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The Relationship of Motivation and Self-regulated Learning through Blended Learning in the Covid-19 Era

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ABSTRACT
This study aims to determine the relationship between motivation and self-regulated learning through blended learning in the covid-19 era. This study is a quantitative study with correlation study type. Samples were taken using random sampling techniques from all 1st-semester students who took basic physics courses and obtained 67 students consisting of 3 classes. The data was collected using the instrument of motivation and self-regulated learning in the form of a questionnaire which was filled in by the students after participating in basic physics courses using blended learning. The data that has been collected is then analyzed for normality and linearity. The data shows the results are normally distributed and linear so that data analysis can be continued with hypothesis testing using the Pearson product-moment correlation test and the value of R = 0.897 is obtained which is then compared with the R table at a significant level of 0.05, namely 0.244. Because R (0.897)> R table (0.244), it can be concluded that there is a positive relationship between motivation and self-regulated learning with the correlation coefficient value is 0.897 which is classified as very strong. Therefore, students' motivation and self-regulated learning through blended learning in the covid-19 era have a very strong relationship. This could be of concern to teachers and lecturers as facilitators in learning in this Covid-19 era. It is hoped that interesting learning using a blended learning approach can be applied so that student learning motivation increases and has a direct effect on students' desire to manage their own learning.

INTRODUCTION

Learning in this era, where the coronavirus spreads rapidly around the world, is undergoing changes that lead to distance learning. The learning process is no longer carried out in the same place, teachers and students must interact directly in different places or interact indirectly with web-based learning. In general, the learning used during the Covid-19 pandemic is the blended learning approach [1]. This

learning combines face to face instruction with the use of technology [2], in more detail, it combines virtual face-to-face instruction as direct (synchronous) learning with web-based instruction as indirect (asynchronous) learning.

The implementation basis of a learning activity is the initiation and process of maintaining an activity from self to achieve a goal, called motivation [3]. If teachers and students are motivated, the learning process with any approach or method will run according to the desired goals. During the Covid-19 pandemic, where learning must be carried out online by combining direct and indirect learning, it was found that student learning motivation was still relatively high and had not changed from before the pandemic period [4]. This proves that the level of motivation possessed by students does not affect the learning approach used, but returns to motivation from within the individual himself. Success in learning can be achieved if students have the motivation to learn because motivation has a positive influence on learning success [5].

Motivation is not the only factor that influences student learning success. In the learning process, other factors influence learning success, namely self-regulated learning. Although the effect is smaller than traditional learning, self-regulated learning can increase learning achievement in online learning [6]. However, self-regulated learning during the Covid-19 pandemic was relatively low in Indonesia because students were not used to implementing full online learning [7]. The many obstacles during the transition period of learning, from direct learning in the classroom to online learning, are a challenge for students, teachers, parents, and various other parties to be able to produce an effective learning process [8]. In line with the research by Wong, K. T., et.al who found the application of blended learning has a significant effect on increasing student motivation but does not have a significant effect on self-regulated learning [9]. This becomes a question, is there no relationship between the level of motivation and self-regulated learning? the high motivation of students cannot foster their self-regulated learning?

In research conducted by Isnawati & Samian found that motivation has a close relationship with self-regulated learning in classroom learning. If students have high learning motivation, then there is an internal desire to carry out the learning process enthusiastically because they have goals to be achieved so that students become more self-regulating [10]. Likewise, Tahar who examined the relationship of self-regulated learning and learning outcomes in distance learning, where students carry out learning indirectly with various learning media sources such as magazines, audiotapes, VCDs, and web-based instruction stated that motivation also has a role. important in fostering self-regulation of students in distance learning [11]. Because in this learning, students are required to manage their own learning, be responsible for the learning carried out, and make use of all learning resources of their own accord. During the Covid pandemic, learning was not only carried out directly but also not only indirectly based on the web. This transitional period adopts the Blended Learning learning approach, which combines virtual face-to-face instruction as direct learning and web-based instruction using a learning management system as indirect learning, to produce an effective and efficient learning process. Therefore, it is necessary to examine the relationship between motivation and self-regulated learning of the student in the blended learning approach. Is the strong relationship between motivation and self-regulated learning also evident in the approach generally used in learning in the Covid-19 era?

METHOD

This research is a quantitative study with a type of correlation study that aims to determine the relationship between motivation and self-regulated learning of students through Blended Learning in the Covid-19 era. The sample in this study was taken using a random sampling technique from all 1st-semester students who took basic physics courses and obtained 67 students with a total sample of 61 women and 6 men who were divided into 3 classes. The research was conducted for 4 months with a total of 16 meetings at the Faculty of Teacher Training and Education - Universitas Syiah Kuala on the Basic Physics course by applying the Blended Learning approach during the lecture process. The blended learning applied in this research is a combination of virtual face-to-face instruction through

the zoom meeting application and web-based learning using Universitas Syiah Kuala e-learning. During the lecture process, all students are required to access e-learning to fill in the attendance list, download teaching materials, collect assignments, take quizzes, and have indirect discussions using the discussion forum on the e-learning system at any time but are scheduled with a span of 1 week /meeting. In addition, material explanations, live discussions, and presentation activities are carried out virtual face-to-face using zoom meetings during scheduled lecture hours.

The instrument used in this study was a questionnaire that measured students' motivation and self-regulated learning which was filled in at the end of the lecture process. The motivation questionnaire used is a questionnaire that has been developed by F Herliana, et.al, referring to the motivation theory of Schunk Pintrich Meece with a total of 30 items covering 3 aspects that are measured, there are, the choice of tasks in learning, effort in learning, and persistence in the face of adversity [12]. The validation of this instrument using the product-moment correlation equation and obtained 30 valid statements. Testing the reliability of the instrument using the Alpha Cronbach formula and it was found that this instrument was reliable with a strong degree because it had an r_{11} score of 0.98 [13]. The motivational instrument grid can be seen in the table below:

Table 1. Learning Motivation Learning Grid

No	Indicator	Statements		Total
		Positive	Negative	
1	The choice of tasks in learning	4	4	8
2	Effort in learning	8	4	12
3	Persistence learning	6	4	10
Total				30

The self-regulated learning questionnaire was developed based on the Online Self-regulated Learning Questionnaire (OSLQ) from Barnard, et.al [14] which includes 6 measured aspects, there are, Goal Setting, Environment Structuring, Task Strategies, Time Management, Help Seeking, and Self Evaluation and obtained 39 points of statements. The validation of this instrument using the product-moment correlation equation and obtained 39 valid statements. The reliability test used the Alpha Cronbach formula and got a score of 0.90, so it can be concluded that this instrument is realistic. The self-regulated learning instrument grid can be seen in the table below:

Table 2. The self-regulated learning instrument grid

No	Indicator	Statements		Total
		Positive	Negative	
1	Goal Setting	2	1	3
2	Environment Structuring	3	3	6
3	Task Strategies	10	3	13
4	Time Management	3	2	5
5	Help Seeking	3	2	5
6	Self-Evaluation	3	4	7
Total				39

The measurement scale used in the two questionnaires is the Likert scale with a scale of 1 to 5 for scoring and is adjusted according to the type of statement. Directions for a scale of 1 to 5 in this questionnaire are shown in the table below [15]:

Table 3. The interpretation of student response

No	Alternative Response	Statements	
		Positive	Negative
1	Always	5	1
2	Frequently	4	2
3	Sometimes	3	3
4	Rarely	2	4
5	Never	1	5

To measure the criteria for interpreting student responses, the results of the data are calculated for the percentage and compared with the table of student response criteria below [15]:

Table 4. The Criteria of student response Interpretation

Score Range	Category
Score ≥ 70	High
30 ≤ score ≤ 70	Medium
Score ≤ 30	Low

Both questionnaires were filled in by respondents (samples) and the data that had been collected was tested for normality and linearity as an assumption test before testing the hypothesis. Data analysis using JASP software to make it easier for writers to analyze the data that has been collected. After the normality and linearity test, followed by the correlation test to determine the relationship between the two variables using the Pearson product-moment correlation test with the following equation [16]:

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2 y^2}} \quad (1)$$

Note:

r_{xy} = correlation between motivation and self-regulated learning

x = $x_i(\text{motivation score i}) - \bar{x}$ (average of motivation score)

y = $y_i(\text{self} - \text{regulated learning score i}) - \bar{y}$ (average of self − regulated learning score)

The analysis results of the correlation between motivation and self-regulated learning are compared with the value of the R table which has a significant level of 5% to test the hypothesis whether or not there is a positive relationship between the variables of motivation and learning independence in blended learning-based learning. After testing the hypothesis, the results of the correlation coefficient are interpreted to determine the strength or weakness of the relationship between the variables of motivation and student learning independence. The value of the correlation coefficient is interpreted by referring to the provisions in the guidelines for providing an interpretation of the correlation coefficient as in the following table [16]:

Table 5. The Interpretation of correlation coefficient

Interval coefficient	Correlation Level
0,00 – 0,199	Very Weak
0,20 – 0,399	Weak
0,40 – 0,599	Medium
0,60 – 0,799	Strong
0,80 – 1,000	Very Strong

RESULTS AND DISCUSSIONS

The results of this study are data from filling out questionnaires on motivation and self-regulated learning by 67 respondents which are then analyzed to determine the relationship between motivation

and self-regulated learning variables in the Blended Learning approach. The descriptive results of the respondents to the questionnaire on motivation and self-regulated learning are described in detail on the table below:

Table 6. Descriptive Statistics Variable Motivation and Self-regulated Learning

	Motivation	**Self-regulated Learning**
Valid	67	67
Missing	0	0
Mean	106.985	144.925
Median	109	144
Std. Deviation	13.952	15.926
Variance	194.651	253.646
Minimum	77	94
Maximum	135	177

The distribution of data from the questionnaire response motivation and self-regulated learning results are normally distributed and linear so that the hypothesis testing is continued using the Pearson product-moment correlation test. The data distribution is clearly illustrated below:

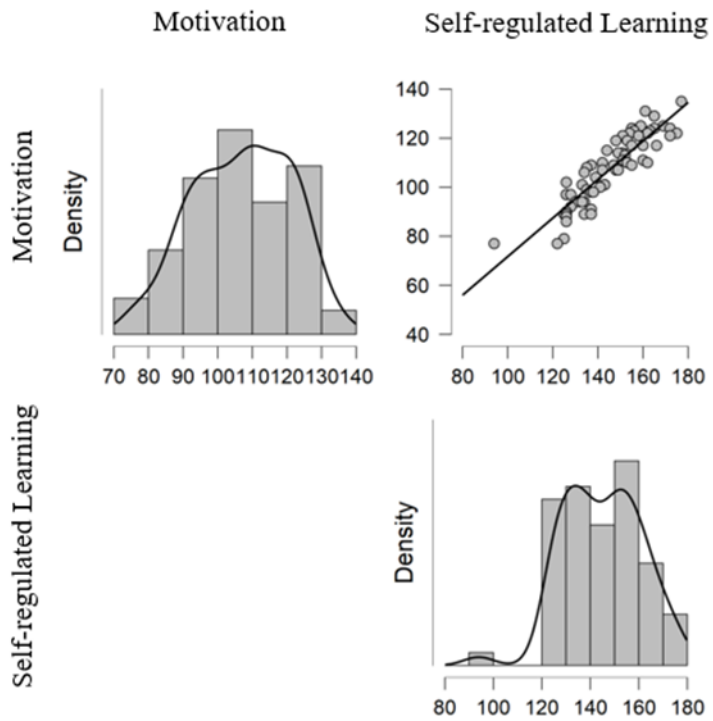

Fig 1. *Distribution of data questionnaire response on motivation and self-regulated learning*

After analyzing using the Pearson product-moment correlation test, the r-value between the motivation and self-regulated learning variable was 0.897. This value is compared with the r table using a significant level of 5% and n = 67, namely 0.244. Because of the r-value (0.897) > r table (0.244), it can be concluded that there is a positive relationship between motivation and self-regulated learning through blended learning in the covid-19 era. Then the value of r (correlation coefficient) is interpreted by referring to the interpretation provisions of the correlation coefficient. The correlation value between motivation and self-regulated learning is 0.897, so it belongs to the very strong criteria. The relationship between the two variables appears to be in accordance with the criteria in the image below:

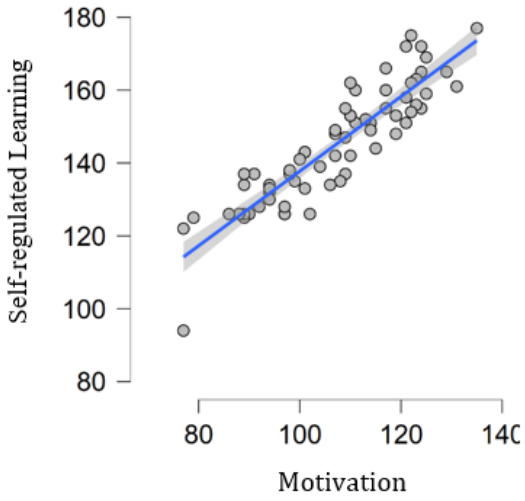

Fig 2. *The Relationship of Motivation and Self-regulated Learning through Blended Learning*

Based on the data and graphs above, it can be concluded that the motivation and self-regulated learning variables in blended learning has a very strong relationship. The higher motivation possessed by students, the higher their self-regulated learning in following blended learning. Likewise, the lower motivation to learn, the student's learning independence in following the blended learning process is low. This is because when students are motivated to learn, they tend to devote the time and energy required to learn and apply self-regulated learning skills, and when they successfully apply the self-regulation strategy, they will be even more motivated to complete academic tasks [17]. This reciprocal relationship shows a close relationship between students' motivation and self-regulation. To clarify the relationship between these two variables, 27% of students who have high and low motivation to learn based on blended learning are taken as in the graph below:

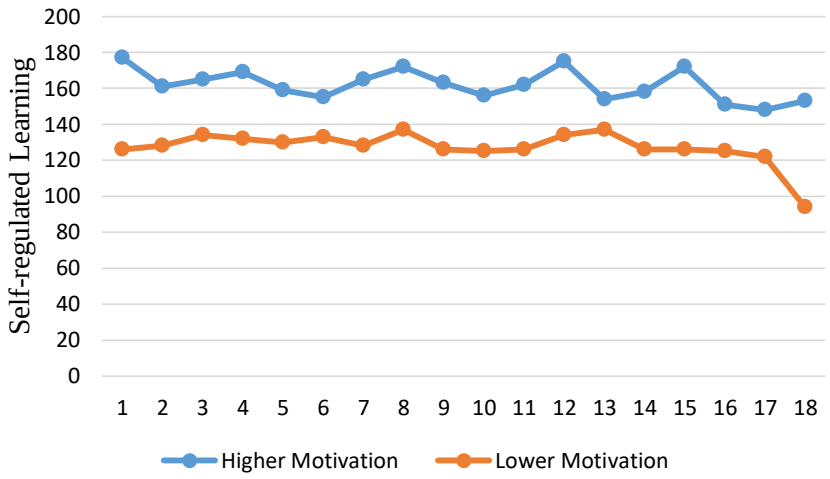

Fig 3. *Graph of self-regulated learning score based on motivation level*

The graph shows the self-regulated learning score of students who have high motivation in the range 148-177, while students who have low motivation are in the range 94-137. This is because all aspects measured on independent learning are related to aspects of motivation. For example in the goal-setting aspect, students who determine the goals of their learning will have an effort in learning (motivational aspects) to achieve the goals that have been determined by themselves because the self-regulated learners who have the high motivation are thought to hold a collection of beliefs and adaptive attitudes that have been determined by themselves. encourage them to be willing to be involved and survive in

the learning process [18]. Likewise, with the aspect of seeking assistance on learning independence, students who have persistence in learning (motivational aspects) will not give up looking for help to complete their academic assignments. Because seeking help is part of the independent learning process which includes self-motivation beliefs, task analysis, self-observation, self-control, etc. [19]. Therefore, students who have high motivation will also have high learning independence and vice versa. This is in accordance with the research of Kintu, MJ, Zhu, C., & Kagambe, E. (2017) which states that independent learning is the only characteristic that predicts students' intrinsic motivation level in blended learning-based learning, the higher the intrinsic motivation, the more diligent in following the learning process and vice versa [20].

The relationship between motivation and self-regulated learning can also be seen from the average score of self-regulated learning per indicator based on the motivation level. The percentage results of student responses are calculated and then compared with the table of student response criteria. In blended learning, the average score for self-regulated learning based on the motivation level can be seen in the table below:

Table 7. The Average self-regulated Learning Score based on the measured indicator

Indicator	The Average self-regulated Learning Score based on the measured indicator			
	High Motivation	**Category**	**High Motivation**	**Category**
Goal Setting	80.37	High	67.41	Medium
Environment Structuring	86.84	High	68.38	Medium
Task Strategies	86.85	High	77.22	High
Time Management	77.78	High	53.11	Medium
Help Seeking	81.11	High	61.11	Medium
Self Evaluation	79.05	High	59.68	Medium
Average	82.00	High	64.49	Medium

From the data, it is shown that the environment structuring indicator has the highest score, and time management has the lowest score compared to other indicators for students who have high or low motivation. This means that students with high or low motivation have advantages in structuring the learning environment and have weaknesses in managing study time. It's just that students with high motivation have high scores in an effort to structure their environment for learning and students with low motivation have a medium score or lower than students who have high motivation. This shows that students adjust their environment to be able to focus and concentrate to follow the learning, either directly or indirectly. There are those who isolate themselves, avoid noisy places, even turn off the TV/radio to be able to focus on learning [21]. In addition, students also ensure that internet quota is available and sufficiently used for studying. Students also ensure that the internet network used for learning is stable so that the learning process that is followed is efficient because, in the aspect of the structuring environment, students ensure that the place and facilities used for online learning are adequate [22]. If there are obstacles during lectures such as unstable networks or blackouts in their environment, students immediately look for a place where the electricity does not go out and has a stable internet network. This is known from student reports when directly and indirectly using e-learning. For students who have high motivation, after reporting the problem, they will solve the problem and follow the lecture process well even though it is late. However, students who have low motivation, after reporting their problems, seldom attend lectures again. This is indicated by the score of self-regulated learning on the environment structuring indicator for low-motivated students is smaller than the score for high-motivated students.

In terms of learning time management, students have the most difficulty managing study time compared to setting learning goals, setting learning strategies, structuring the learning environment, seeking help, and self-evaluating. Students are accustomed to doing assignments after it is close to the deadline for submission and only learn when they are going to take exams/quizzes. For example, if the

deadline for submitting assignments ends on Sunday, 6 December 2020 at 10.00 PM, most students will collect them on that day even though they have 1 week to complete them. This is indicated by the time of submitting assignments and taking quizzes that are recorded on the e-learning system:

Status	Last modified (submission)
Submitted for grading	Sunday, 6 December 2020, 2:31 PM
Submitted for grading	Sunday, 6 December 2020, 10:30 AM
Submitted for grading	Sunday, 6 December 2020, 10:08 AM
Submitted for grading	Sunday, 6 December 2020, 1:19 PM
Submitted for grading	Sunday, 6 December 2020, 9:42 AM
Submitted for grading	Saturday, 5 December 2020, 8:00 PM
Submitted for grading	Sunday, 6 December 2020, 7:32 PM
Submitted for grading	Saturday, 5 December 2020, 10:38 PM
Submitted for grading	Saturday, 5 December 2020, 10:10 PM
Submitted for grading	Sunday, 6 December 2020, 6:14 PM
Submitted for grading	Saturday, 5 December 2020, 8:10 PM
Submitted for grading 2 mins 8 secs late	Sunday, 6 December 2020, 10:02 PM
Submitted for grading	Sunday, 6 December 2020, 11:09 AM
Submitted for grading	Sunday, 6 December 2020, 11:08 AM
Submitted for grading	Sunday, 6 December 2020, 9:55 PM
Submitted for grading	Sunday, 6 December 2020, 6:33 PM
Submitted for grading	Sunday, 6 December 2020, 2:47 PM
Submitted for grading	Saturday, 5 December 2020, 12:19 PM
Submitted for grading	Sunday, 6 December 2020, 6:13 PM
Submitted for grading	Sunday, 6 December 2020, 8:24 PM

Fig 4. *The time of submitting assignments*

Finished	13 December 2020 7:23 PM	13 December 2020 7:46 PM	22 mins 47 secs
Finished	13 December 2020 7:24 PM	13 December 2020 7:49 PM	25 mins
Finished	13 December 2020 7:38 PM	13 December 2020 7:57 PM	19 mins 55 secs
Finished	13 December 2020 7:38 PM	13 December 2020 8:03 PM	25 mins 1 sec
Finished	13 December 2020 7:39 PM	13 December 2020 8:04 PM	25 mins 4 secs
Finished	13 December 2020 8:00 PM	13 December 2020 8:01 PM	1 min 31 secs
Finished	13 December 2020 8:44 PM	13 December 2020 9:04 PM	20 mins 31 secs
Finished	13 December 2020 9:07 PM	13 December 2020 9:32 PM	25 mins 1 sec

Finished	6 December 2020 4:00 PM	6 December 2020 4:16 PM	15 mins 50 secs
Finished	6 December 2020 4:00 PM	6 December 2020 4:16 PM	15 mins 19 secs
Finished	6 December 2020 4:21 PM	6 December 2020 4:38 PM	16 mins 47 secs
Finished	6 December 2020 5:17 PM	6 December 2020 5:37 PM	19 mins 56 secs
Finished	6 December 2020 5:22 PM	6 December 2020 5:42 PM	20 mins 2 secs
Finished	6 December 2020 7:26 PM	6 December 2020 7:47 PM	20 mins 28 secs
Finished	6 December 2020 7:53 PM	6 December 2020 8:10 PM	16 mins 26 secs
Finished	6 December 2020 8:56 PM	6 December 2020 9:16 PM	19 mins 48 secs

Finished	29 November 2020 2:38 PM	29 November 2020 2:58 PM	20 mins
Finished	29 November 2020 2:44 PM	29 November 2020 3:03 PM	18 mins 50 secs
Finished	29 November 2020 2:54 PM	29 November 2020 3:14 PM	20 mins 1 sec
Finished	29 November 2020 3:56 PM	29 November 2020 4:10 PM	13 mins 45 secs
Finished	29 November 2020 4:45 PM	29 November 2020 5:05 PM	20 mins 1 sec
Finished	29 November 2020 6:03 PM	29 November 2020 6:14 PM	11 mins 40 secs
Finished	29 November 2020 6:04 PM	29 November 2020 6:16 PM	12 mins 10 secs
Finished	29 November 2020 7:06 PM	29 November 2020 7:26 PM	19 mins 32 secs

Fig 5. *Time of attempt quizzes*

The same thing happened at the time of taking the quiz, most of the students would do it on the last deadline for either high or low motivation. The image in fig 5 shows some of the quizzes that students took at the deadline for their work.

Students are rarely able to manage their study hours and take advantage of their free time to study even though a system has been provided that can be accessed at any time. These facts cause the score on time management indicators to be lower than other indicators. However, based on the data obtained, students with high motivation have scores that are classified as high criteria and students with low motivation have scores that are classified as medium criteria in managing their study time. This is in line with several previous studies that found positive bivariate correlations between the students' motivational beliefs, attitudes, or values and their reported time management indicators [23].

Based on the description above, students with high and low motivation have advantages and disadvantages in the same indicator, only the average score achieved from each indicator is different. Students with high motivation have a greater average score of self-regulated learning per indicator than students with low motivation. This shows that the higher the motivation, the higher the self-regulated learning. Based on this, the relationship between these two variables proved to be very strong in accordance with the results of the correlation test described above.

CONCLUSION AND SUGGESTION

The results of this study indicate that there is a very strong relationship between motivation and self-regulated learning of students through the Blended Learning Approach. This could be of concern to educators, both teachers or lecturers as facilitators in learning in the Covid-19 era. Blended learning which is generally applied in this era demands learning independence from students so that teachers or lecturers need to increase student learning motivation so that students are more independent in learning and the expected goals can be achieved. The skills of teachers in increasing student learning motivation need to be considered by the relevant government. The workshops can be made for teachers or lecturers so that they can apply interesting learning with the blended learning approach to increase student learning motivation. With the skills to create attractive learning using a blended learning approach, students' motivation and self-regulation will increase and have a direct effect on learning outcomes.

This research is only limited to knowing whether there is a relationship between the two variables after following the blended learning process, without measuring the impact generated by the blended learning process in terms of the relationship between the two variables. After this, it is hoped that further research can measure the impact generated by blended learning in terms of student motivation and self-regulated learning.

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