

An Analysis of Students Motivation in Off-Network-Based Creative Mathematics Learning

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Abstract

Mathematics learning during the COVID-19 pandemic was initially carried out online or based on a network (online). However, as time goes by where the spread of COVID-19 is getting smaller, mathematics learning is carried out face-to-face directly by paying attention to health protocols called offline or off-network-based learning. Therefore, teachers need to know the current student's learning motivation which is taught off-network-based learning. Therefore, an analysis of student motivation in off-network-based creative mathematics learning was carried out by giving a questionnaire to the seventh-grade students of SMP Dharma Wanita Medan, amounting to 27 people as research subjects. This research was conducted in the odd semester of the 2021/2022 Academic Year. While the object of this research is student learning motivation with six indicators, namely responsibility, trying to excel, liking challenges, independence, fortitude, and tenacity. This research is a qualitative-research with descriptive method. The results of this study stated that students' motivation in off-network-based creative mathematics learning was good.

Keywords

motivation, creative mathematics learning, off-network



I. Introduction

Mathematics learning at the beginning of the covid-19 period was carried out online. Through Circular Number 4 of 2020 concerning the implementation of education in the emergency period of the spread of COVID-19, the government provides a policy that the learning process is carried out at home through Distance Learning (PJJ) to provide meaningful learning experiences for students (Hidayati and Adilaturrahmah, 2021). Distance learning or also known as online learning. However, as time goes by and the development of the level of the spread of COVID-19 in each area is getting less and less, schools at levels 1 and 2 can conduct limited face-to-face learning or called off-network-based learning. The learning that took almost two years was conducted online, then it was carried out off-network-based learning with due regard to health protocols. This makes the learning atmosphere and learning environment different from before the Covid-19 outbreak. This condition indirectly affects the learning motivation of each student.

Motivation is a person's strength (energy) that can cause a level of willingness to carry out an activity. (Suprihatin, 2015). Waage (2010) explained that students' motivation may be manifested in cognition, emotion and/or behavior. Yunus and All (2009) stated that motivation contributes to the solve problems. Aritonang (2008) explains that the learning motivation between one student and another is not the same. Learning motivation is influenced by several factors including ideals, learning abilities, student conditions,

environmental conditions, dynamic elements in learning, and teacher efforts to teach students.

All children have a natural motivation to learn and curiosity since they were small (Rahmayani and Amalia, 2020). Every student has motivation within him. However, every student has a motivation that is not as strong, there are students who have intrinsic motivation where their willingness to learn is stronger and not influenced by external factors. On the other hand, with students whose learning motivation is extrinsic, the willingness to learn is highly dependent on conditions outside of themselves. However, in reality this extrinsic motivation is what happens a lot, especially to children and adolescents in the learning process. (Suprihatin, 2015). During the pandemic period, learning is carried out from home and carried out using computer and mobile media. This reduces the enthusiasm and seriousness of students learning. Although not all students become lazy or indifferent to learning. Students who have a strong motivation to learn will continue to take the learning process seriously and seriously. Effort is synonym to motivation. An individual who shows greater effort is considered to be motivated, whilst one who is motivated will also show greater effort. (Yunus and Ali, 2009).

According to Sudirman (1996) learning motivation has indicators such as: persevering in the face of tasks, being tenacious in facing difficulties (not giving up easily), showing interest in various adult problems, preferring to work independently, getting bored quickly on routine tasks, being able to defend his opinion. Handoko (1992) to determine the strength of student learning motivation can be seen from several indicators, including the strong will to do, the amount of time provided for learning, willingness to leave obligations or other tasks, perseverance in doing assignments. In this study, the indicators of student motivation were responsibility, trying to excel, liking challenges, independence, fortitude, and tenacity.

Motivation to learn is needed in improving abilities, especially in learning mathematics. Motivation can be driven by creativity. According to Arsani (2020), learning is essentially a cognitive process that has the support of psychomotor functions. Utomo (2020) stated that the importance of motivation in the learning process because it can arouse and increase the enthusiasm of students in learning. Learning motivation is an effort made to change a person's behavior in order to achieve a result in learning activities. (Khairani, 2020). During the COVID-19 pandemic, it allows students to think creatively in solving problems. Creative thinking refers to generating new ideas or solutions in problem solving (Hadar, L. L., & Tirosh, M., 2019). Therefore, in this study will be analyzed the strength of student motivation through indicators of motivation. The motivation of students to learn at off-network-based creative mathematics learning is based on online learning for a long time.

II. Research Methods

This research is a qualitative-research with descriptive method which aims to analyze students' learning motivation in off-network-based creative mathematics learning. The subjects of this study were the seventh-grade students of SMP Dharma Wanita Medan, amounting to 27 people. This research was conducted in the odd semester of the 2021/2022 Academic Year. While the object of this research is student learning motivation with six indicators, namely responsibility, trying to excel, liking challenges, independence, fortitude, and tenacity. Therefore, the learning motivation questionnaire instrument was designed with the grid in the following table:

Table 1. Student Motivation Questionnaire Grid

No.	Indicator	Questionnaire Item Number		Total
		Positive Statement	Negative Statement	
1.	Trying to Excel	2, 8, 18, 29, 30	12, 14, 20	8
2.	Striving to excel	5, 6, 19, 28	4, 9	6
3.	Liking Challenges	21, 23, 25	11, 16, 24	6
4.	Independence	7, 22, 27	3, 15, 26	6
5.	Fortitude	-	1, 17	2
6.	Tenacity	10, 13	-	2
Total		17	13	30

The results of the learning motivation questionnaire analysis will be interpreted into the student learning motivation questionnaire assessment scores below:

Table 2. Percentage Interpretation of the Questionnaire

No.	Score (%)	Criteria
1.	81-100	Very Strong
2.	61-80	Strong
3.	41-60	Enough
4.	21-40	Weak
5.	0-20	Very Weak

(Source: Arikunto, 2010)

III. Discussion

Mathematics is the basic knowledge needed by students to support their learning success in pursuing higher education. Mathematics is knowledge related to various abstract structures and the relationships between these structures so that they are well organized. Thus, not all students like to learn Mathematics. Students who enjoy learning Mathematics are students who have a strong motivation to learn. Therefore, so that every student has motivation in learning Mathematics, it is also necessary for the efforts of the teacher to foster student learning motivation.

Off-network-based mathematics learning is meant to be Mathematics learning that is carried out in a class with a limited number of students taking into account health protocols during the COVID-19 pandemic that has hit the whole world. Off-network-based Mathematics learning is carried out face-to-face with students by implementing health protocols, for example by wearing masks.

Analysis of students motivation in off-network-based Mathematics learning by giving questionnaires to students who carry out off-network-based Mathematics learning totaling 27 students of class VII SMP Dharma Wanita Medan. The following are the results of the presentation of students' learning motivation for each of the motivation indicators measured.

Table 3. Percentage of Each Item Motivation on Indicator 1

Item Number		Strongly Agree		Agree		Disagree Less		Disagree		Strongly Disagree	
(+)	(-)	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
2		5	19	13	48	2	7	7	26	0	0
8		5	19	9	33	8	30	5	18	0	0
18		8	30	8	30	11	40	0	0	0	0
29		4	15	9	33	5	19	7	26	2	7
30		3	11	8	30	5	19	6	22	5	18
	12	3	11	5	19	11	40	4	15	4	15
	14	1	4	8	30	12	44	4	15	2	7
	20	2	7	3	11	15	56	4	15	3	11
Total		31	116	63	234	69	255	27	137	16	58
Average			14.5		29.2		31.9		17.1		7.3

Based on the first motivation indicator to see student motivation in off-network-based learning from the data above, it is known that the average student strongly disagrees 7.3%, disagrees 17.1%, does not agree 31.9%, agrees 29.2% and strongly agrees 14.5%.

Table 4. Percentage of Student Motivation to Indicator 1

Item Number	Score	Frequency	Score Total	Percentage (%)
2, 8, 12, 14, 18, 20, 29, 30	5	34	170	24
	4	59	236	33
	3	69	207	29
	2	41	82	12
	1	13	13	2
Total		216	708	100
Highest Score		5		
Number of Statement		8		
Number of Respondent		27		
Maximum Score		1080		
Percent Average		65.6		

Based on table 4. The results of the percentage of learning motivation in indicator 1, namely responsibility, where the average percentage is 65.6, which indicates that the student's responsibility for off-network-based learning is good. The following is a table of the percentage of motivation in indicator 2, namely the indicator of trying to excel.

Table 5. Percentage of Each Item Motivation on Indicator 2

Item Number		Strongly Agree		Agree		Disagree Less		Disagree		Strongly Disagree	
(+)	(-)	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
5		4	15	12	44	7	26	4	15	0	0
6		4	15	14	52	5	18	4	15	0	0
19		7	26	9	33	4	15	7	26	0	0

28		3	11	10	37	4	15	7	26	3	11
	4	3	11	4	15	12	44	8	30	0	0
	9	2	7	11	41	11	41	3	11	0	0
Total		23	85	60	222	43	159	33	123	3	11
Average			14.2		37		26,5		20.5		1.8

Based on the second motivation indicator to see student motivation in off-network-based learning from the data above, it is known that the average student strongly disagrees 1.8%, disagrees 20.5%, disagrees 26.5%, agrees 37% and strongly agrees 14.2%.

Table 6. Percentage of Student Motivation to Indicator 2

Item Number	Score	Frequency	Score Total	Percentage (%)
4, 5, 6, 9, 19, 28	5	18	90	17
	4	56	224	43
	3	43	129	25
	2	37	74	14
	1	8	8	1
Total		162	525	100
Highest Score		5		
Number of Statement		6		
Number of Respondent		27		
Maximum Score		810		
Percent Average		64.8		

Based on table 5, the results of the percentage of learning motivation in indicator 2 are trying to excel where the average percentage is 64.8 which indicates that in off-network-based learning the level of trying to excel is good. The following is the percentage of students' learning motivation in indicator 3, namely liking challenges.

Table 7. Percentage of Each Item Motivation on Indicator 3

Item Number	Strongly Agree		Agree		Disagree Less		Disagree		Strongly Disagree		
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%	
21	5	19	7	26	12	44	2	7	1	4	
23	4	15	13	48	6	22	2	7	2	8	
25	0	0	8	30	7	26	10	37	2	7	
	11	3	11	6	22	10	37	7	26	1	4
	16	4	15	13	48	7	26	2	7	1	4
	24	3	11	8	30	7	26	6	22	3	11
Total		19	71	55	204	49	181	29	106	10	38
Average			11.8		34		30.2		17.7		6.3

Based on the third motivation indicator to see student motivation in off-network-based learning from the data above, it is known that the average student strongly disagrees 6.3%, disagrees 17.7%, disagrees 30.2%, agrees 34% and strongly agrees 11.8%.

Table 8. Percentage of Student Motivation to Indicator 3

Item Number	Score	Frequency	Score Total	Percentage (%)
11, 16, 21, 23, 24, 25	5	39	195	31
	4	43	172	28
	3	49	147	23
	2	41	82	13
	1	29	29	5
Total		201	625	100
Highest Score		5		
Number of Statement		6		
Number of Respondent		27		
Maximum Score		810		
Percent Average		77.2		

Based on table 8. The results of the percentage of learning motivation in indicator 3 are liking challenges where the average percentage is 77.2 which indicates that in off-network-based learning the level of liking challenges is in the good category. The following is the percentage of students' learning motivation on indicator 4, namely independence.

Table 9. Percentage of Each Item Motivation on Indicator 4

Item Number		Strongly Agree		Agree		Disagree Less		Disagree		Strongly Disagree	
(+)	(-)	Frequency	%	Frequency	%	(+)	(-)	Frequency	%	Frequency	%
7		2	8	7	26	9	33	9	33	0	0
22		4	15	17	63	3	11	2	7	1	4
27		3	11	10	37	5	19	7	26	2	7
	3	0	8	10	37	4	15	9	33	2	7
	15	1	0	1	4	18	67	6	22	2	7
	26	12	4	8	30	12	44	4	15	2	7
Total		12	46	53	197	51	189	37	136	9	32
Average			7.7		32.8		31.5		22.7		5.3

Based on the fourth motivation indicator to see student motivation in off-network-based learning from the data above, it is known that the average student strongly disagrees 5.3%, disagrees 22.7%, disagrees 31.5%, agrees 32.8% and strongly agrees 7.7%.

Table 10. Percentage of Each Item Motivation on Indicator 4

Item Number	Score	Frequency	Total Score	Percentage(%)
3, 7, 15, 22,	5	15	75	14
26, 27	4	53	212	40

	3	51	153	29
	2	37	74	14
	1	16	16	3
Total		172	530	100
Highest Score		5		
Number of Statement		6		
Number of Respondent		27		
Maximum Score		810		
Percent Average		65.4		

Based on table 10, the results of the percentage of learning motivation in indicator 4 are independence where the average percentage is 65.4 which indicates that in off-network-based learning the level of independence is in the good category. The following is the percentage of students' learning motivation on indicator 5, namely fortitude.

Table 11. Percentage of Each Item Motivation on Indicator 5

Item Number		Strongly Agree		Agree		Disagree Less		Disagree		Strongly Disagree	
(+)	(-)	Frequency	%	Frequency	%	(+)	(-)	Frequency	%	Frequency	%
	1	2	8	6	22	13	48	6	22	0	0
	17	1	4	11	41	7	26	6	22	2	7
Total		3	12	17	63	20	74	12	44	2	7
Average			6		31.5		37		22		3.5

Based on the fifth motivation indicator to see student motivation in off-network-based learning from the data above, it is known that the average student strongly disagrees 3.5%, disagrees 22%, disagrees 37%, agrees 31.5% and strongly agrees 6%.

Table 12. Percentage of Each Item Motivation on Indicator 5

Item Number	Score	Frequency	Score Total	Percentage (%)
1, 17	5	2	10	6
	4	12	48	31
	3	20	60	39
	2	17	34	22
	1	3	3	2
Total		54	155	100
Highest Score		5		
Number of Statement		2		
Number of Respondent		27		
Maximum Score		270		
Percent Average		57.4		

Based on table 12, the results of the percentage of learning motivation on the indicator that are fortitude are obtained where the average percentage is 57.4 which indicates that in off-network-based learning the level of fortitude is in the category of

Good enough. The following is the percentage of student learning motivation on indicator 6, namely tenacity.

Tabel 13. Percentage of Each Item Motivation on Indicator 6

Item Number		Strongly Agree		Agree		Disagree Less		Disagree		Strongly Disagree	
(+)	(-)	Frequency	%	Frequency	%	(+)	(-)	Frequency	%	Frequency	%
10		4	15	11	41	6	22	5	18	1	4
13		8	30	11	41	5	18	3	11	0	0
Total		12	45	22	82	11	40	8	29	1	4
Average			22.5		41		20		14.5		2

Based on the sixth motivation indicator to see student motivation in off-network-based learning from the data above, it is known that the average student strongly disagrees 2%, disagrees 14.5%, disagrees 41%, agrees 41% and strongly agrees 22.5%.

Table 14. Percentage of Each Item Motivation on Indicator 6

Item Number	Score	Frequency	Score Total	Percentage (%)
10, 13	5	12	60	30
	4	22	88	44
	3	11	33	17
	2	8	16	8
	1	1	1	1
Total		54	198	100
Highest Score		5		
Number of Statement		2		
Number of Respondent		27		
Maximum Score		270		
Percent Average		73.3		

Based on table 14, the results of the percentage of learning motivation on indicator 6 are tenacity where the average percentage is 73.3 which indicates that in off-network-based learning the level of tenacity is in the good category.

Table 15. Recapitulation Comparison of the Percentage of Student Motivation in Off-Network-Based Creative Mathematics Learning

Indicator	Percentage	Category
Trying to Excel	65.6	Good
Striving to excel	64.8	Good
Liking Challenges	77.2	Good
Independence	65.4	Good
Fortitude	57.4	Enough
Tenacity	73.3	Good
Average	67.3	Good

Based on table 15, the percentages for each indicator include responsibility in the good category, trying to excel in the good category, liking the challenge in the good category, independence in the good category, fortitude in the sufficient category, tenacity in the good category. The motivation indicators analyzed were responsibility, trying to excel, liking challenges, independence, fortitude, and tenacity with good categories except for fortitude in the sufficient category. This shows that students' motivation in off-network-based mathematics creative learning is good.

IV. Conclusion

Based on the results and discussion, it can be concluded that students' motivation in off-network-based creative mathematics learning is good. By analyzing based on motivation indicators, including responsibility, trying to excel, liking challenges, independence, fortitude and tenacity.

Acknowledgements

The authors thank the Ministry of Research, Technology and Higher Education (Kemenristekdikti) of the Republic of Indonesia for the support and assistance of research funds in the National Competitive research grant of the Inter-University Cooperation Research scheme given by letter of agreement number 165/LL1/PG/2021 and decree number 9/E1/KPT/2021. Hopefully the results of this research will be useful for the development of Indonesian education science.

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