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THE EFFECT OF DIGITAL LITERACY CAPABILITIES AND SELF-REGULATION ON THE STUDENT'S CREATIVITY IN ONLINE PHYSICS TEACHING

B. Syefrinando*[1], Sukarno[2], M. Ariawijaya[3], A.Nasukha[4]

[1]Physic Education Department, UIN Sulthan Thaha Saifuddin, Jambi, Indonesia
[2]Science-Physic Education Department, UIN Sulthan Thaha Saifuddin, Jambi, Indonesia
[3]System Information Management, UIN Sulthan Thaha Saifuddin, Jambi, Indonesia
[4]System Information Department, UIN Sulthan Thaha Saifuddin, Jambi, Indonesia

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ABSTRACT

This research intends to investigate the effect of digital literacy skills and self-regulation on student creativity in online physics learning practices. The approach used in this research is quantitative, with the data collection technique being a survey model. The research design used a quasi-experimental model with a pretest and posttest design. The samples were physics education students of UIN Sulthan Thaha Saifuddin Jambi, with a total sample of 42 students. Data analysis was conducted through several stages, namely: a) the first stage was to analyze category classification, namely classifying student abilities into very good category (A), good category (B), sufficient category (C), and poor category (D), based on the score of the measurement results of the three variables; b) the second stage is to test the correlation between variables. Correlation data analysis was performed with SPSS 25 software. Based on the data and discussions that have been carried out, it can be concluded that there is an influence between digital literacy skills and self-regulation on students' creativity in online physics learning practices. The effect of digital literacy skills on student creativity in carrying out online physics learning practices is 85%, while self-regulation has an effect of 78%. Both variables together affect students' creativity in learning physics online by 74%.

Keywords: creativity in online physics learning; digital literacy; self-regulation

INTRODUCTION

The industrial revolution 4.0 and 5.0, or what is often known as the digital era, requires a variety of abilities so that each student can survive and compete with others. This is important considering that the current generation is a generation of digital natives, meaning that they use gadgets more for activities in their lives with the emergence of a digital-based environment (Mardina, 2017). Turiman et al. (2012), Saputra et al. (2017), and Aslamiah et al. (2021) state that various abilities that need to be developed related to the advancement of Science and Technology in the 21st century, as well as the occurrence of a learning paradigm shift that does not recognize space and time, are digital literacy skills (Van Laar et al., 2020), scientific literacy, language literacy, and mathematical literacy.

Concerning this description, it can be stated that one of the crucial skills that every student must possess is digital literacy, namely the ability to recognize and use digital devices (computers and internet networks) wisely and appropriately. Akbar and Anggraeni (2017), Spires et al. (2018), and Tinmaz et al. (2022) call it Digital Literacy, namely the ability to understand and operate digital technology optimally. Prasanti and Indriani (2017) and Papamitsiou et al. (2021) mention it as a person's ability to use various media to ac-

***Correspondence Address**
E-mail: syefrinando@gmail.com

cess and produce information in everyday life. Information literacy, or the capacity to recognize, ascertain, locate, assess, generate successfully and orderly, use, and transmit information to address a variety of issues, can also be linked to digital literacy.

Concerning learning practices, digital media provides opportunities to transfer information and data so that they can be accessed more quickly with a wide range (Prasanti & Indriani, 2017; Bond et al., 2018). Therefore, prospective teachers must be able to promote digital literacy skills so that the learning they do in the digital era can run optimally. Students with good digital literacy skills are believed to be able to search, find, apply, and evaluate digital information to support the implementation of their learning.

Related to digital literacy, another skill that is very much needed is self-regulation, namely the ability to control or regulate oneself. This is consistent with Alhadi et al.'s (2019) statement that self-regulation is the capacity of an individual to manage his or her own emotions. Self-regulation is the inherent ability to control one's emotions, which is then informed by one's cognitive capacity for influence and emotional experiences of one's conduct. Self-regulation, according to Matric (2018), is the capacity of a human to focus their behaviors on ideals and goals that may originate from their own wishes or the expectations of others. This enables them to react to societal and environmental demands. According to McClelland et al. (2015), self-regulation is the basis for achieving adaptive developmental tasks at all stages of life.

The teacher must be able to regulate or control himself in planning, implementing, and evaluating learning outcomes in learning process. This is because learning or education has a specific purpose. This is similar to the opinion of Latham and Locke (1991) that a person needs the ability of self-regulation to achieve the desired goal. Therefore, to achieve the desired learning objectives, a prospective teacher and teacher must have this self-regulation ability well. This is also reinforced by Matric (2018) that elf-regulation gives people the tools they need to accomplish their goals, which may be motivated by their own interests or by societal demands.

It is understood that there is a close relationship between knowledge, skills, and management in the process of learning and teaching. The relationship between these three elements in the learning process is closely connected and influences each other. Therefore, a teacher who can combine these elements is those who have good self-regulation. This is as explained by McClelland et al. (2015), that self-regulation is not only related to knowledge, self-management, and skills when striving to manage environmental elements but also increases personal functioning awareness when dealing with the environment. Thus, self-regulation plays a crucial role in the learning and teaching processes. Self-regulation in learning is the ability to direct oneself, including cognitive monitoring processes (Pattynama et al., 2019). Self-regulation in learning includes planning, self-monitoring, effort, and self-efficacy, self-evaluation, and reflection (Braund & Timmons, 2021). Therefore, self-regulation is also believed to be closely related to one's creativity in carrying out various activities, including in terms of teaching and learning activities.

Besides self-regulation, creativity is an essential aspect of learning and teaching. This ability can be interpreted as 1) the ability to respond, respond and provide a way out of all existing solutions; 2) the ability to be involved in the discovery process for problems; 3) the ability of intelligence, cognitive style, and personality/motivation; 4) the ability to produce or create something new (Sunarto, 2018; Dong, 2022; Morney, 2022). In order to ensure that students are engaged, diverse, and creative in every learning session, creative teachers not only excel at making decisions and running the show in class but also at designing teaching methods that encourage student decision-making (Wahyuni, 2013), especially in physic learning. In everyday life, people with high creativity will also be able to solve problems better (Sambada, 2012).

Related to online learning, distance learning is conducted face-to-face by utilizing the internet using learning applications and social networks (Suhendra et al., 2021). Wang (2022) and Afghani (2021) explain that information technology is the primary medium in the application of online learning, so that the learning process activities continue during the pandemic. Zhafira et al. (2020) also mentioned that online learning, often known as online, is a way of applying the internet that can boost the involvement of students in the learning process.

The practice of online learning in schools has many problems, including a lack of knowledge about information technology by students and parents of students, boring learning, and learning assessments that should be done directly cannot be done, so learning becomes less effective (Prawanti & Sumarni, 2020; Kuromiya et al., 2022). To reduce barriers and increase the effectiveness of online learning, a teacher's creativity is needed to support the success of the process.

Teachers' creativity in online learning is needed, especially in physics learning and in terms of choosing and determining various information and appropriate learning resources, selecting and determining media according to the conditions of students, and others. This is important to know and understand, considering that information technology is the basis or primary source of learning in online learning (Corfman & Beck, 2019). Thus, it is clear that the creative abilities of teachers and prospective teachers are indispensable to the success of online learning. Suhendra et al. (2021) explain that teacher creativity is needed in online learning so that students remain enthusiastic even though learning is carried out remotely. In addition to covering one part of the student's personality, the teacher's creativity in teaching physics also considers the student's cognitive, psychomotor, and affective development. In addition, Warsita (2011) also explains that to produce quality learning media by the competencies or goals to be achieved, the development of learning media requires a series of creative abilities, both creative thinking skills and creative attitudes.

The digital era requires physics teachers to be able to carry out online learning. Effective online learning occurs when teachers have good digital literacy skills. Digital literacy skills must also be supported by good self-regulation skills so that teachers can choose and select teaching materials and learning equipment more precisely. In addition, effective physics learning must also be developed creatively, from planning and implementation to assessing learning outcomes. Therefore, this study intends to investigate whether digital literacy skills and self-regulation abilities influence the ability of physics students to conduct online learning. Thus, this research focuses on how far digital literacy and self-regulation abilities affect student creativity in carrying out physics online learning practices.

METHODS

This study used a quantitative approach, with data collection carried out through survey techniques, namely by providing a set of instruments to the respondents. This approach is used, considering that the final data obtained in this study are in the form of numbers or scores and processed using statistical techniques. This is in line with the explanation of Borgstede and Scholz (2021), Noyes et al. (2019), and Sugiyono (2017) that quantitative research approaches are employed to address research questions including data in the form of numbers and statistical programs. The survey technique was chosen to determine the form of activity that has become a habit in the community. Adiyanta (2019) and Gürbüz (2017) that the survey can measure various desired variables through various questions in an instrument. The variables in this study are digital literacy skills, self-regulation, and the creative abilities of physics education students in carrying out online learning.

To measure the research variables in this study (digital literacy and self-regulation), an instrument is used in the form of a questionnaire consisting of several questions. Indicators and Instruments used to measure digital literacy skills using instruments developed by Sukarno and El Widdah (2020). The indicators and instruments used to measure self-regulation ability were adapted from the SRQ developed by cassa.unm.edu (Rikli & Jones, 1999). The instrument applied to calculate the creativity ability of physics education students in conducting online learning used an instrument in the form of an observation sheet with a scoring technique adjusted to the two previous variables. The observation sheet is used to observe learning videos from physics education students that they have made during the 2020/2021 even semester academic year in the PPL period. Measurement of student creativity in conducting online learning is focused on: variations in the sources of digital teaching materials used, applications/software used, learning media, and assessment techniques carried out. For this reason, each student was asked to collect the five best learning videos they made during the PPL period. Each video was measured three times with different times and raters, then the value used in this study was the average creativity value. This is intended so that the validity of the data is more guaranteed.

The respondents involved in this study were physics education students who were following the Field Experience Practice (PPL) program, as many as 42 people. Thus, the sampling was carried out using a saturated sampling technique, meaning that the entire population was sampled in this study. Data analysis was done through several stages, namely: a) the first stage was to analyze category classification, namely classifying student abilities into very good category (A), good category (B), sufficient category (C), and poor category (D), based on the score of the measurement results of the three variables, b) the second stage is to test the correlation between variables. This test is carried out using SPSS 25 software. The tests carried out include the biva-

riate correlation test and the F test. The next stage (c) is to conduct a discussion. This stage is done by describing the data obtained and comparing it with the theory and the results of previous research.

RESULTS AND DISCUSSION

As previously explained, the research uses a quantitative approach with surveys as the data collection technique. Therefore, each respondent (42 people) was given the same instrument to measure their digital literacy, self-regulation, and creativity skills in teaching physics online. Based on the measurement of research variables, namely: digital literacy, self-regulation, and student creativity in carrying out online physics learning. After all, the data has been collected and analyzed, and it shows that the ability of physics education students in the three variables measured varies. More fully, the category of the ability of students majoring in physics education on the three variables measured can be seen in Table 1 below:

Table 1. The Ability of Physics Education Students on the Three Variables

Variables	Score	Number of Respondents	Percentage (%)	Category
Digital Literacy	76-100	14	33,33	Very Good (A)
	51-75	12	28,56	Good (B)
	26-50	10	23,90	Enough(C)
	0-25	6	14,29	Less (D)
	Total	42	100	
Self-Regulation	76-100	15	35,72	Very Good (A)
	51-75	14	33,33	Good (B)
	26-50	6	14,29	Enough (C)
	0-25	7	16,66	Less (D)
	Total	42	100	
Online Teaching Creativity	76-100	15	35,72	Very Good (A)
	51-75	13	30,95	Good (B)
	26-50	9	21,43	Enough (C)
	0-25	5	11,90	Less (D)
	Total	42	100	

Table 1 presents that the digital literacy ability of students majoring in physics education is dominated by category "A", which is 33.33%, followed by ability category "B" which is 28.56%, category "C" is 23, 90% and the remaining 14.29% are in the "D" category. Thus, it means that, in general, digital literacy skills, namely the ability of students to understand, choose and use digital platforms, are relatively good. Therefore, these capabilities need to be increased in a systematic and integrated manner.

As for the self-regulation variable (based on Table 1), it is also dominated by students with self-regulation abilities with category "A" as many as 35.72%, category "B" as much as 33.33%, category "C" 16.29 %, and the rest is category "D" as much as 16.66%. These data illustrate that, in general, the self-regulation ability of physics education students is relatively good. This ability includes the ability to be self-directed, which includes the activity of monitoring cognitive processes by oneself. Therefore, this self-regulation capability needs to be developed in a planned and integrated manner, as well as digital literacy capabilities.

Based on Table 1 above, it is also seen that the creativity variable of physics education students in carrying out online physics learning is also relatively good. It can be seen that, in general, the creativity of physics education students in carrying out online learning is dominated by the group with category "A" which is 35.72%. Students with creativity in the "B" category are 30.95%, in the "C" category as much as 21.43%, and in the rest, namely the "D" category as much as 11.90%. Thus, it can be said that the creativity of physics education students in carrying out online physics learning is relatively good. However, this data also shows that optimization efforts still need to produce a quality online learning process.

The subsequent analysis is to determine the correlation between variables. For this reason, a correlation test was carried out, in this case using Pearson Correlation of SPSS 25 software. More fully, the test results can be seen in Table 2 below:

Table 2. Correlation between variables of Digital Literacy, Self-Regulation, and Online Teaching Creativity

Correlations				
		Digital Literacy	**Self-Regulation**	**Online Teaching Creativity**
Digital Literacy	Pearson Correlation	1	.845**	.970**
	Sig. (2-tailed)		.000	.000
	N	42	42	42
Self-Regulation	Pearson Correlation	.845**	1	.818**
	Sig. (2-tailed)	.000		.000
	N	42	42	42
Online Teaching Creativity	Pearson Correlation	.970**	.818**	1
	Sig. (2-tailed)	.000	.000	
	N	42	42	42

**. Correlation is significant at the 0.01 level (2-tailed).

The value of sig. (2-tailed) between the digital literacy variable and Online Teaching Creativity is 0.000 < 0.05. Thus, it presents that there is a significant correlation between the X1 variable (digital literacy) and the Y variable (Online Teaching Creativity). Furthermore, for the self-regulation variable, the value of sig.(2-tailed) is 0.000 < 0.5. This shows a significant correlation between X2 (self-regulation) and Y (Online Teaching Creativity).

The R-value indicates the calculated R-value between the X1 (digital literacy) variable is 0.870 > from the R table, which is 0.304 (for n = 42, it is 0.304 with a significance of 5%). This shows that there is a significant correlation between the X1 variable (digital literacy) and the Y variable (Online Teaching Creativity). The calculated R-value for the X2 variable (self-regulation) against the Y variable (Online Teaching Creativity) is 0.818 > from the R table, which is 0.304 (for n = 42, it is 0.304 with a significance of 5%). Thus, it reveals that there is a significant correlation between the X2 variable (self-regulation) and the Y variable (Online Teaching Creativity).

Table 3. Model Summary

Model	**R**	**R Square**	**Adjusted R Square**	**Std. The error in the Estimate**
1	.870[a]	.757	.838	1.191

a. Predictors: (Constant), Digital Literacy, Self-Regulation

The Summary model (Table 3) above, the calculated R-value is 0.870 > from the R table, which is 0.304 (for n = 42 it is 0.304 with a significance of 5%). This shows that there is a significant contribution between the variables X1 (digital literacy) and X2 (self-regulation) with variable Y (Online Teaching Creativity). Thus, it can be said that digital literacy and self-regulation skills influence 87% of the creativity of physics education students in applying online physics learning during the COVID-19 pandemic, while other factors influence the remaining 13%.

Table 4. Model ANOVA[b]

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	888.297	2	444.149	317.112	.000[a]
	Residual	55.322	39	1.419		
	Total	943.619	41			

a. Predictors: (Constant), Digital Literacy, Self-Regulation
b. Dependent Variable: Online Teaching Creativity

Based on the ANOVA table above, it is known that the sig. 0.000 which means less than (<) 0.05, it can be said that X1 (digital literacy) and X2 (self-regulation) simultaneously affect the Y variable (Online Teaching Creativity). This is also reinforced by the calculated F value 317,112 > F table 3,22. This means that the two variables, namely X1 and X2, simultaneously affect the Y variable (Online Teaching Creativity).

Table 1 conveys that the digital literacy ability of students majoring in physics education is dominated by category "A", which is 33.33%, followed by ability category "B" which is 28.56%, category "C" is 23. ,90%, and the remaining 14.29% are in the "D" category. Thus, it reveals that, in general, digital literacy skills, namely the ability of students to understand, choose and use digital platforms, are relatively good. Therefore, these capabilities need to be developed in a planned and integrated manner. This is because digital literacy skills are needed in the global or current internet era. Students will be able to choose and use digital devices well with good digital literacy skills. This is as stated by Sari (2019) that filtering information at the same time uses digital devices such as the internet involves technical abilities and cognitive intelligence.

In the Pearson Correlation test as has been done (Table 2), digital literacy skills have a significant effect (0.970) on students' creativity in carrying out online physics learning. This can be understood considering that the principal capital of students in online learning is their knowledge of digital devices, ranging from the types of tools, software used, learning resources needed, how to process learning resources, and how to present teaching materials.

Rodin and Nurrizqi (2020) state that the types of electronic publishing are very diverse, which include electronic books (e-books), electronic periodicals (e-periodicals), electronic databases, electronic publishing in CD-ROM, POD (Print On Demand), digital content and electronic ink. In addition, students' ability to detect open access digital information sources such as e-books, e-journals, full-text databases, indexing and abstracting databases, e-images, e-audio, videos, and others influences their creativity in adopting online physics learning. (Alperi, 2019). Students' creativity in carrying out online learning is strongly influenced by their digital literacy skills. The better their digital literacy skills, the better their creativity in carrying out online learning.

In implementing science (physic) learning, digital literacy also occupies a strategic role. It can present exciting and interactive contextual, visual, and audio science learning materials (Rusydiyah et al., 2020) and provide a variety of learning resources (materials, teaching materials, media, virtual practicums, and others) that are widely available in digital form and can be accessed widely via the internet (Wijaya & Supadmini, 2020). So, Lankshear and Knobel (2015) mention that digital literacy should be included as one of the goals of formal education to increase the effectiveness and efficiency of the science learning process and for students' adaptation to the dynamically changing labor market (Shopova, 2014).

In education, especially science education, digital literacy skills are essential and very much needed, especially in the global and current pandemic. Therefore, this is strong evidence that digital skills are the main requirement for the implementation of online learning. Awaliyah (2019) finds that digital literacy skills can improve student learning outcomes. Digital literacy-based learning also affects student learning outcomes and motivation (Kajin, 2018), even the learning process (Elpira, 2018), and student independence in learning (Alperi, 2019). Thus, it can be understood that digital literacy skills, besides having a positive effect on student creativity in carrying out online physics learning, also have a positive effect on learning independence, motivation, and learning outcomes.

Besides education, digital literacy skills are essential to support a better life. Several research results prove that digital literacy skills have a positive impact, both on a person and the surrounding community. Digital literacy skills can affect their daily behavior (Jati, 2021), countering radicalism in eight essential elements, namely: cognitive, constructive, communicative, cultural creative, critical, and civic. Bastian et al. (2021) argue that the rate of digital crime is reduced, the digital economy is increasing, and digital knowledge, skills, and digital governance (Yanti & Yusnaini, 2018), and very important in influencing positive behavior by using the internet (Prihatini & Muhid, 2021). Therefore, digital literacy skills must continue to be promoted for all Indonesian people.

To improve digital literacy skills, several things need to be done by the government through various policies and by educators (teachers, lecturers, and others) through digital literacy-based learning programs. Through various policies, including developing digital system facilities and infrastructure, citizens' digital literacy capabilities can be improved. Some of these policies include the development of digital facilities (Gumati, 2020), formulation of curriculum policies oriented to digital literacy skills (Ahsani et al., 2021), also done through science teaching (Wijaya & Supadmini, 2020) by using specific learning models, for example, PjBL (Rochmawati et al., 2019), STEM models (Stehle & Peters-burton, 2019).

As for the self-regulation variable (Table 1), it is also dominated by students with self-re-

gulation abilities with category "A" as many as 35.72%, category "B" as much as 33.33%, category "C" 16.29%, and rest are category "D" as much as 16.66%. Referring to these data, in general, the self-regulation ability of physics education students is relatively good. This ability includes the ability to be self-directed, which includes the activity of monitoring cognitive processes by oneself. Therefore, this self-regulation capability needs to be increased in a systematic and integrated manner, as well as digital literacy capabilities.

In the field of education, self-regulation has a crucial role. As stated by Hapsari (2017), self-regulation is critical in supporting the improvement of creative thinking skills and helping students achieve higher academic success. It empowers students to direct their own learning (Matric, 2018), forms student learning independence (Yasdar & Muliyadi, 2018), and improves creative thinking skills (Hapsari, 2017). Therefore, McClelland et al. (2015) suggest that self-regulation abilities continue to be developed in the learning process (academic) in schools. Teachers must perform a critical dual self-regulation role to effectively enhance their students' self-regulation (Kramarski & Kohen, 2017). Teachers with good self-regulation skills will also tend to have a good level of professional work (Lord et al., 2010). Thus, self-regulation skills need to be continuously trained and developed for every student, teacher candidate, and teacher in the office.

Several efforts can be made to develop self-regulation skills in the educational process, including by providing homework that is by the development of students (Ramdass & Zimmerman, 2011). In addition, efforts to develop self-regulation abilities can also be carried out through mentoring adult learning, such as teachers, lecturers, and parents (Fuadia, 2020). In addition, increasing self-regulation ability can also be done by carrying out learning with a particular model (Marlina, 2017). Independent learning development to improve self-regulation skills is very suitable for students (Šteh, 2020) and (Suhandoko & Hsu, 2020).

As written in Table 1, the creativity variable of physics education students in carrying out online physics learning is also relatively good. It can be seen that, in general, the creativity of physics education students in carrying out online learning is dominated by the group with category "A" which is 35.72%. Students with creativity in the "B" category are 30.95%, in the "C" category as much as 21.43%, and in the rest, namely the "D" category as much as 11.90%. Thus, it can be said that the creativity of physics education students in carrying out online physics learning is relatively good. However, this data also shows that optimization efforts still need to produce a quality online learning process.

The development of creativity among teachers and prospective teachers needs to be primarily in managing online learning to continue to be developed. This is because creativity has a very strategic position in increasing the success of the educational process. Teachers who have good creativity in the learning process affect student interest and learning outcomes (Wilda et al., 2017), can also improve student learning achievement (Nisa'et al., 2019), and increase the absorption of students (Hadisi et al., 2017). So in online learning, teacher creativity occupies a significant position (Afghani, 2021) and is more successful in developing intellectually and productivity and is more meaningful for students. Thus, a teacher's creativity in learning, both offline and online, has a positive effect on students' processes and learning outcomes (Jeffrey, 2006).

In the correlation test (Table 2), the value of sig. (2-tailed) between digital literacy and Online Teaching Creativity variables is 0.000 <0.05. Similarly, the sig value (2-tailed) for the self-regulation variable is also 0.000<0.5, which means there is a significant correlation between the X1 (digital literacy) variable and the Y (Online Teaching Creativity) variable, and there is also a significant correlation between X2 (self-regulation) and Y (Online Teaching Creativity). In addition, based on table 4 (ANOVA test), it is also known that the sig. 0.000 which means less than (<) 0.05, it can be said that X1 (digital literacy) and X2 (self-regulation) simultaneously affect the Y variable (Online Teaching Creativity). This is also reinforced by the calculated F value 317,112 > F table 3,22. This means that the two variables, namely X1 and X2, simultaneously affect the Y variable (Online Teaching Creativity). Therefore, in short, it can be said that the creativity level of physics education students at UIN STS Jambi in carrying out online learning is influenced by digital literacy skills and self-regulation abilities, with an influence level of 87%.

As the data analysis and testing results, this study has found that 87% of physics education students' creativity in online physics learning is influenced by digital literacy and self-regulation skills. The remaining 13% is influenced by other factors. Thus, it can be said that the creativity of physics education students in carrying out online learning is strongly influenced by digital literacy and self-regulation abilities. If the creativity of physics education students in online learning

is considered a learning outcome, digital literacy skills can be said to affect student learning outcomes. This is consistent with Giovanni and Komariah's research findings from 2020, which demonstrate a significant correlation between student learning achievement and information, communication, content creation, and security competencies. The high output of learning outcomes on student academic achievement is positively influenced by a high level of digital literacy (Yustika & Iswati, 2020).

Based on the study results, lecturers (physics education) must be able to design learning based on digital literacy skills and self-regulation together to produce physics teachers who are creative in carrying out online learning. This can be done through blended learning-based lectures (Tang & Chaw, 2015). Lectures must be able to encourage and provide opportunities for pre-service teachers to promote their digital literacy skills well. So that the prospective teacher students are proactive in using digital platforms in a controlled and responsible manner (Yazon et al., 2019; Liu et al., 2020).

In addition, increasing students' digital literacy and self-regulation skills can also be done by involving them in the digital literacy movement with in-service teachers (Diputra et al., 2020). Another effort that lecturers can make to improve students' digital literacy skills is through digital information training. The involvement of students in the digital literacy movement, together with in-service teachers, is believed to be able to improve both of these abilities (digital literacy and self-regulation) together (Sari, 2014). Thus, the literacy movement activities together with in-service teachers are one real solution. Through these efforts, it is expected that pre-service physics teachers will be able to: 1) carry out a creative learning process, 2) distinguish learning sources that are true, significant, and can provide creative benefits, and 3) open up opportunities for teachers to be more productive in creating creative digital teaching media (Anggeraini et al., 2019).

In addition to lecturers, the results also have implications for the importance of developing a digital literacy-based curriculum which in this case is the authority of the government and university leaders. This is as stated by Nuryantini et al. (2020) that the curriculum in the digital era must be able to bring students to adapt to digital literacy and have skills, knowledge, critical, creative, intelligent, and safe understanding of digital technology. Eva (2021) presents that digital literacy is strengthened through a digital media-based curriculum development model in designing objectives, materials, strategies, and evaluation of learning. This is as stated by Fitriah (2018), that technology plays a crucial role in encouraging teachers to be creative in the learning process. Thus, it can be understood that developing a curriculum oriented towards digital literacy skills is essential in producing future physics education teachers who have high creativity in carrying out online learning.

CONCLUSION

Based on the findings, the variable correlation test shows that X1 (digital literacy) and X2 (self-regulation) simultaneously affect the Y (Online Teaching Creativity) variable. This is evidenced by the value of sig. (2-tailed) between digital literacy and Online Teaching Creativity variables is 0.000 <0.05. Similarly, for the self-regulation variable, the sig value (2-tailed) is also 0.000<0.5. Thus, it can be understood that there is a significant correlation between the X1 (digital literacy) variable and the Y (Online Teaching Creativity) variable, and there is also a significant correlation between X2 (self-regulation) and Y (Online Teaching Creativity). In addition, based on Table 4 (ANOVA test), it is also known that the sig. 0.000 which means less than (<) 0.05, it can be said that X1 (digital literacy) and X2 (self-regulation) simultaneously affect the Y variable (Online Teaching Creativity). This is also reinforced by the calculated F value 317,112 > F table 3,22. This means that the two variables, namely X1 and X2, simultaneously affect the Y variable (Online Teaching Creativity) with an influence level of 87%.

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