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The impact of affective skills toward on the mathematics learning outcomes at senior high school students

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Abstract

Affective skill is one of the factors that students must possess and are the key to successful learning; affective skills are also one of the skills needed in the world of work in the future. This research aimed to analyze the influence of affective skills and their influence on learning outcomes and the dominant influencing variables. This quantitative survey was conducted in January-March 2021, involving 155 students (61 males and 94 females). The variables consisted of exogenous variables, namely affective skills (math interest, math anxiety, math self-efficacy, beliefs, and math attitude), while endogenous variables are learning outcomes. The instrument used to measure exogenous variables were questionnaires including math interest, math anxiety, math self-efficacy, beliefs, and math attitude that met the validity and reliability tests. While the endogenous variable, namely understanding results obtained from the value of documentation of student learning outcomes at school. The data was processed by descriptive and inferential analysis through structural equation modeling (SEM). The study results concluded that math self-efficacy and math attitude were in the high category, beliefs and math interests were suitable. Math anxiety was of a low sort. Furthermore, math interest, math self-efficacy, beliefs, and math attitude were found to have no significant effect on learning outcomes, which means that math interest, self-efficacy, ideas, and math attitude were not sufficient to provide evidence that they could significantly influence learning outcomes.

Keywords: affective skills; learning outcomes; SEM

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Introduction

Mathematics is one of the essential subjects at the secondary school level, which takes precedence over reading (Adeniji et al., 2018). Changing behavior obtained from knowledge or skills is the main goal of studying mathematics. Learning mathematics teaches many things and emphasizes many aspects such as communication (Sfard, 2001; Tabach & Nachlieli, 2016); quantity, space, and structure (Seel, 2014); computing, and problem-solving skills (Yeh et al., 2019).

Mastery and students' mathematical abilities can be seen in their learning outcomes. Learning outcomes are a manifestation of measuring students' success in understanding learning (Ohia, 2011). Learning outcomes describe students' knowledge, skills, and attitudes after participating in the learning framework (Mappeasse, 2009). Various methods can measure learning outcomes to recognize and accredit student learning outcomes (Admiraal et al., 2015). Learning outcomes are statements about what students are expected to know, understand, and demonstrate at the end of the learning experience (Adam, 2004). Therefore, every student is required to obtain good learning outcomes. Many things can affect learning outcomes, including the affective factors of skills (Surmiyati, 2014).

Affective skills are something that a student must have because they can help students give positive reactions or adverse reactions to the situation at hand (Rofiq, 2009). The affective domain includes individual feelings, emotions, and attitudes, including accepting phenomena, responding to phenomena, assessing, organizing, and characterization (Anderson, 2011). Affective abilities can include listening attentively to class lessons and responding to the phenomenon of involving students' active participation in class or during group discussions (Cannon & Feinstein, 2005).

Affective skills can contribute to learning outcomes as opinions (Savitz-Romer et al., 2015) that practical abilities are essential to students' academic success. Students with solid practical skills will acquire, develop, strengthen, and demonstrate behavior and attitudes in learning (Ratka, 2018). These skills are essential because they are manifested in behaviors, thought patterns, and dispositions that lead to understanding (Berger et al., 2012). Affective skills involve attitudes, feelings, emotions, and beliefs. Affective and cognitive skills cannot be separated (Tatar et al., 2013). Therefore, affective skills are essential to determine student skills.

A student who has affective abilities can maximize his ability to engage himself in seeing the value of something and expressing it. It includes sharing their views and ideas on various issues raised in the classroom and attaching importance to academic issues (Wilson, 2016). Affective abilities include feelings, enthusiasm, appreciation, values, interests, and attitudes towards things (Anderson & Krathwoll, 2001).

Affective skills consist of several indicators, which include self-efficacy (Hoffman & Schraw, 2009); mathematical interests and mathematical attitudes (Pimta et al., 2009; Spada et al., 2008); worry (Guven & Cabakcor, 2013); belief (Erdamar & Alpan, 2013; Saban & Yuce, 2012). Likewise, the opinion (Coelho et al., 2020) that practical skills consist of self-efficacy, attitudes, anxiety, beliefs, and interests.

The indicators of affective skills are described as follows: The first is self-efficacy. Self-efficacy is a belief in one's ability to organize and implement a program of action to meet the desired results (Bandura et al., 1999). Self-efficacy describes a person's belief to successfully perform tasks in many cases and obtain performance achievements (Parajes, 2002; Pajares, 2003). Self-efficacy plays a substantial role in choosing, persistence, effort, strategy use, and interest in math problems. In addition, self-efficacy is positively related to mathematical achievement and problem solving (Lopez et al., 1997; Pajares & Miller, 1994; Pajares & Kranzler, 1995).

The second indicator is math interest. Math interest is a sense of interest in a learning activity without coercion (Roida, 2015). Astuti (2015) explains that interest is also a determinant of learning success. Several previous research results found that math interest can positively influence mathematics learning outcomes to include (Meriyati et al., 2018; Yustinaningrum, 2018; Waller, 2006).

The third indicator is math anxiety. Math anxiety is a student's belief that they will not solve the math problems they face. Common reasons for math anxiety are perceptions that have low skills, lack of previous success, non-adaptive behavior, inadequate learning, lack of ability to prepare for study and tests, and genetic characteristics such as perception (Hoffman & Schraw, 2010). Fisher et al. (1996) suggested that math anxiety is one factor that affects student problem-solving achievement. His investigation concluded a negative relationship between math anxiety and problem-solving achievement. A similar thing is also stated that math anxiety is an influential factor that negatively influences students' math achievement (Bindak, 2005).

The fourth indicator is belief. Belief is a tendency to act like or dislike a mathematical problem-solving activity. Belief is formulated as a student's subjective conception that is considered correct, affecting mathematics learning and problem-solving (Eynde et al., 2002). Students' beliefs can provide ideas in learning to excel in the learning process. Belief plays an essential role in directing students' perceptions and behavior so that it affects mathematics learning activities and student achievement (Lazim et al., 2004; Meiyue et al., 2010).

The fifth indicator is math attitude. Math attitude describes a person's tendency to respond positively or negatively to an object, situation, or concept (Sarmah & Puri, 2014). Math attitude can change and develop over time (Syyeda, 2016), and a positive attitude can improve student learning outcomes (Akinsola & Olowojaiye, 2008; Mutai, 2011). On the other hand, negative attitudes hinder effective learning and consequently affect subsequent learning outcomes (Joseph, 2013). Therefore, attitude is a fundamental factor that cannot be ignored. Many researchers consider math attitude a significant contributor to higher or lower performance in mathematics (Waheed & Mohamed, 2011; Mata et al., 2012; Ngussa & Mbuti, 2017).

Unfortunately, practical skills, which are one of the skills needed in the world of work in the future, have not been optimally owned by students in Indonesia. It can be seen from the low learning outcomes of mathematics when viewed from PISA 2018 released by the Organization for Economic Co-Operation and Development (OECD). Indonesia is ranked 71 out of 78 countries based on the accumulated score of three indicators (OECD, 2018). Thus, if seen in the national exam for mathematics at the high school level, only an average of 52.01 is in a low category (Puspendik, 2020). In addition, several research results report the expected learning

outcomes of mathematics in Indonesia, such as (Amir & Kurniawan, 2016; Yahya & Bakri, 2020; Fitrianti et al., 2020).

Likewise, the reported students' affective skills were still low based on the findings (Sigiro et al., 2017); mathematics anxiety can have a negative impact on students' mathematics learning outcomes (Mu'azaroh, 2020); there is student anxiety in learning (Nurhayati et al., 2019); students show negative attitudes towards learning (Riajanto, 2020); low self-confidence in learning (Mirawati, 2017); and students' lack of interest in learning mathematics (Lestari, 2015).

Various previous studies have been carried out in several countries related to affective skills, such as (Folloni et al., 2021) in Italy (Christiana et al., 2021; Mikus et al., 2021) and Germany. In Indonesia, there have also been many such practices (see Muamar & Rahmi, 2017; Zamista, 2016). However, these studies are more likely to examine things that can improve the ability of affective skills, and no one has reviewed the influence of affective skills on mathematics learning outcomes. Research on the influence of students' affective skills has not been conducted during or after a pandemic. Even though research related to the influence of affective skills is vital to do in the hope that it can provide an overview of its influence and factors that can shape the creation of adequate skills. In addition, the findings can be used as a reference for developing effective skills to improve mathematics learning outcomes. The results can also be a reference for lecturers and teachers in developing the quality and results of mathematics learning. Therefore, the main objective of this research is to analyze and describe the influence of affective skills and their influence on mathematics learning outcomes. The research questions are: 1) What influences math interest, math anxiety, math self-efficacy, beliefs and attitude, and students' math learning outcomes?; 2) Do math interest, math anxiety, math self-efficacy, beliefs, and math attitude significantly influence students' mathematics learning outcomes?; and 3) Which dominant variable that influences mathematics learning outcomes is?

Methods

This research was quantitative survey research with a cross-sectional approach considering the researcher observes and measures variables only at a specific time. This research was carried out in January-March 2021 by involving 540 high school students in Makassar City consisting of 61 boys and 94 girls spread over 17 classes at three levels, namely class X-XII. Because there are three levels with different age ranges, the sample was taken using a stratified random sampling technique, and the results obtained were 155 class XI people spread into six classes. The researcher chose one level because the respondents' students had homogeneous abilities and characteristics.

The research procedure was carried out in four stages, namely (1) Preparation: by conducting an inductive study of the problem, studying literature and relevant sources and making a research plan, compiling and validating the instrument; (2) Implementation: giving questionnaires and tests, as well as collecting relevant data; (3) Data analysis: analysis through

descriptive and inferential analysis with structural equation modeling (SEM); (4) Drawing conclusions: analysis and evaluation to get a good picture in drawing the correct conclusions (Latan & Temalagi, 2013).

The research variables consisted of exogenous variables: affective skills, math interest, math anxiety, math self-efficacy, beliefs, and math attitude. At the same time, the endogenous variable was learning outcomes. The operational definitions and variable indicators are described in Table 1.

Table 1. Operational definitions and variable indicators

Variable	Operational definition	Indicator
Math interest	*Math interest* is defined as a student's interest in learning activities	1. Students' desire to learn mathematics. 2. Students' joy in learning mathematics. 3. The emotional involvement of students in learning mathematics; and 4. The tendency of student activity related to mathematics courses. (Syahlani & Setyorini, 2020)
Math anxiety	*Math anxiety* is defined as the belief that students have that they will not be able to solve the math problems they face	1. Mathematics knowledge/understanding 2. Somatic 3. Cognitive 4. Attitude (Cooke et al., 2011)
Math self-efficacy	*Math self-efficacy* is defined as a belief in students that they have abilities to solve problems successfully	1. Dimensions of magnitude (Level). 2. Dimensions of strength (Strength). 3. Dimensions of generalization (Generality). (Bandura et al., 1999)
Beliefs	*Beliefs* defined as a condition that describes the tendency of students to act like or dislike a mathematical problem-solving activity	1. Beliefs about learning mathematics 2. Confidence about yourself 3. Beliefs about social context. (Izzatul, 2017)
Math attitude	*Math attitude* is defined as a description of the tendency of students to respond positively or negatively to Math lessons	1. Trying to understand the problem or substance of a mathematical problem independently. 2. Trying to take logical action. 3. Trying to state things clearly and concisely. 4. Trying to find better things. (Katagiri, 2004)
Learning outcomes	Learning outcomes are defined as a manifestation of student success benchmarks in understanding learning based on the students' test.	1. Cognitive realm 2. Affective realm 3. Psychomotor domain (Bloom et al., 1976)

The instrument used to measure the exogenous variables was a questionnaire with a rubric on a scale of 1-5 with the following information:

1. The math interest questionnaire consisted of 8 positive questions developed from 4 indicators adopted from Syahlani & Setyorini (2020)
2. The math anxiety questionnaire consisted of 8 positive questions developed from 4 indicators adopted from Cooke et al. (2011).
3. The math self-efficacy questionnaire consisted of 6 positive questions developed from 3 indicators adopted from Bandura et al. (1999).
4. The beliefs questionnaire consisted of 6 positive questions developed from 3 indicators adopted from Izzatul (2017).
5. The math attitude questionnaire consisted of 10 positive questions developed from 4 indicators adopted from Izzatul (2017).

All the questionnaires, including math interest, math anxiety, math self-efficacy, beliefs, and math attitude, met the validity test and the reliability test shown in Table 2. While the endogenous variable, namely the results of learning mathematics obtained from the value of the documentation of students' learning outcomes at school.

Tabel 2. Validity and reliability test

Variable	Validity Test				Reliability Test	
	Item	r	Nilai Sig	Ket	Alpha Cronbach	Remark
Math Interest	X1.1	0.660	<0.001	Valid	0.759	Reliability
	X1.2	0.733	<0.001	Valid		
	X1.3	0.690	<0.001	Valid		
	X1.4	0.762	<0.001	Valid		
	X1.5	0.593	<0.001	Valid		
	X1.6	0.576	<0.001	Valid		
	X1.7	0.539	<0.001	Valid		
	X1.8	0.617	<0.001	Valid		
Math Anxiety	X2.1	0.775	<0.001	Valid	0.783	Reliability
	X2.2	0.826	<0.001	Valid		
	X2.3	0.743	<0.001	Valid		
	X2.4	0.775	<0.001	Valid		
	X2.5	0.738	<0.001	Valid		
	X2.6	0.744	<0.001	Valid		
	X2.7	0.804	<0.001	Valid		
	X2.8	0.684	<0.001	Valid		
Math Self Efficacy	X3.1	0.675	<0.001	Valid	0.774	Reliability
	X3.2	0.753	<0.001	Valid		
	X3.3	0.725	<0.001	Valid		
	X3.4	0.653	<0.001	Valid		
	X3.5	0.624	<0.001	Valid		
	X3.6	0.742	<0.001	Valid		
Beliefs	X4.1	0.726	<0.001	Valid	0.781	Reliability
	X4.2	0.800	<0.001	Valid		
	X4.3	0.760	<0.001	Valid		
	X4.4	0.546	<0.001	Valid		
	X4.5	0.779	<0.001	Valid		
	X4.6	0.714	<0.001	Valid		
Math Attitude	X5.1	0.678	<0.001	Valid	0.757	Reliability
	X5.2	0.624	<0.001	Valid		
	X5.3	0.755	<0.001	Valid		

Variable	Validity Test				Reliability Test	
	Item	r	Nilai Sig	Ket	Alpha Cronbach	Remark
	X5.4	0.680	<0.001	Valid		
	X5.5	0.670	<0.001	Valid		
	X5.6	0.729	<0.001	Valid		
	X5.7	0.684	<0.001	Valid		
	X5.8	0.603	<0.001	Valid		
	X5.9	0.633	<0.001	Valid		
	X5.10	0.723	<0.001	Valid		

Furthermore, the research data were processed with descriptive analysis to describe each category of variables and variable indicators by referring to Table 3.

Table 3. Variable category classification

Affective Skills Variable Category		Category of Learning Outcomes Variables	
Score	Category	Score	Category
1.00 - 1.80	Low	> 87	Very high
1.81 - 2.60	Less	75 - 86	High
2.61 - 3.40	Enough	63 - 74	Moderate
3.41 - 4.20	High	50 - 62	Low
4.21 - 5.00	Very high	<50	Very low
(William et al., 2000)		(Purwanto, 2012)	

Furthermore, inferential analysis is processed using structural equation modeling (SEM) analysis techniques through the Amos Version 21 program, which was used as a fundamental for answering the formulated problems. The requirements in the SEM analysis are to meet the goodness-of-fit (GOF) with several criteria, namely: a) X2–Chi-square statistic with a cut of value of $p > 0.05$; b) RMSEA ≤ 0.08; c) GFI = antara 0-1; d) AGFI ≥ 0.9; e) CMIN/DF < 2; and f) TLI ≥ 0.9 (Hooper et al., 2008).

Results

The results of this study consist of the results of the descriptive analysis and the results of the inferential analysis. The results of the descriptive analysis of each variable are presented in Table 4.

Table 4. The results of descriptive analysis of each variable indicator

Variable / Variable Indicator	Mean Value	Category
Affective skills	3.49	High
Math interests	3.55	Enough
Math anxiety	2.9	Less
Math self-efficacy	3.77	High
Beliefs	3.73	Enough
Math attitude	3.50	High
Learning outcomes	84.11	High

Based on Table 4, the result of questionnaires filled by 155 students related to affective skills was found to be in a high category. In contrast, the indicators of affective skills were

found that math self-efficacy and math attitude were in the high category, beliefs and math interests were in the sufficient category, and math anxiety was in the poor category. Likewise, learning outcomes are reported in the high class, and math anxiety was also found in the poor category, but the value was still relatively high.

Furthermore, the findings of the inferential analysis with structural equation modeling (SEM). Testing the hypothesis using structural equation modeling (SEM) analysis was first tested for the construct validity of the variables to determine the validity of the indicators for each variable. The analysis results showed one indicator, namely the beliefs variable, that was excluded from hypothesis testing because the p value> 0.05 (Hooper et al., 2008). Furthermore, the upside of the fit model was tested. The analysis results showed that the initial equation model did not match because the values of several benefits of fit criteria did not meet the values of GFI, TLI, CFI, RMSEA, and AGFI. A modification index was carried out to get a matching model by connecting several model parts to be tested. The analysis results obtained the final model as shown in Figure 1.

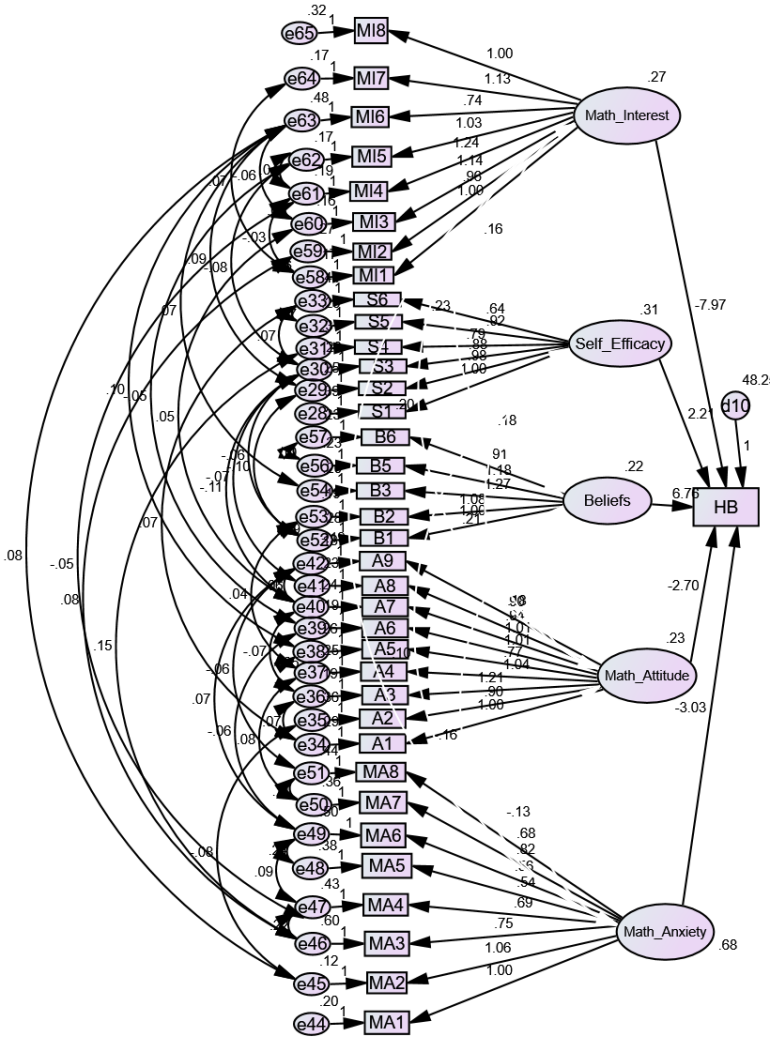

Figure 1. Model fit structural equation modeling

The criteria for the goodness of fit indices are evaluated, shown in Table 5.

Table 5. The results of the evaluation of the criteria for the goodness of fit indices

The goodness of fit index	Cut-off Value	Model Results *	Information
χ^2 - Chi-square	Small expected	841,941	Good
Sign of Probability	≥ 0.05	0.000	Good
CMIN / DF	≤ 2.00	1,462	Good
RMSEA	≤ 0.80	0.061	Good
GFI	≥ 0.90	0.748	Marginal
AGFI	≥ 0.90	0.693	Marginal
TLI	≥ 0.95	0.901	Marginal
CFI	≥ 0.95	0.914	Marginal

Based on Table 5, it can be explained that from the eight items of the goodness of fit indices criteria requirements in the SEM analysis, there are four good categories and four marginal categories, so that they have met the requirements and can be used for hypothesis testing. Furthermore, to see the influence of each exogenous variable on endogenous variables, it can be seen from the results of regression weights in Table 6.

Table 6. Regression Weights

Variable Relationships	Estimate	SE	CR	P	Estimate
Interest ← Learning outcomes	-7,967	7,382	-1,079	0.280	-0.554
Anxiety ← Learning outcomes	-3,027	0.948	-3,194	0.001	-0.331
Efficacy ← Learning outcomes	2,206	3,685	0.599	0.549	0.162
Beliefs ← Learning outcomes	6,758	7,186	0.940	0.347	0.425
Attitude ← Learning outcomes	-2,696	5,430	-0.497	0.619	-0.170

Table 6 is the output of the SEM analysis in the form of standardized regression weight, which shows the coefficient of influence between variables and is used as the basis for testing the hypothesis. Thus, the test results are described as follows:

1. Math interest has no significant effect on learning outcomes based on the value of p = 0.280> α 0.05 with an estimated value of -7.967.
2. Math anxiety has a significant negative effect on learning outcomes based on the value of p = 0.001 <α 0.05 with an estimated value of -3.027.
3. Math self-efficacy has no significant effect on learning outcomes based on the value of p = 0.549> α 0.05 with an estimated value of 2.206.
4. Beliefs have no significant effect on learning outcomes based on the value of p = 0.347> α 0.05 with an estimated value of 6.758.
5. Math attitude has no significant effect on learning outcomes based on p = 0.619> α 0.05 with an estimated value of -2.696.

Discussion

The results showed that math interest had no significant effect on learning outcomes; this suggests that the data obtained from research subjects had not proven that math interest impacted learning outcomes. It means that it is not enough to use math interests to improve learning outcomes. This finding supports the results of previous studies that there was no correlation between interest in learning and mathematics learning achievement that Ratnasari found (2017). In addition, Irwanti & Widodo (2018) explain that the mathematics learning outcomes of students with high learning interest have in common with students who have moderate and low interest. However, these findings are different from the research results (Lestari, 2015; Nugroho et al., 2020; Prastika, 2020; Sari & Fitri, 2019), who found a significant effect of interest in learning on mathematics learning outcomes.

The following finding is that math anxiety has a significant negative impact on learning outcomes. It means that the lower or smaller the math anxiety students have, the better the student's learning outcomes will be. The results of this study are in line with the findings of previous studies conducted by (Villamizar Acevedo et al., 2020; Asrawati, 2021; Evy Novia Nanda Artama et al., 2020) with the finding that mathematics anxiety has a negative impact on mathematics learning outcomes, so do the results (Anita, 2014) that the negative correlation between mathematics anxiety and mathematical connection ability, and the mathematics learning outcomes of students who have high anxiety levels are lower than students with the low level of achievement (Meriyati et al., 2018). Therefore, this study explains an agreement between the hypothesis and the existing data. At the same time, it strengthens the statement (Santri, 2017) that mathematics anxiety has a very negative impact on learning outcomes; students who do not have anxious feelings will overcome learning problems and prepare themselves more thoroughly for learning (Vivin, 2019).

Furthermore, math self-efficacy was also found to have no significant effect on learning outcomes. It suggests that it turns out that self-efficacy is only able to have a minimal effect on learning outcomes, so there is not enough evidence to say that self-efficacy can contribute to improving learning outcomes. The results of this study are in line with the survey results (Husna & S, 2018), which also found that there was no significant positive relationship between self-efficacy and mathematics learning outcomes. Likewise, the findings (Noer, 2013) show no significant difference in self-efficacy on mathematics learning outcomes for students with high, medium, and low abilities. However, the results of this study are different from the research reports of Kaskens et al. (2020), which promote that children's self-efficacy is very important for their mathematical development and a positive predictor of mathematics fluency. Self-efficacy plays a crucial mediating role in the relationship between cognitive activation and mathematical achievement (Li et al., 2021). Likewise, self-efficacy is an aspect of student motivation that has been shown to play an essential role in student engagement, participation, and retention in academic careers in science, technology, engineering, and mathematics (STEM) (Calendar et al., 2020).

The same thing can also be explained that beliefs have no significant effect on learning outcomes. The data obtained from respondents illustrate that student beliefs have a minimal effect on improving learning outcomes, so these findings are not sufficient to provide evidence that beliefs can affect outcomes. Learn significantly. The results of this study mean that to obtain or improve student learning outcomes, it is not enough just the ability of the beliefs but must be supported by other variables. Several previous research results also found that ideas did not significantly affect learning outcomes, such as the research results of Isharyadi (2017), who also found the same thing. In addition, the finding states that students 'mathematics learning outcomes cannot be determined from students' beliefs because students who have firm, moderate or low beliefs have varying mathematics learning outcomes (Rozaqi et al., 2020). However, these findings are not sufficient evidence to support the statement (Eleftherios & Theodosios, 2007; Widjajanti & Wahyudin, 2010), which reveals that critical affective abilities are student beliefs that influence mathematical performance results and findings (Soesanto et al., 2020) that students with firm beliefs have higher learning independence.

The following finding is that math attitude does not significantly affect learning outcomes. It happens because math attitude can only have a minimal effect on learning outcomes. It means that students' math attitude has not encouraged students to improve their learning outcomes. Therefore, it is not enough to have a math attitude alone but must be supported by other factors to obtain high learning outcomes. This finding aligns with the findings (Leonard & Supardi, 2010) (Dahliani, 2019) that there is no positive and significant influence between student attitudes toward mathematics on learning outcomes. However, this study is different from the findings (Susilo & Agustin, 2015; Nurhayati, 2015; Purnomo, 2017; Hashim et al., 2021) that math attitude has a significant effect on learning outcomes. Furthermore, different from the research results (Hartati, 2015), students who have a positive attitude toward mathematics will get higher mathematics learning outcomes than students who have negative attitudes toward mathematics.

Based on the description, in general, the findings of this study illustrate that from the five indicators of affective skills, there is one indicator that has a significant negative effect, namely math anxiety, and four indicators that have a non-significant positive effect, namely math interest, math self-efficacy, beliefs, and math attitude. Several reasons cause this variable to have a positive and insignificant effect, such as because students' beliefs are low, so students do not have the confidence and do not act in solving problems, lack of encouragement and motivation from external parties to students so that students' math interest is only are in a good category. Meanwhile, math self-efficacy and math attitude are in the high category. However, they are not used optimally in learning, so they have not significantly improved students' mathematics learning outcomes. The findings of this study are also different from the findings of previous studies, which found that affective skills generally affect learning outcomes. However, in this study, it was found that the four indicators of affective skills were not all able to influence mathematics learning outcomes significantly, and other studies tend to research things that can improve affective skills in general. No one has researched the effect of affective skills based on the five indicators on mathematics learning outcomes.

In addition, there are also limitations in the study that need to be considered, namely that even though the results of the evaluation of the goodness of fit indices criteria have met the fit model, there are indicators with marginal categories. Besides, the participants in this study only involved one school, and the results of the learning outcome data—were only taken from the value of documentation of student learning outcomes at school. However, further research is expected to measure learning outcomes with specific instruments and involve respondents from various schools to make the population more heterogeneous.

Conclusion

The math self-efficacy and math attitude were in the high category, beliefs and math interest were in a suitable type. Math anxiety was of a low sort. Furthermore, math interest, math self-efficacy, beliefs, and math attitude were found to have no significant effect on learning outcomes, which means that math interest, self-efficacy, ideas, and math attitude were not sufficient to provide evidence that they could significantly influence learning outcomes. Furthermore, math anxiety is the most influenced variable in mathematics learning outcomes. The contribution of findings of this study is provided an overview of the factors that can shape the creation of effective skills and their influence on students' mathematics learning outcomes. However, the results of this study also have limitations, namely the results of the evaluation of the criteria for the goodness of fit indices with a marginal category. In addition, the participants in this study only involved one school. The results of learning outcomes data were only taken from the documentation value of student learning outcomes in schools.

Conflicts of Interest

The authors declare no conflict of interest regarding the publication of this manuscript with the affiliated authors under the same title. In addition, the authors follow the ethical issues, there is no plagiarism, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely by the authors

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