The Relationship between Perceptions of Online Learning and Self-Regulation of Mathematics Education Students

Hesty Marwani Siregar[1*], Titi Solfitri[2], Syarifah Nur Siregar[3]

[1,2,3]Mathematics Education Department, Universitas Riau, Indonesia
*Email: *hesty.marwani@lecturer.unri.ac.id*

Abstract. *Students' perceptions of learning influence the achievement of learning objectives. With the current online learning, students need to have good self-regulation to obtain excellent learning outcomes. Therefore, this study aims to examine the relationship between perceptions of online learning and the self-regulation of Mathematics Education students during the COVID-19 pandemic. The subject of this research is 121 students in semesters 2, 4, and 6 of the Mathematics Education Program in One University in Indonesia. Students in that semester are students who have experienced both face-to-face lectures and online lectures. To collect data in the study, researchers use questionnaires. This study uses descriptive statistical and quantitative analysis techniques. The results showed that student perception of online learning was correlated to student self-regulation during the COVID-19 pandemic (r=0.545 or moderate correlation). It means when students have a good perception of online learning, their self-regulation tends to be good, vice versa. Thus, one way to improve student self-regulation is by increasing student perceptions of online learning.*

Keywords*: relationship, perceptions, online learning, self-regulation*

Introduction

Coronavirus disease 19 (COVID-19) is a highly contagious and pathogenic viral infection caused by Coronavirus 2 (SARS-CoV-2), a severe acute respiratory syndrome emerged in Wuhan, China, and spread worldwide (Shereen, Khan, Kazmi, Bashir, & Siddique, 2020). WHO stated that controlling the rate of transmission of COVID-19, preventive measures, transmission control, isolation, and treatment for infected people need to be considered (WHO, 2020). One way to minimize the spread of the coronavirus is to avoid direct contact either with infected people or other people who look healthy (asymptomatic) (Lotfi, Hamblin, & Rezaei, 2020).

The emergence of the coronavirus and the efforts made to reduce its transmission impact various sectors of life, including education. The lockdown policy, PSBB (Large-Scale Social Restrictions), or physical distancing resulted in face-to-face learning activities at the elementary, middle, and high levels. Thus, online learning activities have been implemented.

Online lectures, also known as online lectures, are interactive learning processes between lecturers and students through social media (Erin & Maharani, 2018). Online lectures make it easier for lecturers to carry out their teaching tasks, such as providing material and assignments to students, and holding exams or quizzes (Sukarno, 2014). Lecturers can carry out learning through applications they master and in accordance with the needs of the lecture.

In fact, the implementation of online lectures received mixed responses from various circles of society. Among students, some feel that online lectures provide convenience as the time for conducting online lectures is flexible. In addition, online lectures are easily accessible anywhere if the signal is adequate, can save time, and is interesting, so the interest in attending lectures is high (Azis, 2020). Several other students stated that online tuition required a large internet cost. In addition, students also assume that the assignments given by some lecturers are more than the assignments during face-to-face lectures (Sutrisno, 2020).

In addition to student responses regarding the implementation of online lectures, lecturers' learning assessments using online lectures also varied. Student complaints about the high cost of internet quotas have caused lecturers to try to minimize the use of video in the learning process, and this is so that the cost of internet used for one meeting can be minimized. In terms of the lectures that have taken place, some lecturers feel that students are more active in asking and participating during online lectures than face-to-face sessions (Sucahyo, 2020). In comparison, some other lecturers think that there are still students who are not serious about taking online lectures. This is because lecturers find it challenging to condition students physically and psychologically to take online lectures.

Responses and thoughts to online lectures, both from students and lecturers, are very diverse. A person's thinking about something is influenced by his perception of a particular object (Desmita, 2012). Students' perceptions of the learning process are influenced by lecturers, lecture materials, and students themselves (Kurniati, Baidowi, & Hikmah, 2018). The selection of teaching methods and media used in the learning process will affect students' perceptions of the lecture process. In addition, the characteristics of each course will also affect students' views on the learning process.

Knowing students' views regarding the learning is very important as a basis for lecturers to take the next step. The study results indicate that students' perceptions of the process will significantly affect mathematics learning outcomes (Sahidin & Jamil, 2013). Students' perceptions of learning Mathematics Education Study Program courses during the COVID-19 pandemic that utilize internet access will undoubtedly be different from students' perceptions of learning Mathematics Education Study Program subjects with a direct face-to-face system. Especially for maths. Lecturers need to be careful in choosing applications that will be used in the learning process and how to deliver them to achieve the expected learning objectives.

There is a close relationship between independence, maturity, motivation, and discipline (Goulão & Menedez, 2015). That is, the greater the autonomy, the greater the maturity, motivation, and discipline. This is because, in online learning, students are more flexible in participating in learning activities, and this flexibility must be followed by great responsibility

for their respective learning processes. Therefore, self-regulation skills are needed not to delay work and complete the work with full responsibility (Goulão & Menedez, 2015).

Self-regulation, according to Bandura, is the ability to manage and carry out a behavior that is carried out to improve his performance so that he can achieve the desired goal (Chairani & Subandi, 2010). Self-regulation refers to how students master their learning process, mental abilities, and performance (Zimmerman, 2015). Self-regulation emphasizes the ability of students to manage and understand the whole process that occurs in the social environment (Chaves-Barboza, Trujillo-Torres, López-Núñez, & Sola-Martínez, 2017).

Self-regulation in online learning is based on activeness and efforts to find learning resources to achieve learning goals (Yen, Tu, Sujo-Montes, & Sealander, 2016). Independent learners optimize learning strategies through self-regulation and continuous self-assessment of their success (Cheng, 2011). Therefore, self-regulation as a predictor of success is essential to be developed by lecturers through good management of the learning process (Macejka, 2014). Self-regulation in learning is done through proactive self-management, self-knowledge, and self-control (Goulão & Menedez, 2015).

Self-regulation does not necessarily appear in students. Many factors may encourage the emergence of this ability. One of them is the internal motivation within the students. The motivation that arises in a person is influenced by the individual's perception of an object. There was a significant influence of the perception of learning mathematics on students' learning motivation in mathematics at SMAN 1 Curup TP 2015/2016 schools (Syaripah, 2016). The research conducted by Kusaeri and Cahyan (2016) also revealed that attitudes and perceptions in mathematics contribute and are significantly related to students' self-regulation abilities in learning mathematics.

These previous studies reported a relationship between student perceptions of learning and student self-regulation. However, in the previous studies, learning was done face-to-face. With the current COVID-19 pandemic situation, face-to-face teaching and learning activities are somewhat tricky. Thus, online learning is one way to keep teaching and learning activities going. Of course, the perception and self-regulation of students participating in online learning will differ from those of students participating in face-to-face learning. This is due to the different situations and conditions between online and face-to-face learning, especially for mathematics courses which for most students require a detailed explanation directly from the lecturer. Therefore, it is necessary to investigate whether there is a relationship between student perceptions of online learning and self-regulation. Thus, researchers are interested in researching the relationship between Perceptions of Online Learning and Self-Regulation of Mathematics Education Students. The purpose of this study is to find out whether there is a

relationship between perceptions about online learning and the self-regulation of students of the Mathematics Education Program in One University in Indonesia during the COVID-19 pandemic.

Method

The research is focused on examining a relationship between the perception toward learning online with self-regulation of students in Mathematics Education in the pandemic COVID-19. The variables in this study were the perception of students of Mathematics Education in the pandemic COVID-19 and their self-regulation. This study aims to examine the relationship between perceptions of online learning and the self-regulation of Mathematics Education students during the COVID-19 pandemic. According to the purpose of the research, the design study used is research quantitative with the method of correlation.

The research subjects were 121 students in semesters 2, 4, and 6 of Mathematics Education Program, Faculty of Teacher Training and Education at one university in Indonesia. Students in those semesters have experienced both face-to-face lectures and online lectures. During the Covid-19 pandemic, online lectures took place synchronously and asynchronously, provided that 60% of lectures were conducted synchronously. The platforms used included zoom, WhatsApps, Google Classroom, and Google meet.

The instruments for data collection were a questionnaire of students' perception of online learning and a self-regulation questionnaire. The questionnaire model used in this study is a Likert scale model. Responses to the questionnaire consisted of strongly agree, agree, disagree, and strongly disagree. The questionnaires were validated by two experts. Later, the questionnaires were improved according to the comments of experts before the validity and reliability tests were conducted. The questionnaires were also revised based on the results of the test validity and reliability before being administered to students of Mathematics Education Program in one university in Indonesia.

The score of the validity of the student perception questionnaire on online learning and the self-regulation questionnaire can be seen in Tables 1 and 2. The reliability test scores for perception questionnaire and the self-regulation questionnaire were also obtained from Cronbach alpha, 0.85 and 0.86 respectively.

Table 1. The score of validity of the student perception questionnaire on online learning

Item	r_{xy}	t count	t table	Description
1	0.49	4.27	2	Valid
2	0.47	4.07	2	Valid
3	0.51	4.50	2	Valid
4	0.47	3.99	2	Valid
5	0.51	4.53	2	Valid
6	0.57	5.17	2	Valid
7	0.53	4.72	2	Valid
8	0.46	3.89	2	Valid
9	0.47	3.97	2	Valid
10	0.51	4.45	2	Valid
11	0.57	5.19	2	Valid
12	0.45	3.79	2	Valid
13	0.43	3.64	2	Valid
14	0.42	3.54	2	Valid
15	0.53	4.77	2	Valid
16	0.43	3.61	2	Valid
17	0.61	5.83	2	Valid
18	0.49	4.22	2	Valid
19	0.62	6.04	2	Valid
20	0.46	3.89	2	Valid
21	0.40	3.31	2	Valid

Table 2. The score of the validity of the student self-regulation

Item	t count	t table	Description
1	4,49	2	Valid
2	7,73	2	Valid
3	4,65	2	Valid
4	4,38	2	Valid
5	3,93	2	Valid
6	6,26	2	Valid
7	4,9	2	Valid
8	7,37	2	Valid
9	7,03	2	Valid
10	5,42	2	Valid
11	6,88	2	Valid
12	5,79	2	Valid
13	5,16	2	Valid
14	4,12	2	Valid
15	4,14	2	Valid

Descriptive statistics were also used to measure students' questionnaire perception towards online learning and students' self-regulation. Data scores perception and self-regulation obtained were based on the category of Azwar (2012), as seen in Tables 3 and 4.

Table 3. The category of perception

Range	Category
x < 34	Very Low
34 ≤ x < 46	Low
46 ≤ x < 59	Medium
59 ≤ x < 71	High
x ≥ 71	Very High

Table 4. The category of self-regulation

Range	Category
x < 24	Very Low
24 ≤ x < 33	Low
33 ≤ x < 42	Medium
42 ≤ x < 51	High
x ≥ 51	Very High

Data scores of students were then grouped based on the category and the percentage for each category was calculated. The percentage of the Perception and self-regulation was categorized based on Purwanto (2012), as presented in Table 5.

Table 5. The percentage category of achievement of perception and self-regulation

Percentage	Category
86 ≤ p ≤ 100	Very high
76 ≤ p < 86	High
60 ≤ p < 76	Medium
55 ≤ p < 60	Low
p < 55	Very Low

The data analysis results were further interpreted to obtain an overview of students' perception towards learning the online and self-regulation. The questionnaire data was then analyzed using Spearman's rho to examine the correlation between the perception of students towards learning online with self-regulation. The test was conducted by SPSS. The magnitude of the correlation coefficient is interpreted according to the categories of Hinkle, Wiersma, and Jurs (2003), as displayed in Table 6.

Table 6. The interpretation of the magnitude of the coefficient of correlation

Range	Interpretation
0 ≤ r < 0.3	Negligible
0.3 ≤ r < 0.5	Low
0.5 ≤ r < 0.7	Moderate
0.7 ≤ r < 0.9	High
0.9 ≤ r ≤ 1	Very high

Results and Discussion

Data scores of students' perceptions of online learning obtained in this study were processed to get an overview of students of Mathematics Education Program in One University in Indonesia to online learning during the pandemic of COVID-19. The score of the perception of each student was grouped into the category as seen in Table 7.

Table 7. The results of grouping perception of students

Category	Number	Percentage (%)
Very low	0	0
Low	0	0
Medium	77	63.64
High	43	35.54
Very high	1	0.83

Table 7 shows that the student's perception is in the category of medium, high, and very high. The medium category has the largest number of students (77 students or 63.64%). The high category consisted of 43 students (35.54%). Furthermore, only one student included in very high category (0.83%). From these data, the mean mathematics education students' perception towards online learning during the pandemic of COVID-19 was adequate. This result is in line with the results of research conducted by Ririen (2019) reporting the influence of the initial knowledge and the student perception explained the learning achievement by 81.4%.

Furthermore, the researchers determined the percentage score of the perception of online learning for each indicator and presented the results in Table 8.

Table 8. The percentage of the perceptions of online learning for each indicator

Aspects	Indicators	Percent (%)	Category
The student's perception about himself during the lecture online	Cultivate an attitude of active in the learning process	71.07	Medium
	Motivation in the learning process	59.3	Low
	Cultivate an attitude of self-learning	69	Medium
	Improve the understanding of	65.19	Medium
Perception about the learning process online ideal	Presentation of the lecture material	89.36	Very high
	Classroom management	75.1	Medium
	Assessment	72.42	Medium
	Access	79.24	High
Perception of online learning that occurs	The Presentation of the lecture material	39.77	Very Low
	Classroom management	76.55	Medium
	Assessment	62.29	Medium
	Access	50	Very Low

Table 8 shows the perceptions of online learning for each indicator. Most indicators are in the medium category. Some indicators are in the category of very low, i.e., "The Presentation of the course material" and "Access" on the aspect of "Perceptions related to online learning that occurs". These findings mean the perception related to the learning that occurs are not in accordance with the perception of online learning expected of students. Presentation of the lecture material during the pandemic COVID-19 has not attracted students' interest and provided an understanding to the students. These results are in line with research conducted by Rifnida, Abdullah, and Herlili, namely, online learning during the COVID-19 cannot be attracting the interest of student learning. Thirty students (62.5%) of the respondents of the study, feel tired during the online learning (Rifnida, Abdulloh, & Herlili, 2021).

In addition to the less interested learning for the students, less stable internet access is also an obstacle for students during the online lectures. This constraint is also found by other researchers at the State High School students in Sewon. Internet credit of students are insufficient to access online learning in Google Classroom. The constraints of the internet connection hinders the students to follow the activities of online teaching and learning

(Marharjono, 2020). Online learning aims to provide good quality online learning; it is massive and open so that it can reach more students (Yohana, Muzakir, & Dina, 2020). However, without any stable support internet, this goal is, of course, challenging to achieve. With less stable internet access, students cannot benefits from the use of the internet in the learning process, such as access to the course material provided lecturer, understand the idea or information delivered by lecturers correctly (Setiyani, 2010), utilizing multimedia effectively in completing the task given by the lecturer (Yohana et al., 2020), access to learning anytime and anywhere (Salsabila, Lestari, Habibah, Andaresta, & Yulianingsih, 2020).

The indicator of "motivation in the learning process" on the "Perception of students about herself during the lecture online" is in the low category (59.3%), meaning that students are less motivated during the lecture online in the pandemic COVID-19. This aligns with a previous study reported students' motivation in participating in online learning in the pandemic COVID-19 declined (Cahyani, Listiana, & Larasati, 2020). Students' high and low learning motivation determine the quality of the behavior in the tasks given (Sardiman, 2018).

The indicators of "cultivate an attitude of active in the learning process", "cultivate an attitude of self-learning", and "improve understanding of the" on "aspects of students ' perceptions about himself during the lecture online" are in the medium category. This means that the lecture online is adequate to make a student active in the learning process, self-learning, and increase the students ' understanding.

The indicators of classroom management and assessment in perception about the learning process online ideal indicator of classroom management and assessment in the perception related to online learning are in the medium category. It means that for the indicator classroom management and assessment, the students' view regarding the ideal online learning and the learning occurred did not differ significantly.

Students' perception of online learning related to the presentation of learning materials, access, and motivation is still in the category of low and very low. So, in online learning, lecturers need to think about how to present the learning materials to attract students and improve their motivation. Furthermore, the lecturers also need to think about presenting the learning material that students can access even when the internet connection is unstable.

Furthermore, the scores of students' self-regulation were analyzed to gain an overview of students' self-regulation in the pandemic COVID-19. The score of self-regulation of each student is grouped and presented in Table 9.

Table 9 shows that 21 students are in the medium category (17.36%), 80 students in the high category (66.12%), and 20 students in a very high category (16.53%). The largest number of students are in the high category with a percentage of 66.12%.

Table 9. The results of the grouping of students' self-regulation

Category	Frequency	Percent
Very low	0	0
Low	0	0
Medium	21	17.36
High	80	66.12
Very high	20	16.53

Furthermore, the percentage of self-regulation for each indicator were then compared with the categories previously determined. The calculation of the percentage of achievement of self-regulation in each of the indicators was done to see whether indicators of self-regulation need to be improved. The results can be seen in Table 10.

Table 10. The results of the calculation of the percentage of achievement of the self-regulation of students for each indicator

Aspects	Indicators	The Percentage Of Achievement Of Self-Regulation	Category
Goal setting	Determines the minimum level of achievement	87.19	Very High
	Set a goal	84.3	High
Environmental management	Site Selection	88.02	Very High
	Selection of conditions	72.93	Medium
Strategy task	Preparation before attending the lecture	68.29	Medium
	How to learn during the lecture	77.27	High
	Way of learning to strengthen understanding	74.79	Medium
	How to complete the task given	75.21	Medium
Time management	Time allocation	63.22	Medium
Search help	Businesses find the right way to understand the lesson that is not yet understood	73.76	Medium
Self-evaluation	Self-reflection	87.6	Very High

Table 10 shows that the lowest category of self-regulation obtained by the students is medium, meaning that students have already had adequate self-regulation. An online learning brings some positive impact for students, i.e., 1) it adds to the intensity of interaction between students and lecturers, 2) learning can be done anywhere and anytime, 3) the learning process can reach wider students, 4) the refining, storing, and accessing learning materials are easier, 5) it can increase students' interest and engagement, 6) it can improve learning outcomes (Suhartono & Indramawan, 2020). Students with good self-regulation could adapt to online learning activities. With good self-regulation, it is expected that students can obtain best learning experience although lectures are done online.

To examine the relationship between students' perceptions of online learning and self-regulation, the Spearman's rho using SPSS was conducted. The hypotheses tested are as follows.

H_0 : There is no significant correlation between the perception of online learning and the self-regulation of students.

H_A : There is a significant correlation between the perception of online learning and the self-regulation of students.

Hypothesis testing was done for a significance level of 0.05. The results of Spearman's rho can be seen in Table 11.

Table 11. The calculation of Spearman's rho correlation coefficient

Correlation

			Perception	Self_Regulation
Spearman's rho	Perception of the	Correlation Coefficient	1.000	.545**
		Sig. (2-tailed)	.	.000
		N	121	121
	Self_Regulation	Correlation Coefficient	.545**	1.000
		Sig. (2-tailed)	.000	.
		N	121	121
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 11 shows that students' perceptions of online learning and self-regulation had a moderate positive correlation, r (119) = .545, p < .001. When students ' perceptions of online learning is good, their self-regulation will also be better, vice versa. The results of this study are in line with Hidayati and Rusmawati (2015) reporting a positive relationship between perceptions of cooperative learning method and self-regulated learning. Research conducted by Kusaeri and Cahyan (2016) also obtained similar results. They revealed that attitudes and perceptions about mathematics have a direct effect on students' self-regulation; the perception of students towards online learning has a positive correlation with the self-regulation of students.

This study showed that the correlation between students' perceptions of online learning and self-regulation was in the moderate category. However, some indicators of student perception were in the low or even very low category. The indicators of perception of online learning that were in the very low and low category were "The Presentation of the course material" and "Access" on the aspect of "Perceptions related to online learning that occurs", and "Motivation in the learning process" on the "Perception of students about herself during the lecture online". These findings mean that students felt that the learning presented were less interesting and less motivating, and their internet access was limited. However, these obstacles created a desire in them to understand the material and learn independently.

The increased self-regulation has a significant effect on learning achievement. Winarso and Supriady (2016), in their research, found that the effect of self-regulation on learning outcomes was 81.9%, meaning that self-regulation is important to develop in students. Based on the positive correlation between students' perceptions of online learning and students' self-

regulation, one way to improve students' self-regulation is to improve students' perceptions of learning. This study revealed that some indicators of self-regulation were in the medium category: selection conditions, preparation before attending the courses, how to learn to strengthen the understanding, how to complete the given task, the allocation of time and effort to find the right way to understand the lesson that is not yet understood. So, self-regulation on such indicators needs to be improved. One of them is to increase the students ' perceptions of learning.

Overall, students' perception of online learning during the pandemic COVID-19 was in a medium category. However, some indicators were in the low or very low category: foster motivation in the learning process, the presentation of the lecture materials, and access. The low perception of this will necessarily be associated with the low self-regulation of students. So, improving students' self-regulation can be done by increasing students' perception through delivering interesting lectures and cultivating student interest. In addition, it is necessary to convey the benefits of the studied material, so that students are motivated to participate in the lectures, study the materials before the class, and complete the task before the deadline.

Another method that could be done is by presenting lecture material into various platforms that students can access easily. For example, if the students have internet constraint to join the lecture, the lecturer can share the material and record a video of the material presented in the virtual classroom for students to watch later. In addition, the lecturer can also give access to students to inquire about the material they do not understand. Through good self-regulation, it is expected that students can obtain optimal learning experience despite the online lectures.

Conclusion

The results showed that students have already had quite good perception of online learning while attending lectures during the COVID-19 pandemic. It can be seen from students' perceptions in the medium, high, and very high categories; the medium category has the highest number of students (77 or 63.64%), followed by the high category (43 and 35.54%).

Likewise, overall, the students' self-regulation in the lectures during the COVID-19 pandemic was quite good. It is indicated by the highest number of students in the high category (80 or 66.12%), followed by the medium and very high categories (21 or 17.36% and 20 or 16.53%, respectively).

The correlation test results revealed a relationship between students' perceptions of online learning and students' self-regulation during the COVID-19 pandemic (r= 0.545 or moderate correlation). It means that students' perceptions of online learning is positively correlated with students' self-regulation. When students' perceptions of online learning are good, their self-

regulation will also be good, vice versa. Thus, one way to improve student self-regulation is by increasing students' perceptions of online learning.

Referring to the research results and the limitations of existing research, the researchers provides recommendations for other researchers in the same field. First, in this study, researchers only examined a relationship between students' perceptions of online learning and self-regulation. So, further research to investigate the influence of students' perceptions about online learning with self-regulation is needed. Second, nowadays, online lectures are unavoidable. Both lectures are conducted online or through blended learning. Therefore, research can be carried out on online learning during the COVID-19 pandemic and blended learning lectures. Third, the affective aspect studied in this study was only related to self-regulation. In following a lesson or lecture, other affective aspects can affect learning outcomes. Therefore, the relationship between perceptions of learning and other affective aspects can still be expanded, not limited to self-regulation only.

Acknowledgment

References

Azis, S. (2020). Cerita mahasiswa kuliah daring, cegah penularan wabah Covid-19. Retrieved November 17, 2020, from Telisik.id website: https://telisik.id/news/cerita-mahasiswa-kuliah-daring-cegah-penularan-wabah-covid-19

Azwar, S. (2012). *Penyusunan skala psikologi*. Yogyakarta: Pustaka Pelajar.

Cahyani, A., Listiana, I. D., & Larasati, S. P. D. (2020). Motivasi belajar siswa SMA pada pembelajaran daring di masa pandemi Covid-19. *IQ (Ilmu Al-Qur'an): Jurnal Pendidikan Islam*, *3*(1), 123–140. https://doi.org/10.37542/iq.v3i01.57

Chairani, L., & Subandi, M. A. (2010). *Psikologi santri penghafal Al-Qur'an: Peranan regulasi diri*. Yogyakarta: Pustaka Pelajar.

Chaves-Barboza, E., Trujillo-Torres, J. M., López-Núñez, J. A., & Sola-Martínez, T. (2017). Actions and achievements of self-regulated learning in unique environments: Research on students participating in the Graduate Program in Preschool Education at the University of Granada. *Journal of New Approaches in Educational Research*, *6*(2), 135–143. https://doi.org/https://doi.org/10.7821/naer.2017.7.236

Cheng, E. C. K. (2011). The role of self-regulated learning in enhancing learning performance. *The International Journal of Research and Review*, *6*(1), 1–16.

Desmita. (2012). *Psikologi perkembangan peserta didik*. Bandung: PT Remaja Rosdakarya.

Erin, & Maharani, A. (2018). Persepsi mahasiswa pendidikan matematika terhadap perkuliahan *online*. *Mosharafa: Jurnal Pendidikan Matematika*, *7*(3), 337–344. https://doi.org/10.31980/mosharafa.v7i3.39

Goulão, M. D. F., & Menedez, R. C. (2015). Learner autonomy and self-regulation in elearning. *Procedia - Social and Behavioral Sciences*, *174*, 1900–1907. https://doi.org/10.1016/j.sbspro.2015.01.853

Hidayati, P., & Rusmawati, D. (2015). Hubungan antara persepsi terhadap metode pembelajaran kooperatif dengan self-regulated learning pada mahasiswa. *Jurnal EMPATI*, *4*(3), 51–55.

Hinkle, D. E., Wiersma, W., & Jurs, S. G. (2003). *Applied statistics for the behavioral sciences 5th edition*. Boston: Houghton Mifflin.

Kurniati, N., Baidowi, B., & Hikmah, N. (2018). Persepsi mahasiswa pendidikan matematika terhadap kinerja dosen dalam proses perkuliahan. *Jurnal Pijar MIPA*, *13*(1), 32–36. https://doi.org/10.29303/jpm.v13i1.471

Kusaeri, & Cahyan, E. D. H. (2016). Sikap, harapan, dan persepsi siswa pada matematika serta implikasinya terhadap kemampuan regulasi diri. *Jurnal Pengajara MIPA*, *21*(2), 114–121. https://doi.org/10.18269/JPMIPA.V21I2.818

Lotfi, M., Hamblin, M. R., & Rezaei, N. (2020). COVID-19: Transmission, prevention, and potential therapeutic opportunities. *Clinica Chimica Acta*, *508*, 254–266. https://doi.org/10.1016/j.cca.2020.05.044

Macejka, M. (2014). The role of grade level and locus of control in self- regulated learning strategies of college students. *Journal of Education, Psychology and Social Sciences*, *1*(2), 1339–1488.

Marharjono. (2020). Manfaat pembelajaran sejarah menggunakan google classroom pada masa pandemi Covid-19. *Ideguru: Jurnal Karya Ilmiah Guru*, *5*(1), 56–63. https://doi.org/10.51169/ideguru.v5i1.155

Purwanto. (2012). *Metodologi penelitian kuantitatif untuk psikologi dan pendidikan*. Yogyakarta: Pustaka Pelajar.

Rifnida, Abdulloh, & Herlili, E. (2021). Pengaruh pembelajaran daring terhadap minat belajar siswa pada masa Covid-19. *Lentera: Jurnal Ilmiah Kependidikan*, *14*(1), 63–72. https://doi.org/https://doi.org/10.52217/lentera.v14i1.784

Ririen, D. (2019). Pengaruh pengetahuan awal dan persepsi mahasiswa terhadap prestasi belajar statistika ii di stie indragiri rengat. *Jurnal Manajemen dan Bisnis*, *8*(1), 49–60. https://doi.org/10.34006/jmbi.v8i1.67

Sahidin, L., & Jamil, D. (2013). Pengaruh motivasi berprestasi dan persepsi siswa tentang cara guru mengajar terhadap hasil belajar matematika. *Jurnal Pendidikan Matematika*, *4*(2), 212–222. https://doi.org/http://dx.doi.org/10.36709/jpm.v4i2.2034

Salsabila, U. H., Lestari, W. M., Habibah, R., Andaresta, O., & Yulianingsih, D. (2020). Pemanfaatan teknologi media pembelajaran di masa pandemi Covid-19. *Trapsila: Jurnal Pendidikan Dasar*, *2*(2), 1–13. https://doi.org/10.30742/tpd.v2i2.1070

Sardiman, A. M. (2018). Interaksi dan motivasi belajar mengajar (cetakan 24). In *Jakarta: Rajawali Pers*.

Setiyani, R. (2010). Pemanfaatan internet sebagai sumber belajar. *Jurnal Pendidikan Ekonomi Dinamika Pendidikan*, *5*(2), 117–133.

Shereen, M. A., Khan, S., Kazmi, A., Bashir, N., & Siddique, R. (2020). COVID-19 infection:

origin, transmission, and characteristics of human coronaviruses. *Journal of Advanced Research*, *24*, 91–98. https://doi.org/10.1016/j.jare.2020.03.005

Sucahyo, N. (2020). Kuliah daring karena corona, mahasiswa keluhkan paket data. Retrieved from VOA Indonesia website: https://www.voaindonesia.com/a/kuliah-daring-karena-corona-mahasiswa-keluhkan-paket-data-/5333590.html

Suhartono, & Indramawan, A. (2020). Analisis pengaruh pembelajaran daring terhadap kemampuan literasi bahasa mahasiswa. *Innovative*, *8*(1), 137–154.

Sukarno, S. (2014). Peningkatan kualitas perkuliahan melalui penerapan model blended learning dengan aplikasi learning management system pada mahasiswa program sarjana kependidikan bagi guru dalam jabatan. *Jurnal Pendidikan dengan Pembelajaran (JPP)*, *21*(1), 61–70.

Sutrisno, D. (2020). Curhat mahasiswa kuliah online, banyaknya tugas hingga rindu ngampus. Retrieved July 5, 2020, from IDN Times website: https://jabar.idntimes.com/news/jabar/debbie-sutrisno/curhat-mahasiswa-kuliah-online-banyaknya-tugas-hingga-rindu-ngampus/6

Syaripah. (2016). Pengaruh persepsi pembelajaran matematika terhadap motivasi belajar siswa dalam bidang matematika di sekolah SMA N 1 Curup Timur T.P 2015/2016. *EduTech: Jurnal Ilmu Pendidikan dan Ilmu Sosial*, *2*(2), 117–131. https://doi.org/10.30596/edutech.v2i2.604

WHO. (2020). WHO director-general's opening remarks at the media briefing on COVID-19 - 11 March 2020 - World Health Organization. Retrieved from World Health Organization website: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020

Winarso, W., & Supriady, D. (2016). Menilai prestasi belajar melalui penguatan self regulated learning dan kecerdasan emosional siswa pada pembelajaran matematika. *Jurnal Didaktik Matematika*, *3*(2), 54–66. https://doi.org/10.5281/zenodo.496133

Yen, C.-J., Tu, C.-H., Sujo-Montes, L., & Sealander, K. (2016). A predictor for PLE management: impacts of self- regulated online learning on students' learning skills. *Journal of Educational Technology Development and Exchange*, *9*(1), 29–48. https://doi.org/10.18785/jetde.0901.03

Yohana, Muzakir, & Dina, H. (2020). Efektivitas pembelajaran daring pada program studi pendidikan ekonomi koperasi fakultas keguruan dan ilmu pendidikan universitas qamarul huda badaruddin. *Jurnal Tirai Edukasi*, *1*(4), 1–8.

Zimmerman, B. J. (2015). Self-Regulated learning: Theories, measures, and outcomes. *International Encyclopedia of the Social & Behavioral Sciences: Second Edition*, *21*, 541–546. https://doi.org/https://doi.org/10.1016/B978-0-08-097086-8.26060-1