



## SELF REGULATED LEARNING OF VOCATIONAL STUDENTS IN MATHEMATICS LEARNING DURING COVID-19 PANDEMIC

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### Abstract

*The Covid-19 pandemic that is currently sweeping the world, including Indonesia, made the government make the decision to implement PSBB (large-scale social restrictions) by asking people to stay at home, including the learning process at school. The learning process carried out online or online indirectly makes students adapt to the new learning process. Students are required to be able to do self-regulation in learning (self regulated learning). Self regulated learning is important for students, especially when learning is carried out online. This study aims to obtain a picture of self-regulated learning of class XI SMK students during the Covid-19 pandemic. This research is a quantitative-descriptive study using a survey method. The instrument used was a self-regulated learning questionnaire which had 23 statement items. Data collection was carried out using an online questionnaire on google form which was given to students of class XI Fashion Design Vocational Schools. The results of the SRL research for students of class XI Fashion Design at SMK Negeri 3 Pekanbaru during the pandemic were 17% students with high SRL, 53% students with moderate SRL and 30% students with low SRL. tudent's SRL is low on indicators of evaluating learning processes and outcomes as well as self-efficacy (self-concept), this is influenced by individual, behavioral and environmental factors.*

**Keywords:** *self regulated learning, factors affecting, online learning.*

### INTRODUCTION

The Covid – 19 is hitting almost all of the countries in the world including Indonesia. The government

provides directions and issues regulations to break the chain of Covid-19 infections by maintaining safe distance between individuals or



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better known as Physical Distancing. This implementation including worship at home, work from home and school from home. It is expected that everyone will not panic facing the Covid-19 pandemic.

This phenomenon is a new challenge for students and teachers in carrying out teaching and learning activities. It raises unusual learning pattern from learning face-to-face at school to face-to-face visually (online). This learning is on the role of students themselves in carrying out this new learning pattern, all of things are online. The online learning process can still run through several applications recommended by the Minister of Education and Culture, including Google Classroom, Zoom, Educational TV, interactive learning on the learning house portal, teacher's room and other online learning applications. In online learning, students must be responsible for themselves in learning process, can control attitudes, control positive emotions, complete tasks, and optimize gadgets as learning tool.

This is certainly a challenge for the organizers of educational programs such as schools. Various obstacles were encountered, ranging from networks to learning strategies that were not optimal. In this situation, internal encouragement within students is needed to not rely the learning process only on the limited information provided by the teacher. Independence and self-regulated learning are needed to optimize the learning process itself.

Students who have good self-regulated learning (SRL) in using gadgets will avoid negative influences (Yulanda, 2017). SRL is important in

learning abstract mathematics (Wanti, 2017). SRL is also important for individuals to believe and plan their emotional actions to complete certain tasks in learning (Gestiardi & Maryani, 2020). To achieve high learning achievement, students must have good self-regulation (Latipah, 2010). Students who learn by self-regulation not only know what each task requires, but they can also apply the required strategies (Mulyana et al., 2015).

Self regulated learning defined as a technique that students do in planning, monitoring, and regulating their own learning by referring to the thoughts, feelings and actions that have been planned and adapted by involving motivation in the learning process to be able to regulate and direct themselves, adjust and control themselves in dealing with learning tasks (Pulungan et al., 2018).

Self regulated learning can also affect student involvement in terms of emotion. Students who have self-regulated learning will avoid learning boredom. It is because students will be able to control their learning motivation (Mukaromah et al., 2018). It can be concluded that self-regulated learning is an independent learning process carried out by students such as planning, monitoring, managing their own learning, facing tasks and fostering learning motivation.

Self-regulation in learning has significant role in student achievement (Damayanti, 2015). The importance of self-regulated learning for students is supported by research conducted by Dorrenbacher & Perels (2016), showed the results that achievement is significantly higher for students with high SRL and motivation. However students with low achievement are

students with low SRL and low motivation as well..

Students who have self-regulated learning will certainly be confident and diligent (Koto & Nirwana, 2019). The ability to self organize with conditions in the environment becomes strong tool for students to experience the maximum learning process (Saputra, 2018). Students who have self-regulated learning tend to carry out the learning process by prioritizing the environmental context and even have confidence and perseverance in learning. However, not all vocational students have good self-regulated learning.

In fact, students have difficulty in managing time for study as well as activities inside and outside school (Yulianti et al., 2016). Other problems often occur in learning mathematics such as most of students lack of willingness to repeat or recall mathematics topics at home so that they do not achieve target in learning, did not prepare well so that become procrastinate to participate in learning, prefer to cheat on friend's assignment, chatting with friends during class, even lack of attitude during learning process (Amelia & Taufik, 2021).

According to Schunk and Zimmerman (Sugandi, 2013) There are three main phases in the learning independence cycle, namely: designing learning, monitoring learning progress during implementing the design, and evaluating learning outcomes completely. Based on these SRL phases Lestari & Yudhanegara (2018) stated indicators of self-regulated learning are as follows: (a) Have the initiative to learn (b) Have the

ability to determine one's own destiny (c) Diagnose learning needs (d) Monitor, regulate, and control learning (e) Able to restrain oneself (f) Make own decisions. (g) Able to solve problems.

While according to Sumarmo in Hendriana (2017) indicators of self-regulated learning are as follows: (a) Initiative and intrinsically motivated (b) The habit of diagnosing learning needs (c) Setting learning goals or targets (d) Monitoring, organizing and controlling (e) Viewing difficulties as challenges (f) Utilizing and seeking relevant resources (g) Selecting and implementing learning strategies (h) Evaluating learning processes and outcomes (i) Self efficacy (self-concept)

Based on indicators by Lestari & Yudhanegara (2018) and Sumarmo in Hendriana (2017), indicators in this research are: (a) Have a learning initiative. (b) Has the ability to self-determination. (c) Diagnosing learning needs. (d) Monitor, regulate, and control learning. (e) Capable of restraint. (f) Make your own decisions. (g) Able to solve problems. (h) Set learning goals or targets. (i) View adversity as a challenge. (j) Utilize and seek relevant sources. (k) Selecting and implementing learning strategies. (l) Evaluating the process and learning outcomes. (m) Self efficacy (self concept).

Based on this explanation, it can be concluded that self-regulated learning is very important to push ahead the development of students' thinking in learning mathematics. With the development of self-regulated learning, students can learn mathematics in various aspects of life because they are trained and

accustomed to learning independently. Based on these things, this study aims to analyze the extent to which students' self-regulated learning in mathematics learning activities during the covid-19 pandemic.

## METHODS

This study uses quantitative descriptive research, which describes the phenomenon to find out something happening (Gall et al., 2014). This research was conducted at SMK Negeri 3 Pekanbaru on 30 students of class XI Fashion Design in the even semester of the 2020/2021 academic year. This study uses data collection techniques in the form of an online questionnaire conducted in March, 2021 via google form.

The instrument used in this study was the SRL questionnaire which was

modified by (Fineldi, 2020) with a Likert scale of 1-4. Consists of 23 items of statements of which 12 are positive and 11 are negative. The reliability coefficient using the cronbach alpha formula ( $r$ ) is 0.871.

The data generated in this study is in the form of quantitative data. The presentation of quantitative descriptive data obtained from the results of questionnaires distributed online, then the data were analyzed using statistical descriptive methods. The results are then presented in the form of figures and tables. SRL capabilities are grouped into three categories, namely high, medium and low SRL. For student SRL grouping criteria can be seen in Table 1.

Table 1. Self-regulated learning grouping criteria

Criteria	Category
$SRL \geq \bar{X} + s = SRL \geq 66.67 + 9.65 = SRL \geq 76.32$	high SRL student
$\bar{X} - s < SRL < \bar{X} + s = 57.01 < SRL < 76.32$	medium SRL student
$\bar{X} - s \leq SRL = 57.01 \leq SRL$	low SRL student

Information:  $\bar{X}$  = mean,  $s$  = standard deviation

Based on the standard deviation and the average of the SRL questionnaire scores obtained, the criteria for grouping students' SRL will be grouped into students who have

high SRL, medium SRL and low SRL. Meanwhile, to see the category of each SRL indicator using a standard scale of five can be seen in Table 2.

Table 2. Category of each SRL indicator

Criteria	Interval	Category
$x \geq \bar{X} + 1.5 s$	greater than or equal to 81	Very good
$\bar{X} + 0.5 s \leq x < \bar{X} + 1.5 s$	71 – 80	Good
$\bar{X} - 0.5 s \leq x < \bar{X} + 0.5 s$	62 – 70	Fair
$\bar{X} - 1.5 s \leq x < \bar{X} - 0.5 s$	52 – 61	Poor
$x < \bar{X} - 1.5 s$	less than or equal to 51	Very poor

Information :  $\bar{X}$  = mean,  $s$  = standard deviation

The SRL indicator category uses a five standard scale, namely: very good, good, fair, poor and very poor. This category is based on the criteria of the standard deviation and the average of the obtained SRL questionnaire scores.

The categorization of the SRL indicators is to see what indicators are the cause of the low SRL of SMK students in learning mathematics.

## RESULTS AND DISCUSSION

Based on the results of questionnaire collected from 30 respondents of class XI Fashion Design SMK Negeri 3 Pekanbaru, data obtained in the form of numbers tabulated and presented in the form of figures and tables. Based on descriptive statistics, the mean is 66.67 with a maximum value of 83 and a minimum value of 48, with a standard deviation of 9.65.

The next step is to categorize SRL abilities based on questionnaire filled in by class XI Fashion Design students at SMK Negeri 3 Pekanbaru. The percentage of students' self-regulated learning is grouped based on high, medium and low categories. The following is presentation of the results of the grouping of students' SRL in percentage form.

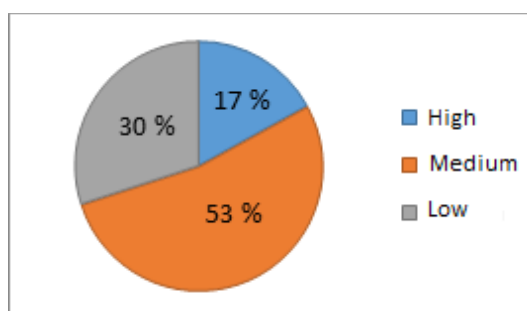


Figure 1. SRL category percentage

Based on Figure 1. it can be seen that the results of frequency of answers to questionnaire are grouped into three categories, namely students with high, medium and low SRL. There are 17% of students with high SRL, 53% of students with medium SRL and 30% of students with low SRL. This result is different with Azizah et al. (2019) which classified students into five categories of SRL in solving problems.

Students who have high SRL have high learning initiative in learning mathematics. Before learning takes place students have set targets and learning objectives to be achieved such as completing assignments on time, looking for other learning resources, focusing on learning and being able to refrain from playing in the mathematics learning process.

Students who have high SRL also view mathematics problems given by teacher as challenge, so that students try to solve the problems given. This is agree with Koto & Nirwana (2019) Students who have high SRL will always self-evaluate the quality of their assignments and the progress of their own learning process, make plans and learning goals, arrange schedule for completing their assignments and have the initiative to try to find information outside of sources when working on assignments.

Students who have moderate SRL tend to have difficulty in managing time and often procrastinate completing assignments. Meanwhile, students who have low SRL lack the willingness to repeat learning material and do not have targets and goals in the learning process and have low self-confidence in solving mathematics problems given by the teacher.

If students have low SRL, it will result in difficulties in receiving subject material so that their learning outcomes are not optimal (Adicondro & Purnamasari, 2011). According to Amelia & Taufik (2021) students who have low SRL tend to be less willing to repeat or recall subject material at home, not have achievement targets in the learning process, not prepare before studying, depend on their friends to complete tasks such as cheating on a friend's assignment or doubting and not sure of their own answer.

Students who have good *self regulated learning* ability called *self regulated learner* (Ruliyanti, 2014). *Self regulated learner* have a good strategy of organizing information in receiving learning materials. They usually have neat and complete notes so that the material becomes easy to learn. *Self regulated learner* tend to control their own learning behavior, such as managing their own time and learning environment, and have good

emotional management such as generating effort when faced with failure.

According to Savira & Suharsono (2013) A student who has a high SRL describes a student who is able to independently make arrangements for several things that direct his thoughts, motivations and behavior towards achieving goals where students have a directed plan to determine the time required for each stage of the activity to be carried out.

This is in line with what was stated by Zimmerman & Martinez-Pons in Zamnah (2017) that students who have independence in learning show their ability to control the learning process so that it runs well and learning uses a problem-centered learning approach without hands-on activity, and students who have independence in learning have a great responsibility for achievement.

There are several indicators in the SRL, to see the answers of student respondents on each indicator can be seen in Table 3 below:

Table 3. SRL questionnaire scores

No	Indicators	Item number	Statement Criteria								TC (%)	Information
			SS		S		K		TP			
			F	%	F	%	F	%	F	%		
1	Have learning initiative	2	23	38,3	21	35,0	16	26,7	0	0,0	77,9	Good
2	Diagnosing learning needs	2	42	70	12	20,0	4	6,7	2	3,3	89,2	Very good
3	Monitor, organize and control learning	2	12	20	20	33,3	25	41,7	3	5,0	67,1	Fair
4	Setting learning goals or targets	2	31	51,7	17	28,3	7	11,7	5	8,3	80,8	Good
5	Viewing difficulties as challenge	1	16	53,3	10	33,3	4	13,3	0	0,0	85,0	Very good

6	Utilize and search for relevant sources	3	28	31,1	29	32,2	28	31,1	5	5,6	72,2	Good
7	Selecting and implementing learning strategies	3	13	14,4	34	37,8	37	41,1	6	6,7	65,0	Fair
8	Have the ability to determine your own destiny	2	24	40	11	18,3	20	33,3	5	8,3	72,5	Good
9	Being able to hold back	1	5	16,7	25	83,3	0	0,0	0	0,0	79,2	Good
10	Making own decision	1	6	20	5	16,7	19	63,3	0	0,0	64,2	Fair
11	Being able to overcome problems	1	12	40	16	53,3	2	6,7	0	0,0	83,3	Very good
12	Evaluating learning process and outcomes	1	4	13,3	7	23,3	16	53,3	3	10,0	60,0	Poor
13	<i>Self efficacy</i> (self concept)	2	2	3,33	23	38,3	18	30,0	17	28,3	54,2	Poor

Information: SS = Always, S = Often, K = Sometimes, TP = Never, TC = Achievement Level, F = Frequency

There are 3 indicators with very good level of achievement, namely the indicators of diagnosing learning needs, viewing difficulties as challenges and being able to overcome problems. Students prepare equipment for learning mathematics well such as preparing books, assignments and others. Students are also able to complete the tasks given by the teacher well.

While in other indicators the level of achievement is in good and fair category. As in indicators of utilizing and searching relevant sources with good level of achievement. Students use the library or the internet to study and do math assignments well. Students find it easy to work on practice questions with examples of questions given by the teacher.

Student's confidence becomes important part to drive a continuous learning process (Meiliati et al., 2018). However, the level of achievement in the poor category lies in the indicators of evaluating learning processes and outcomes as well as Self efficacy (self-concept). This is because students are still less interested in finding answers (rechecking) questions both in quizzes or tests that have been done. Students are also less confident in their own abilities, so students cannot work on questions without asking others.

This is in accordance with the results of Kurnia's research (2019) that students in this evaluation phase are still classified into the low category, there are still a small number of students who are able to choose good or bad strategies to use in learning mathematics, and there are still a small

number of students who are able to evaluate themselves in learning.

Research by Febriyanti & Imami (2021) get the same result that in the evaluation phase decreased value. Where a small number of students evaluate after going through the implementation phase. This is because students are still very difficult to evaluate and determine strategies from the results of the evaluation.

According to Zimmerman in Adicondro & Purnamasari (2011) there are three things that influence self-regulated learning, namely the individual, behavior and environment. Individual factors include knowledge, goals to be achieved, and self-efficacy. If a student who has low self-efficacy may not want to try to study for an exam because not believing that studying will help solve the problem.

On environmental factors, the social support that students get can affect self regulated learning (Aziz, 2016). Social support can come from important and close people, for individuals who need help, for example at school, such as teachers and friends. The existence of the role of teachers and parents is very important in the success of student learning (Hamonangan & Widyarto, 2019).

If the individual gets emotional support from family, when facing obstacles in learning, the child will get support from family so that still feels more confident and is still able to plan and control learning activities and take advantage of his environment..

In the process of learning mathematics the teacher can provide problems related to everyday life. Giving problems to students will encourage students to formulate goals

to be achieved, identify the sources needed to seek information and develop a plan for completion. This series of activities will encourage students to be able to monitor themselves in observing information. Students are trained to monitor themselves to be more disciplined in complying with the plans and strategies that have been prepared. At the end of the lesson the teacher invites students to conclude the lesson and evaluate learning so that students will get used to reflecting and evaluating after learning.

## **CONCLUSION**

This research was conducted on class XI Fashion Design students at SMK Negeri 3 Pekanbaru during the pandemic. The results showed that 17% of students with high SRL, 53% of students with medium SRL and 30% of students with low SRL. SRL students are low on indicators of evaluating learning processes and outcomes as well as self-efficacy (self-concept). This is because students are still less interested in finding answers (rechecking) questions both in quizzes or tests that have been done. Students are also less confident in their own abilities, so students cannot work on questions without asking others.

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