



# The use of social arithmetic contextual modules on learning achievement in terms of interest in learning

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### Abstract

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This research aims to find out: (1) significant difference in students' mathematics achievement between the student who used the contextual social arithmetics module and who do not use it. (2) the difference in students' mathematics achievement among the student having high, medium, and low interest. (3) The interaction between contextual social arithmetics module and students' mathematics interest toward students' mathematics achievement. This research was quasi-experimental. The population of the study was the seventh grade of students of a Junior High School in West Borneo. The samples were 66 students. Data collection instruments using tests and questionnaires. The technique of analyzing the data was two-ways ANOVA. The results reveal that: (1) there is a significant difference in students' mathematics achievement between the student who used contextual social arithmetics module and students who do not use it. (2) there is a difference in students' mathematics achievement among students with high, medium, and low interest. (3) There is no interaction between the use of contextual social arithmetics module and students' mathematics interest toward students' mathematics achievement.

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## 1. Introduction

Mathematics still becomes an uninteresting course for students. It is proved through students' daily test results on social arithmetic material at the seventh grade of SMP Santo Thomas Ngabang students. There were 26 of 32 students who got the score under the Minimum Completion Criteria (KKM) of 70. Social arithmetic material is taught to VII students in the even semester containing materials about selling and buying prices, discount, profits and losses, tare, gross, net, and single interest. The low learning achievement on the main social arithmetic material was presumptively caused by teachers who still used less varied learning method and teaching materials.

Learning achievement is a result achieved by students after participating in a learning process of certain material at certain times which in the end becomes a benchmark of learning success (Latifah & Widjajanti, 2017). In addition, learning achievement also describes the extent to which student, teachers, or an institution have achieved educational goals, so it can be used as a reference to evaluate the learning goals achievement (Fane & Sugito, 2019). In other words, students' learning achievement is an important right and must be teachers' particular concern. Therefore, the low students learning achievement must be improved and given solutions.

From the observation result at the seventh grade of SMP Santo Thomas Ngabang, teachers still used conventional learning model, while the teaching materials used were less related to the daily life. Consequently, the material provided was only accepted without being interpreted and understood. It surely became one of causes of the low students learning achievement. Hence, the researchers tried to find a solution to this problem by using teaching materials developed with a certain learning approach.

Teaching material is all forms of materials utilized by teacher to conduct learning activities in a class. These materials have been systematically arranged in both written and unwritten forms so as to create a

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comfortable environment or atmosphere for students to learn (Hamdani, 2011). In general, teaching material is defined as a set of material that is systematically arranged and provides competences in which students can possibly learn a basic competence coherently and systematically and master all competences completely and integrated (Rosyida & Jailani, 2014). Module is believed to become one of teaching materials that can be used.

Module is a learning tool in written or printed form that is systematically arranged, contains learning materials, methods, and learning objectives in line with basic competence, can be used for self-instructional learning, and provides opportunities for students to conduct self-evaluation through exercises provided in it (Hamdani, 2011). Additionally, module is defined as learning program units arranged in specific forms and used to support students to meet their needs for individual learning and learning objectives (Zulfikar & Tamrin, 2019).

To develop a module, contextual approach can be used as the alternative. Nurhadi defines it as a learning concept in which teacher relates the materials with students current situation and leads them to connect their knowledge to its application in their daily life (Rusman, 2012). In learning, contextual approach focuses on how students interpret, achieve, and demonstrate what they have learned, its benefits, and its status (Suprijono, 2012). It is started by taking (simulating, telling) the events in daily life which than being elevated into mathematic concepts as material discussed. In this approach, the concept is constructed by students through Q and A or discussion. It involves 7 main components of effective learning namely constructivism, asking, finding, community, learning, modelling, reflection, and real assessment (Riyanto, 2010).

Based on the observation, learning achievement of the seventh grade students of SMP Santo Thomas Ngabang on social arithmetic material was still low or under the KKM. In this study, the teaching material used was module developed based on a contextual approach in social arithmetic material. The development of this module can be an alternative to enable students to interpret the knowledge and material through many learning activities during the learning process.

There are other factors which also influence students' learning achievement, one of them is learning interest. Sukada et al. (2013) suggest that interest is personal aspect related to learning achievement. Then, Komariyah et al. (2018) argue that in fact, students' achievement will be better if they have high learning interest on the material or course taught (Friantini & Winata, 2019). According to Sardini et al. (in Partayasa et al., 2020), learning interest is a constant tendency to pay attention and get involved in learning activities since understanding what has been learned is important and valued.

Students' learning interest functions to encourage students' learning enthusiasm given the importance of interest as a means of supporting power for students to learn. Students with high learning interest will always try and have enthusiasm to explore and develop their potential to boost their confidence (Djiwanto et al., 2019). Moreover, there are several indicators to measure students' learning interest, namely 1) a feeling of pleasure in learning, 2) concentration of attention and thought in learning, 3) willingness to learn, 4) self-willingness to be active in learning, and 5) efforts to realize the willingness to learn (Friantini & Winata, 2019).

Regarding above explanation, this study aimed to find out (1) the differences of mathematic learning achievement between students who were treated social arithmetic contextual module and those who were not, (2) the differences of mathematic learning achievement between students with high, moderate, and low learning interest, 3) the interaction between the use of social arithmetic contextual module and students interest toward their mathematic learning achievement.

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## 2. Method

This study was conducted in SMP Santo Thomas Ngabang, Landak Regency. This study was quasi experimental research with population of 66 students at the seventh grade of SMP Santo Thomas Ngabang in the even semester in the academic year 2019/2020. This study used saturated sampling. To collect the data, test and questionnaire were distributed. Meanwhile, to analyze the data, this study used two-way variances analysis technique. Before analyzing the data using ANOVA, prerequisite test was conducted using Kolmogorov-Smirnov method and homogeneity tests using Levene method. If the result of variance analysis showed zero or rejected hypothesis ( $H_0$ ), further test using Scheffe' method was performed.

### 3. Result & Discussion

This study was conducted in SMP Santo Thomas Ngabang with class VII B was treated using social arithmetic contextual module, and VII A was not. Prior to filling out learning achievement test and learning interest questionnaire, these two instruments trial were conducted in VII A. There were several tests in learning achievement test, including validity, reliability, difficulty index, and differentiation power tests, meanwhile learning interest questionnaire contained validity and reliability tests.

From those tests, the researchers obtained and categorized students' learning interest (high, moderate, and low) in the following table.

**Table 1.** Students' Learning Interest Category for each Class

Interest	High	Moderate	Low
With Module	7	18	7
No Module	7	19	8

The learning achievement test was given after social arithmetic material was taught. The test result was analyzed in terms of normality and homogeneity as the requirement of variance analysis. The results are presented on the following table.

**Table 2.** Normality Test

	Kolmogorov-Smirnov		
	Statistic	df	Sig.
Standardized Residual for Learning Achievement	,088	66	.200*

Based on table 2, the result of normality test using Kolmogorov-Smirnov showed the significant value of 0.200. It means that students' data were normally distributed since the significant value (0.200) > 0.05 and  $H_0$  was accepted.

**Table 3.** Levene's Test of Error Variance Equality

F	df1	df2	Sig.
1,802	5	60	,126

As presented in table 3, the result of homogeneity test using Levene test showed the significant value of 0.126. In brief, the data had the same variance since the significant value (0.126) > 0.05 and  $H_0$  was accepted.

Regarding the previous prerequisite tests results, further test could be conducted by using two ways variance analysis test.

**Table 4.** Between-Subjects Effects Test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1243.287 <sup>a</sup>	5	248,657	6,381	,000
Intercept	307469,206	1	307469,206	7890,057	,000
Learning Interest	372,282	2	186,141	4,777	,012
With Module-No Module	678,199	1	678,199	17,403	,000
Learning Interest * With Module-No Module	3,690	2	1,845	,047	,954
Error	2338,152	60	38,969		
Total	371837,500	66			
Corrected Total	3581,439	65			

Table 4 elaborates the test results as follows:

1. In With Module-No Module source, the significant value was  $0.000 < 0.05$ , so  $H_0$  was rejected. It means that there was a difference in mathematic learning achievement of students who were treated with module and those who were not. Afterwards, the marginal average of social arithmetic contextual module students gained 78.710, while no-module class gained 71.469. This indicated students' mathematic learning achievement with social arithmetic contextual module was better than no-module students.
2. In learning interest module, the significant value was  $0.012 < 0.05$ , so  $H_0$  was rejected. Shortly, there was difference between of students with high, moderate, and low mathematic learning interest.

After that, multiple comparative test by using Scheffe was performed. The results are presented in the following table.

**Table 5.** Multiple Comparative Test

(I) Learning Interest	(J) Learning Interest	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
High Interest	Moderate Interest	4.9855*	1,95876	,046	,0688	9,9023
	Low Interest	7.1071*	2,31980	,013	1,2841	12,9302
Moderate Interest	High Interest	-4.9855*	1,95876	,046	-9,9023	-,0688
	Low Interest	2,1216	1,91080	,543	-2,6748	6,9180
Low Interest	High Interest	-7.1071*	2,31980	,013	-12,9302	-1,2841
	Moderate Interest	-2,1216	1,91080	,543	-6,9180	2,6748

As seen in table 5, the significant value of high and moderate learning interest was  $0.046 < 0.05$ . It means that there was a difference in mathematic learning achievement between students with high and moderate learning interest. Then, the mean difference value was 4.9855 or the learning achievement of students with high learning interest was better than moderate students. Additionally, the significant value of high and low learning interest was  $0.013 < 0.05$ , meaning that there was a difference in mathematic

learning achievement between students with high and low learning interest. The mean difference was 7.1071. In other words, the mathematic learning achievement of high learning interest student was better than low learning interest students. Lastly, there was no difference in mathematic learning achievement between moderate and low learning interest students. It is proved through the significant value of  $0.543 > 0.05$ .

3. As presented in table 4 on leaning interest \* With Module-No Module source, the significant value was  $0.954 > 0.05$  and  $H_0$  was accepted, so there was no interaction between the use of social arithmetic contextual module and students learning interest towards mathematic learning achievement. It means that at either high, moderate, or low learning interest level, students who were treated with module were better than students with no module. Then, in terms of students with module and no module, the learning achievement of students with high learning interest was better than moderate and low learning interest students, while moderate students were better than low students.

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#### 4. Conclusion

Based on the previous elaboration, there are several conclusion that can be drawn as follows:

- a. There is a difference of mathematic learning achievement between students who were treated with social arithmetic contextual module and students with no module. Viewed from class marginal average, students with contextual learning module gained 78.710, while students with no module gained 71.469. It can be concluded that students' mathematic learning achievement with module is better than those with no module.
- b. There is a difference in mathematic learning achievement between students with high, moderate, and low learning interest. Apparently, the learning achievement of students with high learning interest is better than students with moderate and low learning interest. Also, there is no difference in mathematic learning achievement of students with moderate and low learning interest.
- c. There is no interaction between the use of social arithmetic contextual module and students' learning interest on their mathematic learning achievement. In other words, the learning achievement of students with high, moderate, and low learning interest with module is better than those with no module. Further, mathematic learning achievement of students with high learning interest is better than moderate and low learning interest students, and moderate learning students are better than low learning interest students in both classes.

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