


The effect of the implementation the independent curriculum learning on the understanding of algebraic material in junior high school

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ABSTRACT

The independent curriculum is new in Indonesia and there has never been any research on the effect of implementing the independent learning curriculum on understanding algebraic material in junior high schools. This study aims to determine the effect of the implementation of the independent learning curriculum on understanding algebraic material. Completeness of learning outcomes in the independent learning curriculum is carried out by summative & formative assessments on learning to identify the achievement of learning objectives. The population used in this study were all class VII students of SMP Batik Surakarta for the Academic Year 2021/2022. The research sample was taken using a random sampling technique, the selected sample was class VII D students of SMP Batik Surakarta. This study uses quantitative methods. The data analysis technique used was the t-test (one sample t-test) with a significance level of 0.05. Based on the results of the t-test obtained a significant value of 0.000 which means 0.000 0.05, it means that the average value of math report cards is not equal to a value of 70 or more than a value of 70 with the result that the average value of knowledge in class VII D on algebraic material is 78, 42. It can be concluded that the independent learning curriculum is effective in students' understanding of algebra material.

KEYWORDS

Independent curriculum;
Mathematics; Algebra

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Introduction

Mathematics consists of several language topics, one of which is algebra. Algebra is an important science. According to Parhaini Indriani (Andriani, 2015), Algebraic reasoning is known as algebraic reasoning or algebraic thinking in English. In general, the reasoning is divided into inductive reasoning and deductive reasoning. Both types of reasoning can be applied to various mathematical concepts including algebra. Mathematics is one of the important learnings that exist at every level of education starting from basic education to secondary education level, even up to higher education level (Nabila in (Hilda et al., 2022)). This success can be seen from the level of understanding, material, and student achievement. The higher the understanding and material and student achievement, the higher the learning success rate (Kurniyanthi et al., 2019). Mathematics must be learned by everyone because it is considered to be able to help solve problems in everyday life.

Understanding comes from the word "understand" which means knowing what is appropriate and what is not. Understanding according to the Big Indonesian Dictionary means a process, a way of understanding or understanding (KBBI, n.d.). It was concluded that understanding means someone can understand, know or understand something well. Understanding can be influenced by several factors including internal factors and external factors. Here the author focuses on external factors that come from outside the student. Meanwhile, external factors that affect learning can be grouped into 3 factors: family, school, and community (Maradona, 2016). One of the external factors is the curriculum.

The conditions of the pandemic in recent years have made a change in all activities in life, especially in the world of education. As a result, there has been a change in the face-to-face or offline learning system in schools, making distance or online learning which causes many obstacles in the learning process in the world of education, one of the learning methods that apply online is learning mathematics. In this mathematics learning, students can have the opportunity to develop and improve their abilities by thinking through solving various problems. With this distance learning, it makes students difficult to understand the concepts and use mathematical concepts as well as in solving problems, which results in students' ability to solve problems. less developed (Alfiyah et al., 2021). This pandemic condition has had a significant impact on the learning process.

Before the pandemic, the only curriculum used was the 2013 curriculum which was used in learning. The Ministry of Education, Culture, Research, and Technology (Kemendikburistek) issued a policy in development, namely

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the Independent Curriculum which was given to educational units for additional options in carrying out learning recovery. Policies regarding the use of the 2013 Curriculum can then be changed to an independent learning curriculum to make it easier to manage learning in educational units. Freedom to learn is a policy program issued by the Minister of Education and Culture of the Republic of Indonesia to restore the national education system to the essence of the law by giving freedom to schools, teachers, and students to be free to innovate, free learn independently and creatively, also where the freedom to innovate can start from teachers as teachers and drivers of national education (Sherly et al., 2020; Baidi et al., 2020; Makruf et al., 2021). The 2013 curriculum and the independent learning curriculum can still be used by educational units in managing learning for educational units that are not ready to use the independent learning curriculum. All schools in Indonesia are not yet required to use an independent learning curriculum. Some of the programs that support the Implementation of the Independent Curriculum (IKM) are the Mobilization School (SP) and Vocational High Schools Centers of Excellence (SMK-PK) programs where the Ministry of Education and Culture in these programs provides support in the Implementation of the Independent Curriculum (IKM). good at implementing the independent learning curriculum so that it becomes good practice and learning content from IKM at SP/SMK-PK is well identified and can become learning for other educational units (Kemendikburistek, 2021).

In the Independent Curriculum, the Ministry of Education and Culture gives flexibility to educational units in implementing it. That way the teacher has the flexibility to choose various teaching tools that can be used in learning so that they are by the needs and interests of students. This is to the notion of independent learning, teachers and students can innovate and be creative in independent learning. In the Merdeka curriculum, formative assessments on learning are carried out to identify the achievement of learning objectives (Pengelola Web Direktorat SMP, 2022). This is where teachers are also given the freedom to determine the criteria for achieving learning objectives that can be adjusted to the characteristics of their competencies and learning activities.

Based on the explanation above, because the independent curriculum is still new and will be issued in 2021, not many schools are ready to use the independent curriculum. One of the schools that are ready to carry out learning with an independent curriculum is SMP Batik Surakarta, so researchers are interested in knowing the effect of implementing an independent learning curriculum on the understanding of seventh-grade algebra material at SMP Batik Surakarta.

Methods

In this study, researchers used quantitative methods in research activity. This method is used to obtain data that is more comprehensive, valid, reliable, and objective.

Participants

Class VII consists of 7 classes. The research sample was taken using a random sampling technique, the selected sample was class VII D students of SMP Batik Surakarta. There are 24 students in VII D. The research subjects were seventh-grade students at SMP Batik Surakarta. In researching the implementation of the independent learning curriculum on understanding algebraic material, researchers conducted research at the Surakarta Batik Middle School.

Instruments

The descriptive quantitative phase is the phase where the researcher examines the effect of the independent learning curriculum. This phase is carried out to determine the average value of students who use the independent learning curriculum.

Data analysis

Here the research was conducted using the *One Sample t-test* statistical technique to find out the average (*mean*) of students using the independent learning curriculum.

Results

The following is the result of the value of algebra material at Batik Surakarta Middle School. This research was conducted in class VII D, which consisted of 24 students. In the following, the value of student knowledge obtained in the independent learning curriculum.

Table 1. Algebraic material values

73	70	75	78	80	83	73	78	80	78	85	90
85	70	70	90	83	80	80	83	80	73	70	75

The value of algebra material for class VII D students for the 2021/2022 academic year above was then analyzed descriptively. The results of the descriptive analysis are presented in Table 2 below.

Table 2. Descriptive analysis

<i>Statistics Descriptive</i>	
<i>N Valid</i>	24
<i>Missing</i>	0
<i>Mean</i>	78.24
<i>Median</i>	79.00
<i>Mode</i>	80
<i>Std. Deviation</i>	5.992
<i>Variance</i>	35.906
<i>Minimum</i>	70
<i>Maximum</i>	90
<i>Sum</i>	1882

Based on Table 2 it can be explained that the number of respondents (N) is 24 students. From the results of the knowledge value on the algebraic material for class VII D, the minimum value is 70 and the maximum value is 90 with an average (mean) of 78.42 and a standard deviation of 5.992.

The prerequisite test is carried out before testing the hypothesis using the one-sample t-test. The prerequisite test is in the form of a normality test with the lilies test. This study uses a one-sample t-test to determine the difference in the average (mean) of the sample studied with the existing population average. With the hypothesis, H₀ is the research data on the average value of understanding algebraic material with a normal distribution, and H_a is the research data on the average value of understanding algebraic material that is not normally distributed. If the value of Sig. > 0.05, then the data is normally distributed then H₀ is accepted H_a is rejected and if the Sig. < 0.05, then the data is not normally distributed then H₀ is rejected H_a is accepted.

Table 3. Normality test

Kolmogorov-Smirnov ^a		Shapiro-Wilk				
Statistic	df	Sig.	Statistic	df	Sig	
NILAI	.109	24	.200*	.942	24	.178

Based on Table 3, the significance value is 0.178, which means $0.178 > 0.05$, then H₀ is rejected, and H_a is accepted so that it can be concluded that the research sample comes from a normally distributed population. After the normality test, a one-sample t-test was carried out using an average value of 70. This value is the minimum completeness score (KKM) used in the 2013 curriculum. The hypothesis (H₀) of this study is that the average score for understanding algebraic material is equal to a value of 70 and H_a, namely the average value of algebraic material is not the same as a value of 70. Based on the statistical results of the one-sample t-test hypothesis test, H₀ is accepted and H_a is rejected if the value of sig > 0.05 and if the value of sig 0.05 then H₀ is rejected and H_a is accepted.

Table 3. Test one sample t-test

Test Value = 24						
t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Different		
				Lower	Upper	
Value	44.489	23	.000	54.417	51.89	56.95

Based on table 4, the significance value is 0.000, which means $0.000 \leq 0.05$, then H₀ is rejected and H_a is accepted, meaning that the average value of understanding algebraic material is not equal to a value of 70 or more than a value of 70. The completeness of the learning outcomes of the independent curriculum is not seen from the quantitative value, while this test is only to see quantitatively how far the influence of the implementation of the independent curriculum has on understanding algebraic material.

Discussion

Surakarta Batik Middle School begins implementing the independent curriculum in the 2021/2022 school year. Surakarta Batik Middle School is one of the driving schools in Surakarta City, Central Java Province, as one of the driving schools in the school. Implementing the learning process with an independent curriculum and learning process, each learning subject applies to learning management that is designed in such a way that what is the learning achievement of each subject is realized including the application of mathematics learning management. Based on the statistical results of the one-sample t-test hypothesis test using a significance level of 0.05, the final result is $0.000 \leq 0.05$, then H₀ is rejected and H_a is accepted, meaning that the average value of algebraic material is not equal to a value of 70 or more than a value of 70. It can be concluded that the independent learning curriculum is effective in students' understanding of algebra material.

The curriculum is one of the important components of education, the curriculum is defined as a program provided for students (Fajri, 2019). The curriculum is a reference for every educator in implementing the teaching and learning process. Indonesia is a country that has made changes/revisions to the curriculum several times. The

government has created a learning program, namely the Free Learning Curriculum, which has been affected by the Covid-19 outbreak so far. The Independent Learning Curriculum is a forum for exchanging information and experiences, especially for students, to add insight and open a mindset toward a superior generation (Susilowati, 2022). Merdeka Learning is a new policy program of the Ministry of Education and Culture of the Republic of Indonesia (Kemendikbud RI) which was launched by the Minister of Education and Culture of the Republic of Indonesia for the Advanced Indonesia Cabinet. The essence of freedom of thought, according to Nadiem, must be preceded by teachers before they teach it to students (Festiyed et al., 2022).

Mathematics is a universal science that has an important role in various disciplines and develops human thinking power and underlies the development of modern technology (Mashuri, 2019). Mathematics helps students to solve problems experienced in everyday life through the learning that is done. Learning is any effort made intentionally by educators that can cause students to carry out learning activities (Festiawan, 2020). The learning process is an activity carried out by two parties, namely the teacher as a facilitator and students as learners which involves intermediaries to convey messages in the form of knowledge (cognitive), skills (psychomotor), and positive (affective) attitudes and values (Hamid et al., 2020). Learning mathematics is one that must also always innovate and renew because mathematics is a basic science that plays many roles in everyday life as well as in the development of science and technology (Badjeber & Purwaningrum, 2018).

Conclusion

Based on research that has been conducted at Batik Surakarta Middle School with a sample of class VIII D for the 2021/2022 academic year. In the discussion above, that obtained a significance value of 0.000, which means $0.000 < 0.50$, means that the average value of math report cards is not equal to a value of 70 or more than a value of 70. Learning outcomes, it is not seen from quantitative values but the application of an independent curriculum that is student-centered so that students can find out about the material from learning. Implementation of the independent learning curriculum is effective in understanding algebraic material at junior high school. The results of this study are useful for the field of mathematics in algebraic material in the world and Indonesia in particular.

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