34				
Years schooling head of household		0	23	8,65	4,048		
Region characteristics							
IP-TIK		3,35	7,66	5,667	0,64		
BTS ratio		0,008	13,559	1,25	1,288		

Source : SUSENAS 2021 (processed)

Description of the Characteristics of Digital Access Ability

If examined further, based on their ability to access digital devices, in figure 1 show that girls appear to be more adept at accessing digital devices, this can be seen from categories 1 & 2 of digital access which have a greater percentage of females than males. Meanwhile, if viewed according to the level of education, the higher the education, the better the child's ability to access digitally. This can be seen from the higher proportion for categories 1 & 2 of digital access at the high school level compared to the elementary level. Based on the household expenditure quintile, it appears that the higher the expenditure quintile, it will be directly proportional to the ability to access better digital. This can be seen from the higher proportion for category 1 & 2 digital access in quintiles 1 & 2. This indicates that

the higher the economic status of the household, the more able it is to provide digital devices to its children compared to poorer households. Meanwhile, when viewed based on the location of residence, the lowest category (no access) shows a higher percentage in rural areas, while for other categories it is higher in urban areas. This shows that urban children have better digital access skills than children in rural areas. This is because urban communities have better computer access and telephone services and a faster internet network than rural communities (Subiakto, 2013).
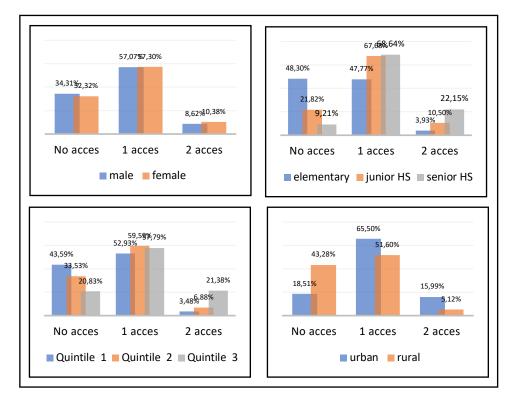

Figure 1. Digital access capabilities according to individual & household characteristics

The Effect of Digital Access on Dropout

In a multilevel approach, the first step is to test the null model that contains only random intercepts without including independent and control variables which will produce an intraclass correlation coefficient (ICC) value which is the proportion of the total residual variance due to variations between groups at level 2 (district/city). ICC shows how much the area factor influences the expected response behavior in the model. The ICC measure is also used to determine whether the multilevel model is better than the single-level model in modeling dropout data. ICC above 0.05 or 5% indicates that the variation between groups is greater than the expected probability so grouping by area effects on individual responses, which means that multilevel modeling is necessary(Sorra & Dyer, 2010). When the ICC value = 0 or close to zero or can be ignored, the model construction can be considered using single-level analysis (Sommet & Morselli, 2017)

Based on data processing of the estimated variance from the null model, the ICC value for dropping out of school for children aged 7-18 years is 0.1231, which means that the total variation for dropping out of school for children aged 7-18 years in Indonesia is 12.31 percent, influenced by differences in characteristics between districts/city. The remaining 87.69 percent of the total variation in dropping out of school for children aged 7-18 years is influenced by differences in individual factors (individual & household characteristics) in districts/cities in Indonesia. Although individual factors play a larger role in influencing the risk of dropping out of school for children aged 7-18 years, the ICC values indicate that regional characteristics have a significant role in influencing dropout for children aged 7-18 years.

Table 3. Results of the Likelihood Ratio Test (LR-Test)

Model tested (y=vs. Single-level Logistics Model)	Deviance	Significance of Testing
Model 1 (Null Model)	993.38	0.00
Model 2 (Model with Main Independent Variables)	1086,72	0.00
Model 3 (Model with Individual Factors)	818.72	0.00
Model 4 (Full Model - Random Intercept)	714,42	0.00
Model 5 (Full Model - Random Slope)	735.86	0.00

After considering the ICC, model testing was also carried out by testing the significance of the random effect using the likelihood ratio test (LR Test) presented in table 3. The LR test used the difference in deviation of the two nested models which were assumed to follow the chi-square distribution with degrees of freedom for the difference in the number of parameters of the two model equations. The results of the LR test can help determine whether a model is more suitable and better than other models (Hox et al., 2010). The results of the LR test show that the p-value for all models compared to the single-level logistic model is below 5%, so it can be concluded that the multilevel logistic model is better than the single-level logistic model. These results also show that there is indeed significant variation between districts/cities in the incidence of dropping out of school for children aged 7-18 years. In addition to 4 models show the smallest deviance value so the final model formed to estimate the risk of dropping out of school for children aged 7-18 years is using a random intercept multilevel binary logistic regression model, with the following equation:

$$\eta_{ij} = log\left[\frac{\pi_{IJ}}{1-\pi_{IJ}}\right] = -4{,}627 + 0{,}202 digital\_access_{1ij} +$$
$$0{,}146 digital\_access_{2ij} + 1{,}868 school\_level_{1ij} + 1{,}799 school\_level_{2ij} -$$
$$0{,}208 female_{ij} - 0{,}036 educyr_{ij} - 0{,}022 work\_status_{1ij} -$$
$$0{,}204 work\_status_{2ij} - 0{,}098 quintil_{1ij} - 0{,}164 quintil_{2ij} -$$
$$0{,}035 familysize_{ij} + 0{,}244 rural_{ij} - 0{,}103 KBI_{ij} - 0{,}179 ip\_tik_{ij} +$$
$$0{,}039 rasio\_bts_{ij}$$

Furthermore, Table 4 presents the estimation results of the multilevel binary logistic regression model analysis that has been carried out. The estimation results show that there is an effect of digital access on the risk of dropping out of school

for children aged 7-18 years, indicated by the statistically significant estimated odds ratio (OR) (p<0.01; <0.05 and p<0.1) in multilevel logistics model. The final model shows that the risk of dropping out of school for children aged 7-18 years tends to increase as a child's digital access decreases. Children aged 7-18 years who only have 1 digital access have a 1.16 times higher risk of dropping out of school than children who have 2 digital acces. Meanwhile, children aged 7-18 years who have absolutely no digital access have a 1.22 times higher risk of dropping out of school than children who have 2 digital acces.

This finding is consistent with studies in several countries which report that the success of online learning is highly dependent on accessibility to digital devices such as laptops and tablets accompanied by internet services. Additionally, accessibility is the most important element in the digital transformation of education during a pandemic. The existence of digital access allows students to easily access information or learning resources. When viewed according to individual characteristics, girls have a tendency of 0.812 times lower to drop out of school than boys. According to the school level, junior high school students had 6.478 times higher tendency to drop out of school than elementary school children, while high school students had 6.042 times higher tendency to drop out of school than elementary school children. When viewed according to household characteristics, children with a head of households who work in the informal sector have 0.978 times lower tendency to drop out of school than children with head of households who do not work.

Meanwhile, children with household heads who work in the formal sector have a tendency of 0.816 times lower to drop out of school than children with household heads who do not work. By expenditure quintile, children living in quintile 2 households have a 0.907 times lower tendency to drop out of school than children living in quintile 1 household. Meanwhile, children living in quintile 3 households have 0.848 times lower tendency to drop out of school than children living in quintile 1. According to the classification of residence & province area, children living in rural areas have 1.277 times higher tendency to drop out of school than children living in urban areas and children living in western Indonesia have 0.902 times lower tendency to drop out of school than children who live in eastern Indonesia. Furthermore, the length of schooling of the household head also has a significant effect on the risk of dropping out of school for children.

Table 4. Estimation of OR Model of Multilevel Binary Logistic Regression Dropouts for Children Aged 7-18 Years

Variable	Full Model level 1			Full Model level 2		
	Koe	Std. Error	Odds Ratio	Koef	Std. Error	Odds Ratio
(1)	(5)	(7)	(5)	(8)	(10)	(8)
Intercept	-5,561	0,141	0.004***	-4,627	0,356	0,009***
Children characteristics						
Digital Acces						
No acces	0,226	0,085	1,253***	0,202	0,085	1,224**

1 acces	0,147	0,069	1,158**	0,146	0,069	1,157**
2 acces*						
Sex						
Male*						
Female	-0,208	0,038	0,812***	-0,208	0,038	0,812***
School Level						
Elementary						
Junior HS	1,874	0,055	6,511***	1,868	0,055	6,478***
Senior HS	1,805	0,059	6,081***	1,799	0,059	6,042***
Household characteristics						
Working Status head of household						
No work						
Informal	-0,019	0,083	0,981	-0,022	0,083	0,978
Formal	-0,203	0,087	0,816**	-0,164	0,087	0,816**
Expenditure Quintile						
Quintile 1*						
Quintile 2	-0,097	0,046	0,908**	-0,098	0,046	0,907**
Quintile 3	-0,158	0,060	0,853***	-0,164	0,060	0,848**
Number of family						
<=4 person*						
>4 person	0,036	0,040	1,037	0,035	0,040	1,036
Residence Classification						
Urban*						
Rural	0,241	0,051	1,272***	0,244	0,052	1,277***
Location of Province						
KTI*						
KBI	-0,182	0,074	0,834**	-0,103	0,080	0,902
Years school head of houshold	-0,037	0,005	0,964***	-0,036	0,005	0,964***
Region characteristics						
IP-TIK				-0,179	0,062	0,836***
BTS ratio				0,039	0,034	1,04
ICC			11,595		11,193	
Observation			250.921		250.921	

Significance ***p<0.01;**p<0.05;*p<0.1
Source : SUSENAS 2021 (processed)

Furthermore, when viewed according to regional characteristics (contextual factors), it shows that the ICT development index has a significant effect on dropping out of school for children, where for every increase of IP-TIK by 1 unit, the risk/tendency of dropping out of school for children in that area decreases by

0.836 times. The ratio of BTS, the estimation results have no significant effect because it is possible that the existence of BTS towers is not directly related to student achievement/output in learning.

The Effect of Digital Access on Dropout by School Level

Subsequent analysis was carried out to see whether there were differences in the factors that influenced dropping out of school between levels of a child's school. The estimation results in table 5 show that digital access only has a significant effect on the risk of dropping out of school at the junior high school and high school levels. The effect of the digital access variable shows the same direction at the junior high school and high school levels, where the less digital access the greater the coefficient, which means the greater the influence on dropping out of school.

However, it is different at the elementary level which shows that there is no significant effect of digital access on dropping out of school. In line with these findings, data from Kemendikbud (2020b) shows that during the pandemic most elementary students were still studying by working on the questions (worksheets) distributed by the teacher, while high school level students used more learning resources with digital access. In addition, in general students at the elementary level do not have good digital literacy skills so they are not able to use digital devices optimally for learning. Unlike the case with students at the secondary school level, the majority of whom already have relatively better digital skills, so they can access digital devices more proficiently & independently. Furthermore, contextual factors (IP-TIK) have a significant effect on dropping out of school at all levels of school. This shows that learning outcomes during a pandemic are highly dependent on ICT infrastructure that can support access to digital devices during learning. This is because the use of ICT is currently one of the factors that accelerates the transformation of knowledge, therefore its use is very much needed in the learning system (Setiawati & Rahmadani, 2019).

Another finding is that there are differences in the factors that influence the risk of dropping out of school at each school level. At the elementary level, variables that have a significant effect on dropping out of school are gender, household expenditure quintile, classification of residence, length of schooling for a head of household and IP-TIK. At the junior high school level, more variables have a significant effect on the risk of dropping out of school including digital access, gender, work status of the head of household, household expenditure quintile, classification of residence, length of schooling of the head of household and IP-TIK. Meanwhile, at the senior high school level, the variables that have a significant effect on the risk of dropping out of school are digital access, provincial area and IP-TIK.

Table 5. Estimated Results of Dropout Odds Ratio by Education Level

Variabel	Elementary			Junior HS			Senior HS		
	Koef	Std. Error	Odds Ratio	Koef	Std. Error	Odds Ratio	Koef	Std. Error	Odds Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Intercept	-1,364	0,659	0,256**	-3,109	0,45	0,045***	-5,832	0,619	0,003***
Chidren Characteristics									

Digital Acces									
No acces	0,268	0,426	1,308	0,578	0,151	1,783***	0,297	0,143	1,345**
1 acces	0,382	0,421	1,467	0,529	0,136	1,697***	0,100	0,088	1,105
2 acces*									
Sex									
Male*									
Female	-0,448	0,094	0,639***	-0,249	0,056	0,779***	-0,044	0,064	0,957
Household Characteristics									
Working Status head of household									
No work*									
Informal	0,064	0,241	1,067	-0,194	0,117	0,824*	0,171	0,136	1,19
Formal	-0,319	0,254	0,727	-0,302	0,123	0,739**	-0,005	0,141	1,00
Expenditure quintile									
Quintile 1*									
Quintile 2	-0,189	0,107	0,828*	-0,128	0,066	0,879*	0,057	0,082	1,059
Quintile 3	-0,386	0,150	0,679**	-0,128	0,087	0,879	0,004	0,102	0,996
Number of Family									
<=4 person*									
>4 person	-0,031	0,096	0,969	0,064	0,059	1,067	-0,023	0,068	0,977
Residence Classification									
Urban*									
Rural	0,386	0,139	1,471***	0,302	0,076	1,353***	0,109	0,083	1,115
Location of Province									
KTI*									
KBI	-0,182	0,139	0,833	-0,023	0,097	0,977	-0,219	0,124	0,803*
years schooling head of household	-0,050	0,012	0,951***	-0,063	0,008	0,939***	0,004	0,009	1,004
Region Characteristics									
ID-ICT	-0,79	0,083	0,454***	-0,129	0,076	0,879*	0,234	0,109	1,264**
BTS ratio	0,097	0,064	1,101	-0,008	0,045	1,008	0,004	0,050	1,004
Observation		134.999			61.686			54.236	

Significance ***$p<0.01$;**$p<0.05$;*$p<0.1$
Source : SUSENAS 2021 (processed)

CONCLUSION

Analysis of the effect of digital literacy on the risk of dropping out of school using a multilevel binary logistic regression model shows that digital literacy which is proxied by digital access has a significant negative risk of dropping out of school. The higher a child's digital literacy, so the lower the risk of dropping out of school during a pandemic. However, after conducting a heterogeneity test based on educational level, it was found that digital literacy only had a significant effect on dropping out of school at the junior high school and high school levels. In addition, there are also differences in the factors that influence dropping out of school between levels of school. In general, other individual and contextual characteristic factors that influence the risk of dropping out of school are gender, the employment status of the head of household, the length of schooling of the head of household, household expenditure quintile, classification of residence, and IP-TIK. Meanwhile, the variable number of household members, province area, and BTS ratio has no significant effect on the risk of dropping out of school.

Statistical evidence in this study has shown that digital literacy can affect the risk of dropping out of school. Therefore, the proposed policy implications are 1). The government needs to work together with relevant stakeholders to encourage easier and more affordable digital access, especially for poor children in rural areas, for example by assisting with digital devices such as mobile phones, laptops/computers and internet quota for free; 2). The government also needs to ensure that digital infrastructure (ICT) is evenly distributed in all regions. This can be done by developing and distributing internet network infrastructure, especially in rural areas and eastern Indonesia; 3). The need to encourage educational institutions (schools) to transform digital-based education through various innovative learning programs in the face of technological disruption and the industrial revolution 4.0.

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