[Research Article]

CORRELATION BETWEEN DIGITAL LITERACY AND EMOTIONAL INTELLIGENCE ON UNDERSTANDING VISCOSITY STOKE'S METHOD AIDED BY VLAB AMRITA OLABS

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ABSTRACT

Digital literacy is an understanding of digital which is an ability that is very much needed in learning in the digital era or the 21st century. The use of technology or technology development is one of the things that can be used in digital literacy skills. The use of technology in education is the most important aspect of 21st-century learning because many students have started using technology, one of which is virtual-based laboratory activities. Not spared from digital literacy, a person's success in the 21st Century is determined by his emotional intelligence. About 80% of emotional intelligence (EQ) is the main factor in a successful life. This study aims to find a correlation between digital literacy and emotional intelligence using Viscosity Stoke's Method assisted by the Amrita OLabs virtual laboratory. For digital literacy aspect there are; (1) Internet Basic; (2) Use of Win/Mac OS; and (3) Computer Basic, for emotional intelligence, the aspect there are; (1) Perception; (2) Understanding; (3) Facilitation; and (4) Self-Management. The method used in this research is using a true-experimental one-group pretest-posttest design, with a sampling technique that is non-probability sampling which produces a purposive sample of 30 subjects in the early semester students of Physics Education UIN Sunan Gunung Djati Bandung. The results showed that there was an influence on digital domain literacy on N-Gain and emotional intelligence with N-Gain. In addition, the Pearson's Correlation test shows a correlation between digital domain literacy and emotional intelligence, which is indicated by a sig value of .039 with a low degree of correlation or Pearson's correlation value of .379. This research has implications for determining the decision to use a virtual laboratory to increase digital literacy in terms of student's emotional intelligence

Keywords: Correlation, Digital Literacy, Emotional Intelligence, Virtual Laboratory

1. INTRODUCTION

21st Century Learning is learning which encourages students to have "*Super Abilities*". Students in the 21st century are always expected to develop and make updates because in the 21st century, students can access knowledge massively and quickly with technology. (Kivunja, 2015; Mohammadyari & Singh, 2015).

In 21st century learning that does not escape the use of technology, it must be very thick with the *digital* world, such as the use of computer media for learning (Purnama et al., 2021). With various learning models, one of them by using laboratory activities with several methods such as; (1) Cookbook Laboratory (Nicolaidou et al., 2019); (2) *Inquiry Laboratory* (Ural, 2016); *Problem Solving Laboratory* (Putri et al., 2019); (4) HOT-LAB dan HOT-VL (Nuraeni, 2018; Setya, W., Agustina, R. D., Putra, R. P., et al., 2021). The various kinds of laboratory activities certainly use technology, such as the research that has been carried out by Riki (Purnama et al., 2021) In his research, which developed and used *E-Modules* for laboratory activities for tiered students, students found that *E-Modules* were preferred by students compared to using *traditional modules*. In addition, research conducted by Makiyah (Makiyah et al., 2019) shows that there is student interest in the use of a virtual *laboratory* compared to a real *laboratory* due to the ease of use. Makiyah's findings are in line with the findings by Riki (Putra et al., 2021), In finding out the perspective of students on the use of *Virtual Laboratory*, it was found that as many as 68.25% of subjects liked virtual laboratory activities compared to real *laboratory* activities.

Students as the main actors in receiving technological education are expected to have high intellectual and emotional intelligence (Saibani et al., 2012). About 80% of the influence of emotional intelligence (EQ) is a major factor in the success of a person's life compared to intellectual intelligence or IQ which only contributes about 20% of success in life (Sakti et al., 2020). Emotional intelligence (EQ) is the ability to recognize, assess, and control the emotions of others and always make these emotions into new and important information for themselves, so that people always get and learn new things. (Hadiwijaya, 2017; Rohman, 2010).

In today's digital era, the ability to technology is one of the most important abilities possessed by people other than students. In addition, emotional intelligence plays a very important role in building and shaping one's abilities. Thus, this study aims to find out the correlation between digital literacy and emotional intelligence in understanding the material on the *viscosity stoke's method* assisted by a *virtual laboratory.*

2. RESEARCH METHODS

The study was conducted on the subject of Physics Education students in semester 1, totaling 30 subjects using a *true-experiment* research method with a *one group pretest-posttest* design which can be seen in table 1, and *sampling* using *purposive sampling*.

Table 1. One group pretest-posttest design

Sampling	Pretest	Treatment	Posttest
Purposive	O_1	X	O_2

Digital literacy assessment uses an assessment that has been created and designed by Northstar with a website domain https://www.digitalliteracyassessment.org/.
The assessments that will be tested on the subject include; (1) Use of Windows/Mac OS; (2) Internet Basics; (3) Computer Basic. The pretest is carried out before the treatment is given by doing questions from the HOT-LAB-based module as designed (Purnama et al., 2021). Posttest is carried out after the treatment is given so that it can get comparison results between before doing and after doing it (Riduwan & Akon, 2009). The flow of research carried out in this study can be seen in Figure 1.
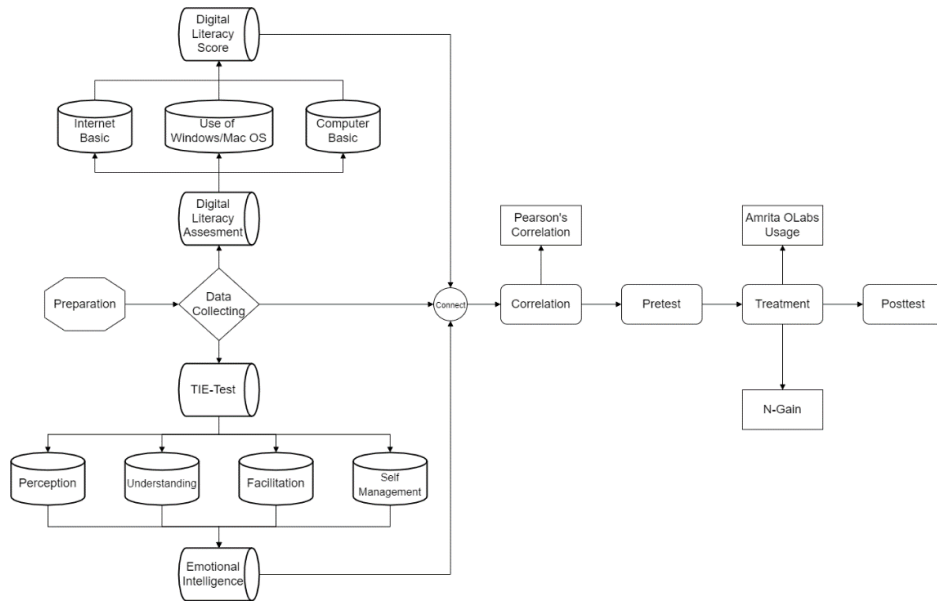
Figure 1. Research Flow

Emotional intelligence assessment using *TIE-Test* which has been developed and designed previously by Smieja (Śmieja et al., 2014), which has four aspects namely; (1) *Percepaction*; (2) *Understanding*; (3) *Facilitation*; (4) *Self-Management*. *Amrita OLabs* on the material *Viscosity Stoke's Method* is carried out on *treatment* with a *website* domain (Amrita.olabs.edu.in, 2015) http://amrita.olabs.edu.in/?sub=1&brch=5&sim=225&cnt=4 which can be seen in Figure 2.
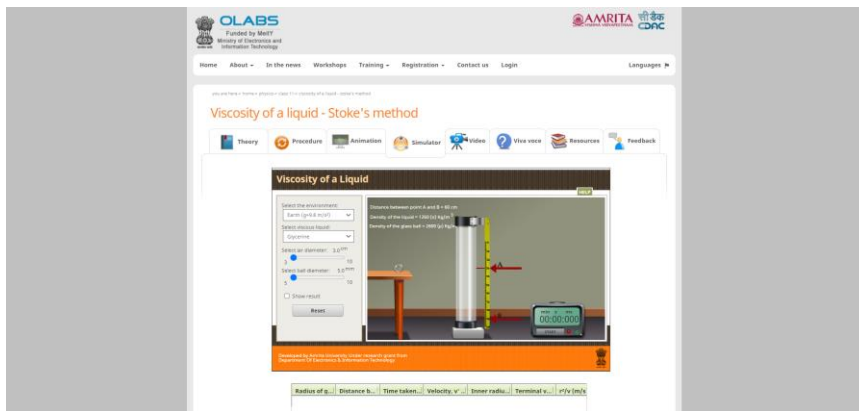

Figure 2. Amrita OLabs Viscosity of a liquid - Stoke's method

The use of Amrita OLabs in the material *Viscosity Stoke's Method* is used to determine whether there is an effect on digital literacy and emotional intelligence of the subject by using the *One Way Anova* test, so as to obtain a decision whether or not there is an influence between the subject's *N-Gain* on digital literacy and emotional intelligence variables with the hypothesis ; H_0: sig > α, then there is an influence between *N-Gain* and digital literacy; H_{a0} < α, then there is no effect between *N-Gain* and digital literacy. H_1: sig > α, then there is an influence between N-Gain and emotional intelligence; H_{a1}: sig < α, then there is no effect between *N-Gain* and emotional intelligence. *Pearson's Correlation* used to determine the correlation between digital literacy variables and emotional intelligence with H_2: sig < α, then there is a correlation between the variables of digital literacy and emotional intelligence; H_{a2}: sig > α, then there is no correlation between digital literacy and emotional intelligence variables, with the degree of relationship that can be seen in Table 2.

Table 2. Pearson's Correlation Degree Guide

| Pearson's Correlation Value	Correlation
0.00 – 0.20	No correlation
0.21 – 0.40	Weak correlation
0.41 – 0.60	Medium correlation
0.61 – 0.80	Strong correlation
0.81 - 1	Perfect Correlation

3. RESULTS AND DISCUSSION

Descriptive analysis is used to find out the statistics descriptively so that they can continue the next statistical test. Descriptive analysis conducted on two variables, namely digital literacy (DL) and emotional intelligence (KE) can be seen in Table 3.

Table 3. Descriptive Analysis of Digital Literacy and Emotional Intelligence

Aspect	N	Minimum	Maximum	Mean	Std. Deviation
KE	30	40.40	85.880	61.10367	13.54945
DL	30	40.25	85.750	59.37500	13.63513

Table 3 shows the mean value for KE of 61.10367 with Std. Deviation is 13,54945, while digital literacy gets a mean of 59.37500 with Std. Deviation is 13,63513. The results of the comparison between digital literacy and emotional intelligence can be seen in Figure 3.
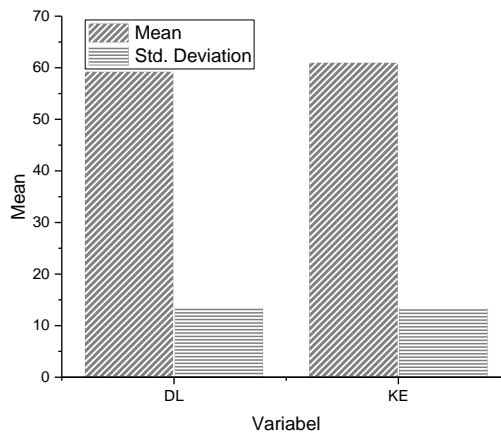
Figure 3. Comparison Graph between Digital Literacy and Emotional Intelligence

Next, perform the One-Way Anova test to find out whether there is an influence between the subject's N-Gain on digital literacy and emotional intelligence variables which can be seen in Tables 4 and 5.

Table 4. ANOVA Descriptive

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
DL	Ineffective	4	56.52	8.971	4.485	42.244	70.795	44.600	66.200
	Less effective	11	60.10	14.658	4.065	51.243	68.959	40.400	82.720
	Effective enough	15	62.93	14.391	4.154	53.788	72.076	42.780	85.880
KE	Ineffective	4	62.43750	18.577961	9.288980	32.87582	91.99918	43.250	80.750
	Less effective	11	63.25000	13.558131	3.760349	55.05690	71.44310	40.750	85.750
	Effective enough	15	52.43750	9.118615	2.632318	46.64381	58.23119	40.250	70.000

Table 5. ANOVA

|		Sum of Squares	df	Mean Square	F	Sig.
DL	*Between Groups*	134.173	2	67.087	.342	.713
	Within Groups	5098.148	26	196.083		
	Total	5232.321	28			
KE	*Between Groups*	795.597	2	397.798	2.489	.103
	Within Groups	4155.938	26	159.844		
	Total	5911.862	41			

Table 6 or a table about the influence of digital literacy on emotional intelligence shows the significance value of digital literacy (DL) getting .713, which means that the hypothesis taken is accept H_0 reject H_{a0}, in other words, the influence of digital literacy on N-Gain in the material Viscosity Stoke's Method assisted by the virtual laboratory Amrita OLabs. In addition, on emotional intelligence (KE) the result is .103, which means accept H_1 reject H_{a1}, or in other words, the influence of emotional intelligence on N-Gain in the material Viscosity Stoke's Method assisted by the virtual laboratory Amrita OLabs.

In order to find out the correlation results, a correlation test was carried out using Pearson's Correlation which can be seen in table 6 and Figure 4 for the scatter plot.

Table 6. Pearson's Correlation Test

		DL	KE
DL	Pearson Correlation	1	.379
	Sig. (2-tailed)		.039
	N	30	30
KE	Pearson Correlation	.379	1
	Sig. (2-tailed)	.039	
	N	30	30
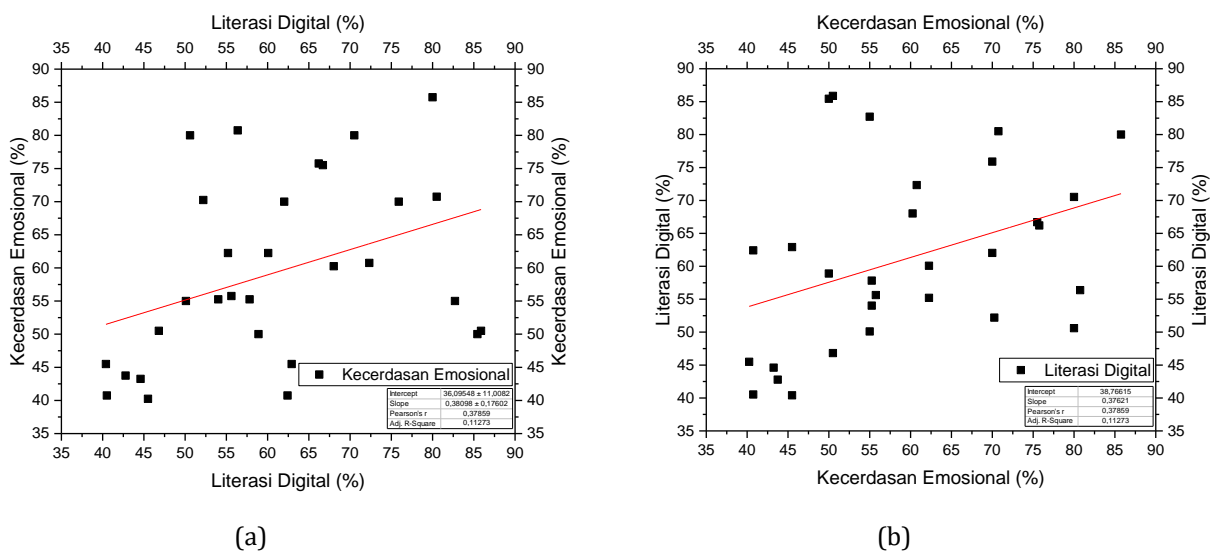
(a)   (b)
Figure 4. Scatter Plot on (a) Emotional Intelligence, and (b) Digital Literacy

Correlation test in table 6 shows that the value of Sig. (2-tailed) are in the value of digital literacy and emotional intelligence variables get a value of .039 or in the sense of Sig < 0.05, then the hypothesis that is taken is refuse to accept H_2, reject H_{a2}. Whereas in Pearson's Correlation

the results are .379, if viewed in terms of the degree of relationship, then the correlation between variables gets a low correlation. The low level of correlation can also be seen in Figure 4 which shows the distribution of data that is less evenly distributed and tends to move away from each other between data. Pearson's Correlation got positive results, so when digital literacy increases, there will be an increase in emotional intelligence as well, and when emotional intelligence increases, there will be an increase in emotional intelegence. The results of the study also show that increasing digital literacy will be very easy to improve if emotional intelligence is higher, as stated by Rahman (Rahman et al., 2021) which states that the higher a person's emotional intelligence, the easier it will be for that person to increase their digital literacy, or in other words the person can be called a digital intelligence person. Tohara (Tohara, 2021) in his research added that the need to increase digital literacy, must be accompanied by a review of one's emotional intelligence, because it will be easier to increase digital literacy in someone who has a high level of emotional intelligence. This study recommends that to review the increase in digital literacy on emotional intelligence by using other media, and also find out the effectiveness of using a media to increase digital literacy in terms of emotional intelligence. vice versa.

4. CONCLUSION

The results of the study show that there is an influence between digital literacy on N-Gain and emotional intelligence on N-Gain¬, by showing the value of sig. the ANOVA test conducted on digital literacy on N-Gain got a result of .713 and on emotional intelligence on N-Gain got a result of .103. The results of sig ANOVA in both domains on N-Gain¬ shows there's an influence for digital literacy using Amrita OLabs in Viscosity Stoke's Method material. The results of the correlation test using Pearson's test also get the results of sig .039, which means Sig < 0.05 with the decision that $H_3 < \alpha$ or there is a correlation between the digital literacy domain and emotional intelligence, but the *Pearson's Correlation* score gets results .379, this indicates that the correlation level is low, this can also be

seen in the *scatter plot* which shows the distribution of the data is less evenly distributed and tends to move away from the data. The implication of this research is that educators can find out that using a virtual laboratory, especially Amrita OLabs, can improve digital literacy. In addition, other researchers can find out that there is an influence between digital literacy on emotional intelligence that later educators can consider class division to improve digital literacy or focus on digital literacy in terms of students' emotional intelligence levels.

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APPENDIX

A1. Digital Literacy Assessment

Domain	Aspect	Description
Digital Literacy	Internet Basic	The subject is able to operate the internet (including browsers) and shortcuts from a website such as returning to the home page, opening a menu, looking for a menu, distinguishing hyperlinks in a website, to uploading files on a website.
	Use of Windows/Mac OS	The subject is able to operate Windows and Mac OS, such as opening and closing applications, dividing two tabs, shortcuts to change applications, managing the internet network, increasing/decreasing the volume, to deleting and restoring files.
	Computer Basic	The subject is able to use a computer/laptop, such as classifying the types of hardware, the use of a piece of hardware, turning the computer/laptop on and off, inserting a CD into the computer/laptop, to operating the mouse.

A2. Emotional Intelligence Assessments

Domain	Aspect	Description
Emotional Intelligence	Perception	Subjects can provide a perspective on their emotional self, whether it is good/bad, and how the subject knows him/herself to his emotional self.
	Understanding	The subject understands the meaning of the emotions that arise, and understands what others are feeling in accordance with the subject's understanding of the emotional self.
	Facilitation	The subject knows from how he overcomes a problem with his mood. When the subject is sad, happy, or angry, what to do when facing a problem that befalls him/her.
	Self-Management	Indicates an effectiveness of various solutions to regulate the emotions of oneself and others