



## The Influence of Family Environment, ICT Literacy, Infrastructure on Learning Outcomes of Online Learning with Learning Motivation as Intervening Variables in State Vocational High Schools in Jepara Regency

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Article Info	Abstract
Article History : Received June 2022 Accepted October 2022 Published December 2022	This study aims to examine the online learning outcomes of basic accounting subjects in State Vocational Schools throughout Jepara Regency which are influenced by family environment, ICT literacy, infrastructure with motivation as an intervening variable. The type of research used is quantitative research. Data were collected by questionnaire and analyzed using path analysis. The population in this study were all students majoring in accounting at State Vocational Schools throughout Jepara Regency which included SMK Negeri 3 Jepara, SMK Negeri 1 Batealit, SMK Negeri 1 Kedung, SMK Negeri 1 Bangsri. The total population in this study was 288 students, with a sample of 168 students. The results of this study indicate that this research model is good in measuring the research theme. (1) Family environment has a positive and significant effect on learning outcomes of 0.303, (2) ICT literacy has a positive and significant effect on learning outcomes of 0.187, (3) Infrastructure has a positive and significant effect on learning outcomes of 0.433, (4) Learning motivation has a positive and significant effect on learning outcomes. significant to the learning outcomes of 0.242. (5) Family environment has a positive and significant effect on learning outcomes through learning motivation of 0.05544, (6) ICT literacy has a positive and significant effect on learning outcomes through learning motivation of 0.110, (7) Infrastructure has a positive and significant effect on learning outcomes through learning motivation of 0.011.
Keywords: <i>Learning Outcomes, Family Environment, Information Communication Technology Literacy, Infrastructure, Learning Motivation, Online Learning</i>	

## INTRODUCTION

The Industrial Revolution 4.0 is the state of the 21st century industry when major changes occurscale in various fields through technological guidance that reduces the barriers between the physical, digital, and biological worlds of Arizona (2020). The development is so rapid, especially in the part of technology that will be increasingly used by humans personally which will limit the social as described by Kagerman et al (2016) that industry 4.0 is often related to technical problems and national boundaries. The development of this revolution has penetrated into the world of education where learning in the current era is a development of the industrial revolution using sophisticated technology.

According to Nurhadi (2017) communication is an interaction process seen from the point of view of biology, communication from experimentation is the tendency to act with the efforts of individuals who are actively involved in aspects of human life. So, from the point of view of education, communication is a reciprocal process between the recipient of the communication, namely the student, and the sender of the message, namely the teacher, either directly or indirectly. According to Suardi (2018), learning is an effort that intentionally involves and uses the professional knowledge possessed by teachers to achieve curriculum goals.

Teachers as educators according to Law No. 20 of 2005 concerning teachers and lecturers Article 39 paragraph 2, educators are professional personnel who are tasked with planning and implementing learning, conducting guidance and training, as well as conducting training and community service. The teacher is the spearhead in an educational institution where the task is very important in the teaching and learning process where the teacher is required to make plans in learning and ends with evaluation. During the COVID-19 pandemic, teachers are required to prepare everything using distance learning models or other terms using online. Online learning is required by teachers to be able to have the ability to manage learning technology or what is called learning media and have adequate infrastructure.

So the success or effectiveness of a learning system is very dependent on the quality of a teacher.

According to Rosyid (2019), learning outcomes are abilities that are obtained by individuals after the learning process takes place, which can provide behavioral changes in students' knowledge, understanding, attitudes and skills so that they become better than before. Learning outcomes are also reports related to what learners get after completing the learning process (Popenici & Millar, 2015). This means that learning outcomes are a measure of the success of a learning process where a process is said to be successful if it can provide the expected results. According to Dabbag in Sudarsana et al. (2020) stated that the characteristics of students in online or online learning activities such as learning spirit, technology literacy, interpersonal communication skills, collaboration, skills for independent learning. During the COVID-19 pandemic, student learning outcomes can be influenced by various factors such as the environment, technological literacy, infrastructure, or motivation in online learning.

The environment is a factor that can affect the success of an individual in online learning. According to Zainiyati (2017) states that the social climate can occur internally and externally. Internal social climate such as people involved in school and for the external climate of people involved outside the school such as parents of students. This can affect the learning process in schools using face-to-face and online learning models even in the midst of the COVID-19 pandemic. The family environment is a factor that can affect student learning outcomes in the midst of a pandemic, this is because students have not been allowed to undergo face-to-face learning, therefore the family environment is a factor that can affect student learning.

Technology literacy or what is known as ICT literacy according to Halaludin (2019) This literacy is defined as the ability to use and utilize new media such as the internet to access, disseminate, and communicate information effectively. Saleh (2015) states that the indicators of ICT literacy are computer literacy, cell phone literacy, internet literacy. Or it can be said as skills

in using computers, cell phones and the internet. Meanwhile, according to Latip (2020) states that technological literacy includes 1) knowledge and skills to operate technological devices, such as computers, laptops, smartphones, and tablets. 2) skills in processing online information, starting from searching, processing, evaluating, to communicating information.

Infrastructure is the main factor in learning because it has a function as a medium that connect the information giver (teacher) and the recipient of information (students). Other factors such as the environment included in the supervision of the family are factors included in student activities that can make learning better in achieving a learning process. Coyne et al. (2018), entitled Exploring virtual reality as a platform for distance team-based learning, states that technology is an immersive, interesting, comfortable and fun platform for online or distance learning. Technology in this case is the infrastructure used in online learning activities that must attract students' interest in every learning activity. Another study related to media by Gomez et al (2020) under the title Innovation Born in Isolation: Rapid Transformation of an In-Person Medical Student Radiology Elective to a Remote Learning Experience During the COVID-19 Pandemic stated that with the right tools interactive and interesting teaching can be achieved without direct instruction. Which means that in an online or distance learning process, it can be supported by good media so that it can achieve the objectives of the learning process.

Learning motivation according to Ricardo (2017) is a power within students that encourage them to be willing and diligent in learning, to make the best and directed efforts in the learning process to achieve the best results which are goals that are owned and maintained during the learning process takes place. Learning motivation according to Sadirman in Susanti (2017) with indicators of being diligent in facing tasks, being tenacious in facing difficulties, preferring to work independently, and happy to find and solve problems (Sardirman, 2008:83).

The rapid spread of Corona Virus Disease 2019 (COVID-19) has spread to the capital city area to the coast of Central Java. The following is

a picture of the COVID-19 table in Central Java, Tuesday 30 June 2020

**Table 1.1 Table of COVID-19 in Central Java**

County/ City	O DP	PD P	positi ve recov ery	Posit ive Died	Posit ive treat ed
Semaran g	12	15 3	540	136	607
Demak	12	96	102	74	219
Jepara	95	29	26	20	167
Temang gung	5	6	78	3	125
Kudus	63	32	45	13	115

Source: <https://corona.jatengprov.go.id/data>

Based on the COVID-19 table in Central Java, Jepara is one of the coastal areas affected by the most positive cases of COVID-19, which is 168, below Semarang and Demak. Social restrictions in red zone areas such as Jepara really need to be carried out, including education issues. Online learning in the Jepara region has begun to be mobilized, unlike vocational high schools which usually have a lot of face-to-face practice.

Based on initial observations, learning carried out at favorite schools such as SMK N 3 Jepara is still not aligned in practice with various applications such as Google Classroom, Whatshap, Office 365, Zoom, etc. As a result students do not focus on each subject followed by various assignments from several different applications. Other schools also have poor conditions, especially network problems where the location of other schools is far from the city, this cause of uneven students' signals in the implementation of online learning. Observation of seeing students who are free at home is also an important observation where there are still students who use smart phones only to play games, This is such a common phenomenon that very often occur during the current COVID-19 pandemic. Another condition was found in teachers where teachers did not 100% understand technology where its use was felt to be lacking in online learning, this can be seen from the media used by teachers which differ from one teacher to another. Of course, this will have an impact on the technology that students use where

each student has a different purchasing power. The cellphones owned by students are certainly different from one student to another, of course, it will be an obstacle when using various and different media. These problems are the initial conditions experienced by teachers and students in conducting online learning.

Based on the background above, there are several identification problems, namely: 1) The initial conditions in online learning are not so good in preparation, both from the family environment, ICT literacy, infrastructure and student motivation. 2) Lack of good communication in the family environment becomes a problem in learning activities. 3) Students' ability to use ICT is still not evenly distributed, it can be seen from the various obstacles experienced when learning online. 4) The facilities owned are different so that the online learning that has been prepared has not been carried out properly and thoroughly. 5) The motivation of each student when learning is very varied, even though online learning is expected to have high student motivation to study independently.

The purpose of this study was to analyze the influence of the family environment, ICT literacy, infrastructure and motivation on learning outcomes in State Vocational High Schools throughout Jepara Regency both directly. As for analyzing the indirect influence between the variables of the family environment, ICT literacy, infrastructure on learning outcomes through the motivation variable as the intervening variable.

**RESEARCH METHODS**

This study uses a quantitative approach with quantitative descriptive research to analyze the factors that influence online learning in accordance with the research hypothesis. According to Sugiyono (2015) descriptive statistics function is to describe or provide an overview of the object under study through sample or population data as it is without analyzing and making generally accepted conclusions. The research data was taken from a questionnaire to students majoring in accounting.

The population in this study was all class X majoring in accounting for the 2020/2021

academic year in Jepara Regency as many as 288 students. The sampling technique in this study used simple random sampling. Based on the calculation of the sample distribution, it was found that 34 students were taken at SMK N 1 Bangsri, SMK N 1 Batealit 34 students, SMK N 3 Jepara 50 students, and SMK N 1 Kedung 50 students.

The data collection technique used a questionnaire which was distributed online. The measurement of the questionnaire in this study used a Likert scale with five alternative answers and then the validity and reliability were tested.

The data analysis technique used is descriptive analysis, requirements test or classical assumption test, path analysis, significant test, coefficient of determination, and Sobel test..

**RESULTS AND DISCUSSION**

The results of this study can be seen from the results of the t test, as well as the results of direct and indirect effects between the dependent variable on the independent variable through the intervening variable.

Model	Coefficients <sup>a</sup>					
	Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.	
1						
	(Constant)	,775	,954		,812	,418
	Family environment	,171	,028	,303	6,144	,000
	ICT Literacy	,247	,076	,187	3,267	,001
	Infrastructure	,370	,043	,433	8,674	,000
	Motivation to learn	,228	0,051	,242	4,443	,000

a. Dependent Variable: Learning Outcomes

**Hypothesis test**

**Family environment affects learning outcomes**

The family environment used has a positive regression coefficient of 0.171. The positive coefficient means that if the family environment is constant (*ceteris paribus*) then the value of learning outcomes has increased by 0.171%. So, in other words, if there is a change in the family environment, it will result in changes in the value of learning outcomes for state SMK students in Jepara regency.

The family environment variable (X1) obtained the value of  $t_{count} 6,144 > t_{table} 1.975$  with a significance value of  $0.000 < 0.05$ , and a fairly high beta coefficient value of 0.303. This shows that the family environment has a significant

influence on learning outcomes for state vocational high school students in Jepara regency, so the first hypothesis which states "Family environment affects learning outcomes for state vocational students in Jepara regency" is accepted.

**ICT literacy affects learning outcomes**

The ICT literacy used has a positive regression coefficient of 0.247. The coefficient is positive which means that if the ICT literacy used increases by 1 percent while the other independent variables are considered constant (ceteris paribus) then the value of learning outcomes increases by 0.247%. So it can be concluded that if there is a change in ICT literacy, it will result in a change in the learning outcomes of state vocational high school students in Jepara regency.

ICT literacy variable (X2) obtained the value of  $t_{count}3,267 > t_{table}1.975$  with a significance value of  $0.001 < 0.05$ , and a high beta coefficient value of 0.187. This shows that ICT literacy has a significant effect on learning outcomes for state vocational high school students in Jepara regency, so the second hypothesis which states "ICT literacy affects learning outcomes for state vocational students in Jepara regency" is accepted.

**Pre-facilities have an effect on learning outcomes**

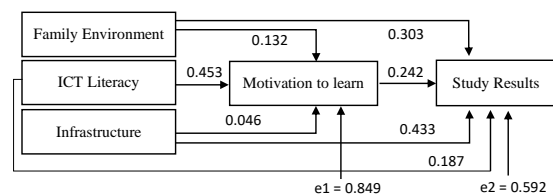
The infrastructure used has a positive regression coefficient of 0.370. This coefficient is positive, which means that if the infrastructure used decreases by 1 percent while the other independent variables are considered constant (ceteris paribus) then the value of learning outcomes decreases by 0.370%. So it can be concluded that if there is a change in infrastructure, it will result in a change in the value of learning outcomes for state SMK students in Jepara regency.

The infrastructure variable (X3) obtained the value of  $t_{count}8,674 > t_{table}1.975$  with a significance value of  $0.000 < 0.05$ , and a fairly small beta coefficient value of 0.433. This shows that infrastructure has a significant effect on learning outcomes for state SMK students in Jepara regency, so the third hypothesis which states "Infrastructure has an effect on learning outcomes for public SMK students in Jepara regency" is accepted.

**Motivation affects learning outcomes**

Motivation has a positive regression coefficient of 0.228. The positive coefficient means that if the self-control used decreases by 1 percent while the other independent variables are considered constant (ceteris paribus), the value of learning outcomes decreases by 0.228%. So it can be concluded that if there is a change in motivation, it will result in a change in the learning outcomes of state SMK students in Jepara regency.

The motivation variable (X4) obtained the value of  $t_{count}4,443 > t_{table}1.975$  with a significance value of  $0.000 < 0.05$ , and a fairly high beta coefficient value of 0.242. This shows that motivation has a significant effect on learning outcomes for state vocational high school students in Jepara regency, so the fourth hypothesis which states "motivation affects learning outcomes for state vocational high school students in Jepara regency" is accepted.



**The learning environment has an effect on learning outcomes through motivational variables as an intervening**

The total influence of the family environment on learning outcomes mediated by motivation shows a result of 14.7% on the learning outcomes of state vocational high school students in Jepara regency. As for the positive sign on the total effect, which means it has a positive influence, that is, if there is a change in all independent variables, there will be a change in learning outcomes in the same direction.

Based on the results of the Sobel test, the value of  $2,620 > t_{table}1,975$  so it can be concluded that motivation can significantly mediate the family environment on learning outcomes. So the family environment has a significant influence on learning outcomes through motivation, so it can be concluded that the fifth hypothesis in this study "Family environment affects learning outcomes

through motivation in state SMK students in Jepara regency" is accepted.

#### **ICT literacy affects learning outcomes through motivational variables as an intervening**

The effect of total ICT literacy on learning outcomes mediated by motivation shows a result of 14.5% on learning outcomes of state vocational schools in Jepara regency. As for the positive sign on the total effect, which means it has a positive influence, that is, if there is a change in all independent variables, there will be a change in learning outcomes in the same direction.

Based on the results of the Sobel test obtained a value of  $3.209 < t_{table1,975}$  so it can be concluded that motivation can significantly mediate ICT literacy on learning outcomes. So ICT literacy has a significant effect on learning outcomes through motivation, so it can be concluded that the fifth hypothesis in this study "ICT literacy affects learning outcomes through motivation in state vocational students in Jepara regency" is accepted.

#### **Infrastructure has an effect on learning outcomes through motivational variables as an intervening**

The effect of total infrastructure on learning outcomes mediated by motivation shows a result of 19.8% on learning outcomes of state vocational schools in Jepara regency. As for the positive sign on the total effect which means has a positive effect, that is, if there is a change in all independent variables, there will be a change in learning outcomes in the same direction.

Based on the results of the Sobel test obtained a value of  $0.700 < t_{table1,975}$  so it can be concluded that motivation significantly cannot mediate infrastructure on learning outcomes. So there is no significant effect on infrastructure and learning outcomes through motivation, so it can be concluded that the fifth hypothesis in this study "Infrastructure affects learning outcomes through motivation in state vocational students in Jepara regency" is rejected.

## **CONCLUSION**

Based on the formulation of the problem, hypothesis, and research results "The Influence of Family Environment, ICT Literacy, and Infrastructure on the learning outcomes of students majoring in accounting in the basic accounting subject with learning motivation as an intervening variable in State Vocational High Schools throughout Jepara Regency" it can be concluded as the following: 1) "Family environment influences learning outcomes for state vocational school students in Jepara regency" is accepted. 2) "ICT literacy affects learning outcomes through motivation in state SMK students in Jepara regency" is declared accepted. 3) "Infrastructure has an effect on learning outcomes for state SMK students in Jepara regency" is accepted. 4) "Motivation affects learning outcomes in state vocational students in Jepara regency" is accepted. 5) "The family environment influences learning outcomes through motivation for state vocational students in Jepara regency" is accepted. 6) "ICT literacy affects learning outcomes through motivation for state vocational students in Jepara regency" is declared accepted. 7) Infrastructure has an effect on learning outcomes through motivation for state vocational school students in Jepara regenc " is rejected.

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