Factors influencing students' academic achievement in mathematics: A case of Kaffa Zone Tello Woreda Oda Primary School[1]

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Article Info

Abstract

Academic achievement of students at the primary school level was a foundation for acquiring educational skills, materials, and knowledge, usually spanning a variety of disciplines. Understanding the factors affecting mathematics achievement at primary school was important for deciding on the teaching and learning process of mathematics in secondary and higher education. This study investigated the factors that influence the academic achievement of students in mathematics in Kaffa Zone Tello Woreda Oda primary school. The target groups for this study were 318 students from grades 5- 8. This group was sampled using stratified sampling techniques, and the sample size was 160 students. The data was collected using questionnaires, student interviews, and a teacher questionnaire. The data collected were analyzed using descriptive statistics and multiple linear regression models using a statistical package for social science (SPSS version 20). The finding of this study indicates that students' academic achievement in mathematics is significantly related to students' attitudes towards mathematics, studying systems of mathematics, math-test anxiety, and learning resources of mathematics. The significant relation of academic achievement with the predictor variables accounts for 56.8% of the variance. This indicates that the prominent factors for academic achievement in mathematics were students' attitude towards mathematics, studying system of mathematics, math-test anxiety, and learning resources of mathematics. The other factors investigated by descriptive statistics were parents' educational background, parents' occupation, and teacher-related factors such as teachers' attitudes towards the subject, teachers' methodology, and teaching strategies. Generally, the factors influencing the academic achievement of students at the primary school level were students' attitudes towards mathematics, studying system of mathematics, math-test anxiety, learning resources of mathematics, parents' educational background, and parents' occupation, teachers' attitude towards the subject, teachers' methodology and teaching strategies. Finally, the researchers suggested that the concerned bodies should take measures of these factors that influence the academic achievement of mathematics at the primary school level to boost the students' academic achievement in mathematics.

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1 Introduction

1.1 Background of the study

Mathematics and human life are interconnected. Mathematics is a subject that depends on numbers, and numbers are a tool for human daily life and knowledge. Different individuals raised the utility of mathematics for each individual and the societies as a whole. Accordingly, mathematics plays a key role in shaping how individuals deal with the various spheres of private, social, and civil life (Anthony & Walshaw, 2009). For the economic success of one's country, mathematics knowledge is very interesting, and mathematical ability is crucial for the economic success of societies (Lipnevich et al., 2011). Mathematics opens the human mind to a better understanding of the value of science, technology, business, agriculture, computer science, and other fields. The study of mathematics belongs to a classical education, but the purpose is not clear for each individual learner and society. Moreover, according to (the Ministry of Education, 2003), mathematics is one of the school disciplines that focus on enhancing students' mathematical power and proficiency, which leads to purposeful and worthwhile mathematical work. Students gain the ability to use mathematics to extent and apply their knowledge for other curriculum areas, such as science and language (Riffat, 2007). Mathematics relies on logic, reasoning, problem-solving, and creativity as a science of patterns and relationships. Students learn mathematics without understanding the application of it in real life. Most students did not have an interest in learning mathematics at school. A lack of interest in learning mathematics leads the students to the lowest academic achievers in the class. Academic achievement is the observed and measured aspects of students' master of skills and subject content as measured with valid and reliable tests. Academic achievement is commonly measured with examinations that assess important procedural knowledge, such as skills, and declarative knowledge, such as facts that students have been taught (Bennett, 2003). It is knowledge attained or skills developed in school subject usually designated by scores in tests or examinations (Kpolovie et al., 2014). Since academic achievement is the criterion for selection, promotion, or recognition in various walks of life, the importance of academic achievement can't be ignored (Reddy, 2007). The students' academic achievement at the middle primary school is mandatory for the secondary and the university education of students. When a good foundation lies at the primary school level, students better cope with the challenges of life and profession with great interest. But nowadays, no one gives priority to mathematics in our country as well as in our society. The student's lack of attention to learning mathematics leads to low achievement in his /her academic success. Currently, in Ethiopian primary schools, the level of academic achievement in mathematics has been rated as insufficient as it was commonly presented that students are promoted from lower grades to higher grades without sufficient knowledge (Keneni, 2022). However, the researchers are subject to research factors influencing students' academic achievement in mathematics in the case of Kaffa Zone Oda primary school.

1.2 Statement of the problem

Academic achievement in mathematics plays a significant role in students joining science and technology departments at universities or colleges. A problem related to learning mathematics is a common phenomenon among students worldwide. In the Ethiopian context, there are several factors that influence students' mathematics achievement positively or negatively (Abebe, 2014). Some prominent factors contributing to difficulties in learning mathematics are students' dislike of mathematics, which may have stemmed from psychological incidences such as fear, endurance, perseverance, and other associated factors (Siti Fairus Mokhtar et al., 2012). Specifically, the problem related to learning mathematics is a common phenomenon among students in Ethiopia. Achievement in mathematics is inextricably associated with upcoming career opportunities for learners, plays a substantial role in the student's general learning acquisition level, and is a reliable criterion to divide students into scientific or literary streams (Keneni, 2022). In Oda primary school, most students' achievement in mathematics was below 50% in regional examination.

However, no study has been conducted to investigate the failure of students in regional examinations at Tello Woreda Primary School. For this reason, the studies were conducted to investigate the status of students in grades 5-8 who achieved academic achievement in mathematics and find out the factors that influence students' achievement in mathematics. The following research questions addressed the solutions to the problems.

1. What is the relationship between students' attitudes, studying system, math test anxiety, and learning resources and students' mathematics academic achievement?
2. What are the dominant factors that affect students' mathematics achievement?
3. Are there teacher-related factors that affect the student's achievement in mathematics?

1.3 Objective of the study

1.3.1 General objective

The main objective of this study is to determine the factors that influence students' academic achievement in mathematics.

1.3.2 Specific objective

The specific objective of this study is:

- To investigate the relationship between students' attitudes, studying the system, test anxiety, and learning resources with the academic achievement of students in mathematics
- To identify dominant factors that affect students' mathematics achievement
- To identify factors related to teachers affecting the student's mathematics achievement.

1.4 Research hypothesis

This study proposed the following hypothesis to be tested by the study

H_0: All independent variables do not affect students' academic achievement.

H_1: At least one independent variable affects students' academic achievement.

H_0: There is no statistically significant relationship between independent variables such as attitude towards mathematics, studying the system of mathematics, math test anxiety, learning resources, and academic achievement of students in mathematics.

H_1: There is a statistically significant relationship between independent variables such as attitude towards mathematics, studying the system of mathematics, math test anxiety, learning resources, and academic achievement of students in mathematics.

1.5 Significance of the study

The findings of this study are expected to expose some factors that could contribute to students' mathematics achievement in primary schools. The findings of the study will help students to identify their potential by proving their confidence when dealing with mathematics problems. Also, this study will equip teachers of mathematics with the required approach of teaching students with negative perceptions of mathematics that will elicit better achievement in mathematics. The outcome of the study will also enable stakeholders in mathematics education to put the appropriate measures in place when developing the mathematics curriculum to ensure the quality of education in Ethiopian primary schools. Finally, this study will guide researchers in further studies on students' mathematics achievement.

2 Research methodology

This section of the study presents the methodology deployed by the researchers to arrive at the stated objectives, research questions, and hypothesis.

2.1 Research design

Descriptive survey research design was used in this study in order to find out factors influencing academic achievement in mathematics. In educational research, survey research is a popular design, and it includes quantitative and qualitative research in which investigators administer a survey to a sample to describe the attitudes, opinions, behaviors, or characteristics of the population (Creswell, 2012).

2.2 Population, sample, and sampling techniques

Tello Woreda is part of the Kaffa Zone, with a population of 63,251. Of these populations, 3,509 lived in Oda town, and the remaining lived in rural areas. There are two primary schools in Oda town; one is Shobeni Primary School, which contains classes up to 4th grade, and the other is Oda Primary School, which contains classes up to 8th grade. For this study, Oda Primary School was selected because of grievances that arose about the failure of students in mathematics in the regional examination. The students taken for this study were Oda primary school grade 5-8 students and all mathematics teachers currently teaching in those grades. The number of students in these grades was 157 male students and 161 female students, a total of 318 students and 3 mathematics teachers. From these total numbers of students, the samples taken were 88 female students and 72 male students, a total of 160 students. The sample students were drawn using stratified sampling techniques, considering the Grades 5-8 students as a stratum. Moreover, stratified sampling is a technique that uses any relevant information that might be available to increase the efficiency of the result of the study.

2.3 Data collection

Data collection instruments are the basic tools to gather data to investigate a possible solution for the research problem. In this study, the researchers used questionnaires and interviews to ensure the study's findings. To accomplish this duty, questionnaires contained mainly closed-ended items and were administered to 3 mathematics teachers and 160 students to gather information on the issue under this research. In distributing a questionnaire, the researcher gave a brief orientation on the purpose of the study and how to respond to the questionnaire. The questionnaires implemented a five-point point Scale. These were strongly agree, agree, undecided, disagree, and strongly disagree. Particularly for students, to minimize doubt, the researcher tried to prepare the questionnaires in English, and it was translated into the Amharic language. As a result, there is a high chance for them to recognize existing problems and factors that influence academic achievement in mathematics. The four questions were developed for the interview and evaluated by the experts in college. The questions were limited to avoid confusion and repetition of the idea. In the interview process, the respondents generally spoke in their own languages, and the interviewer recorded their responses through handwritten notes. The interviewers who participated in this study were 12 students. These students were selected using purposive sampling to gather clear information for this research.

2.4 Data analysis

The data collected from 160 students of Oda primary school students were coded and analyzed properly. Descriptive statistics and inferential statistics from multiple regression analysis were used to analyze the collected data. The quantitative data was analyzed using Statistical Package for the Social Sciences (SPSS) version 20. A narrative analysis was used to describe the

respondents' opinions of the qualitative data.

2.5 Validity and reliability

2.5.1 Validity analysis

Validity is the degree to which results obtained from data analysis represent the phenomenon under the study (Wekesa, 2013). Validity tests have been conducted to select and assess the final items of the construct that are finally used for statistical testing. Among several types of validity tests, the content validity test was used for this study. The construct's content validity is the degree to which the measure spans the domain of the construct's theoretical definition. It represents the adequacy with which a particular domain of construct was sampled. Content validity is subjective and judgmental but is often based on two standards suggested by the instrument, which contained a representative set of measures and were sensible methods of scale construction used.

2.5.2 Reliability analysis

According to different researchers, a reliability test is important to ensure the consistency of measuring instruments to measure the research's intended purpose (Baharin et al., 2015). This could be done by using Cronbach's alpha to measure the internal consistency of items. Cronbach's used in his research reliability test by providing a better rule, the so-called Cronbach's alpha with standard values were 0.9-1.0 is excellent, 0.8-0.89 was very good, 0.7-0.79 was acceptable, 0.6-0.69 was questionable. At the same time, 0.59 is poor, and less than 0.5 is unacceptable (Cronbach, 1951). In this research, the value of Cronbach's alpha has been computed separately to assess the reliability of the scales adopted on the student's questionnaire. These students' attitude towards mathematics has $\alpha = 0.83$, studying the system of mathematics has alfa eşittir 0.78, math test anxiety has $\alpha = 0.92$, and learning resource has $\alpha = 0.94$. All the values of Cronbach's alpha were above the accepted value. This indicates that all dimensions of the construct significantly contribute to the consistency.

3 Findings

This section presented and interpreted the analyzed data regarding the factors influencing students' academic achievement in mathematics. The socioeconomic and demographic-related factors and students' related factors were analyzed, presented, and interpreted using descriptive and inferential regression analysis statistics.

3.1 Socio-economic and demographic-related factors

Table 1 Statistical description of achievement based on age and gender

Variables	Categories	N	%	2015 E.C First Semester Math Result											
				Grade 5th			Grade 6th			Grade 7th			Grade 8th		
				$\overline{x}$	SD	CV	$\overline{x}$	SD	CV	$\overline{x}$	SD	CV	$\overline{x}$	SD	CV
Gender	Male	72	45.0	6	14.4	21.	63.4	13.9	21.	63.2	9.2	14.	67.2	6.4	9.
	Female	88	55.0	65.04	7.	11.53	60	14.7	24.5	68	9.1	13.3	58.6	11.9	20.4
Age	< 17	146	91.3	65.52	11.6	17.7	67.2	16.6	27.7	68.5	10.8	15.5	66	14.7	22.2
	17-30	12	7.5							-			53.59	3.4	6.34
	>30	2	1.3							-			56.4	2.5	4.

From Table 1, the student's achievement varies from grade to grade. This finding shows that there is a fluctuation in achievements from class to class. In one grade, females performed better than males; in another, males performed better than females.

Table 2 Statistical description of achievement based on parental education

Variables	Categories	N	%	2015 E.C First Semester Mathematics Result											
				Grade 5th			Grade 6th			Grade 7th			Grade 8th		
				$\overline{x}$	SD	CV	$\overline{x}$	SD	CV	$\overline{x}$	SD	CV	$\overline{x}$	SD	CV
Educational level of Father	Not Educated	25	15.6	67.3	6.8	10.1	65.3	13.5	20.6	64.5	3.4	5.2	69.5	11.8	17
	Elementary	49	30.6	55.3	10.8	19.5	58.5	8.8	15	63.2	6.8	10.7	65.5	13	19.8
	High School	61	38.1	55.5	12.6	21.5	67.6	5.8	8.5	65.3	12.8	19.6	54.4	5	9.19
	College and above	25	15.6	69.6	5.6	8.5	65.8	18.6	28.2	67.9	8.8	13	59.6	13.4	22.5
Educational level of ;	Not Educated	26	16.3	65.4	9.2	14.1	67.3	5.5	8.1	63.4	7.4	11.6	59.12	6.8	11.5
	Elementary	71	44.4	67.8	8.4	12.4	58.4	6.35	10.8	62.2	4.4	7.07	63.5	15.6	24.6
	High School	42	26.3	54.6	13.2	24.4	65.6	12.6	19.2	64.5	8.6	13.3	64.2	11.4	17.8
	College & above	21	13.1	69.3	4.5	6.4	64.3	15.4	23.9	66.8	2.5	3.74	68.3	6.26	9.16

From Table 2, in one grade, students whose parents studied college and above had better performance in mathematics. In other grades, the students whose parents attended high school education and those whose parents were not educated had better performance in mathematics. According to this study, there is a fluctuation in students' achievements in mathematics from grade to grade in one school at the parental educational level.

Table 3 Statistical description of achievement based on parents' occupation

Variables	Categories	N	%	2015 E.C First Semester Mathematics Result											
				Grade 5th			Grade 6th			Grade 7th			Grade 8th		
				$\overline{x}$	SD	CV	$\overline{x}$	SD	CV	$\overline{x}$	SD	CV	$\overline{x}$	SD	CV
Father's Occupation	Merchant	40	25.0	64.3	3.5	5.4	61.4	15.3	24.8	66	9.61	14.56	65.3	11.8	18.1
	Farmer	70	43.8	62.5	4.9	7.8	60.6	14.2	23.4	58.6	5.54	9.4	61.5	13	21.1
	Employee	37	23.1	61.4	15.5	25.2	64	5.6	8.7	67.8	2.44	3.5	49.2	1.74	3.5
	Others	13	8.1	56.7	12.3	21.6	62.3	9	14.4	57	3.8	6.6	59.5	6.7	10.7
Mother's Occupation	Merchant	27	16.9	61.6	3.28	5.3	58.6	12.5	21.3	59.6	9.9	16.6	61.4	7.4	12.1
	Farmer	58	36.3	68	8.5	12.5	64.5	6.8	10.54	60	9.44	13.6	68.6	12.6	18.4
	Employee	32	20.0	63.5	4.4	17.7	61.6	13.5	21.9	69.3	2.5	3.6	63.5	9.52	14.9
	Others	43	26.9	54.6	12.9	23.6	59.6	12.5	20.97	59.5	8.58	14.4	56.2	5.42	9.6

Table 3 shows a lower or higher SD and CV at each occupational level. This indicates that the achievement lowness was consistent.

3.2 Regression analysis of student-related factors

Table 4 Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.757[a]	.568	.202	1.107

a. Predictors: (Constant), Students attitude towards mathematics, Studying System of Mathematics, Math Test Anxiety, Learning resources

From Table 4, the multiple linear regression models with four predictors have an R-squared value of 56.8% of student academic achievement variation. From this model, the summary of the R-value showed a 0.757 correlation between the predicted values and the observed value of students' achievement. From the values of the adjusted R-squared, we can observe that the explanatory power of the regression model contains different numbers of predictors. Since in R square, there is a relationship between a dependent variable and the set of independent variables.

To test the following hypothesis, we used Table 5 of ANOVA

H_0: All independent variables do not affect students' academic achievement.

H_0: At least one independent variable affects students' academic achievement.

Table 5 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	67.870	15	4.525	3.691	.000[b]
1	Residual	176.530	144	1.226		
	Total	244.400	159			

a. Dependent Variable:
b. Predictors: (Constant)

Table 5 represents the p-value (p=0.000) for the F (3.691) is less than 0.05. Based on the Null hypothesis, all independent variables do not affect the academic achievement of students, and the alternative hypothesis, at least one independent variable has an effect on the academic achievement of students, whiles, p<0.05 with hypothesis decision rule H_0 reject for p-value greater, than 0.05 level of degree of accuracy. This means that at least one of the independent variables is a significant predictor of the dependent variable. Therefore, the null hypothesis is rejected, and the alternative hypothesis is accepted. For this reason, the multiple linear regression model is a fit.

To test the following hypothesis of individual parameters in the model, we used the result of output linear regression

H_0: There is no statistically significant relationship between independent variables such as attitude towards mathematics, studying the system of mathematics, math test anxiety, learning resources, and academic achievement of students in mathematics.

H_1: There is a statistically significant relationship between independent variables such as attitude towards mathematics, studying the system of mathematics, math test anxiety, learning resources, and academic achievement of students in mathematics.

Table 6 Result of output linear regression

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.653	.475		5.586	.000
Students' attitudes towards mathematics	4.686	.070	.279	3.743	.000
1 Studying system of Mathematics	4.390	.130	.333	3.005	.003
Math Test Anxiety	3.364	.129	.437	2.829	.005
Learning resource	3.167	.091	.168	1.829	.040

a. Dependent Variable: Achievement of students

From Table 6, all the independent variables are statistically significant. All have positive coefficients for each independent variable. Thus, for every 1% increase in the student's attitude towards mathematics, math test anxiety, studying system of mathematics, and learning resources, there is an increase of 4.68%, 4.39%, 3.36%, and 3.16% in the predicted value of the academic achievement.

Thus, statistical model given for the academic achievement of students' is:

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4$$

Where, Y - the academic achievement of students
x_1 - students attitude towards mathematics
x_2 - studying system of mathematics
x_3 - math test anxiety

x_4- learning resource

β_0 - Y-intercept

β_1, β_2, β_3, β_4 are the coefficients which indicates the vertical change of the academic achievement of students.

The statistical model of the academic achievent of Tello woreda Oda primary school students' was given as;

$$Y = 2.653 + 4.686x_1 + 4.39x_2 + 3.364\ x_3 + 3.167\ x_4$$

When we take the mean of five point likert scale values, which is 3.5, then the assumption of one student result becomes,

$$Y = 2.653 + 4.68(3.5) + 4.39(3.5) + 3.364(3.5) + 3.167(3.5)$$

$$Y=57.5$$

This, Y- value indicates the achievement score of one student which is closest to the R-square value. For the hypothesis, the p- value less than 0.05. Therefore, the null hypothesis that there is no statistically significant relationship between independent variables such as attitude towards mathematics, studying the system of mathematics, math test anxiety, learning resources, and academic achievement of students in mathematics is rejected. Hence, the alternative hypothesis that there is a statistically significant relationship between independent variables such as attitude towards mathematics, studying the system of mathematics, math test anxiety, learning resources, and academic achievement of students in mathematics is accepted.

3.3 Factors related to teachers

Table 7 Statistical description of teachers' responses on attitude towards mathematics

Items	Categories				
	SA	A	U	DA	SDA
Mathematics is difficult subject by nature.	33.3	-	33.3	33.3	-
Teaching mathematics does not need resources.	33.3	-	-	66.7	-
Mathematics is essential for daily life.	100.0	-	-	-	-
More practice enhances understanding of mathematics concepts.	100.0	-	-	-	-
Mathematics is an interesting subject.	66.7	33.3	-	-	-
I feel nervous when teaching math	33.3	66.7			
Mathematics is easy to teach.	66.7	33.3			
I like solving mathematics problem	66.7	33.3			
Mathematics is challenging to teach.	100.0	-	-	-	-

From Table 7, all teachers who participated in this study feel nervous when teaching mathematics, believe that mathematics is essential for daily life, that mathematics is challenging to teach, and that mathematics is an interesting subject. More practice enhances the understanding of mathematical concepts. Also, 33.3% of teachers responded that mathematics is a difficult subject by nature, 33.3% suspected its difficulty in nature, and the rest, 33.3% of teachers, responded that mathematics is not difficult in nature. So, the difficultness of mathematics in nature is difference according to each individual teacher. On the item of teaching mathematics needs resources, 66.7% of the teachers disagree, and 33.3% strongly disagree about it. This indicates that the majority of teachers need resources in teaching mathematics. But 66.7% strongly agree, and 33.3% agree they like solving mathematical problems. This result basically shows that the majority of teachers' attitudes towards mathematics are not negative but rather a misconception that mathematics does not need resources.

Table 8 Statistical description of students' response to teacher teaching strategy of mathematics

Items	Categories				
	SA%	A %	U %	DA %	SDA %
My teacher explains mathematics easily	24.4	6.3	0.6	30.0	38.8
My mathematics teacher can arouse my interest for mathematics.	19.4	17.5	5.0	38.8	19.4
My mathematics teacher facilitates active participation during the instruction.	30.0	18.1	1.9	24.4	25.6
My mathematics teacher encourages me if I have difficulties with mathematics	26.9	13.8	1.3	33.1	25.0
My mathematics teacher checks my homework and the class work and gives feedback.	20.6	14.4	8.8	29.4	26.9

From this finding, the highest percent of students responded that their teachers cannot arouse their interest for mathematics; they have difficulties in solving mathematics applications and problems. So, the teachers support was very less in solving problems and showing the ways for the students who have in difficulties. Even if; most of the students responded that their mathematics teacher didn't check home works, class works and didn't provided a feed backs for their works.

3.4 Students interview results

Interviews were conducted with twelve grade 5-8 students. Each student was asked to respond to the same set of questions during the interviews. Moreover, students from the selected classes were interviewed on the idea that the interest of students towards mathematics, the use of mathematics in real life, the homework and class work given by their mathematics teacher, and the feedback given to their homework and class work. Some of their responses are given below. Of the twelve students, three of them did not like mathematics. The reason that they didn't like mathematics is that it is difficult to memorize the principles, formulas, and steps that are written in their textbook. Also, five students like mathematics parts such as number addition, multiplication, subtraction, and division, but they don't like equation parts and geometry parts. Four of the twelve interviewees felt strongly about liking mathematics. They ranked mathematics as their favorite subject. They said that learning mathematics depends on rules, and they like rules. All twelve interviews said that mathematics is useful and important. When I asked them to elaborate, almost all the learners recognized that mathematics is used daily. They gave examples like counting livestock, counting money in the banking sector, and building and construction. Also, of twelve students, six said that their mathematics teacher did not give any classwork at all. But he did that at the end of each period; he gave plenty of exercises from the textbook as homework. But, he did not check what we had done even once. Three said their teacher had no problem giving home and class work. He gave us several exercises even out of the text. The next day, he did all the exercises alone without checking our exercise books. Also, three said their mathematics teacher gave them homework by selecting challenging problems from the text. But he checked their exercise books once a week to see whether they had done their homework or not. However, he did not go through each question to check our work step by step to give feedback. In general, they said that their mathematics teacher did not check their homework and class work and did not give valuable feedback about their work.

4 Discussion

The socio-economic and demographic-related factors include age, gender, parents' education, and occupation. Every day of their lives, people's gender influences how they are expected to behave, how they are perceived and evaluated by others, the kind of role they take on, and the

possibilities available to them. In this study, gender variation does not matter in students' achievement. In mixed-school classes, males performed better than females, while in single-sex school classes, females performed better than males in mathematics achievement (Njagi, 2013). This study was on mixed school classes. Therefore, gender variation does not affect the mathematics achievement of students. This study's finding contradicts that the higher the parents' level of education is, the more time they spend with their children in activities related to education, the greater their involvement in school activities is, and the lower the psychological costs of children in coping with educational effort (Yara, 2009). Parents with high-ranking occupational status might have enough income which can be used to provide the needed materials and support for their children in order to arouse their interest in mathematics than their counterparts in low-ranking occupations whose major obligation is to provide shelter and food for the family (Mohammad AnangTaufik , 2019). From the multiple linear regression analysis, attitudes towards mathematics, studying systems of mathematics, math test anxiety, and learning resources were the predictors of academic achievement. This indicates that they directly affect the academic achievement of students. From the review literature, students' interest in learning mathematics contributes significantly to the prediction of students' academic achievement (Kpolovie et al., 2014). But in other reviews, there is no significant link between students studying system and academic achievement (Xolani, 2012). Therefore, according to this study, there is a significant difference between academic achievement and studying the system of mathematics. From the teacher-related factors, the students learning to be in life, using different resources such as charts, graphs, models, etc., were advisable. Therefore, mathematics teachers can positively influence students' attitudes toward mathematics by demonstrating a positive attitude toward teaching the subject. Creating a positive attitude towards mathematics is a very important strategy that needs to be done to enhance students' performance in the subject (Mensah et al., 2013). Teacher plays a great role in learning mathematics in the classroom and in the academic achievement of students. Essentially, learners are treated as co-creators in the learning process, as individuals with ideas and issues that deserve attention and consideration (Adegboyega et al., 2017). When the teacher doesn't explain the mathematical concepts in a simple way, it is difficult for the students to understand the main concepts. This way leads to the failure of academic achievement. More than any other actions that teachers might take, posing tasks that engage students in thinking for themselves about mathematics through the act of problem-solving is the main stimulus for student learning (Anthony & Walshaw, 2009). From the interview results of the students, their interest in mathematics, their beliefs in using mathematics in real life, and the feedback given by the teacher for their homework and class work were generally very low.

5 Conclusion and recommendation

5.1 Conclusion

Based on the result of the study, the researchers investigated the factors that influence students' academic achievement in mathematics at Oda primary school. The relationship between students' attitudes towards mathematics, the studying system of mathematics, mathematics test anxiety, and learning resources with the academic achievement of students in mathematics was investigated. This relation was found by using multiple regression analysis, and it was statistically significant, which means the p-value less than 0.05. From the findings, the R-squared value of 0.568 indicates that the relationship between independent variables such as students' attitude towards mathematics, studying the system of mathematics, mathematics test anxiety and learning

resources, and student's academic achievement in mathematics was 56.8%. Depending on the R-R-squared value, the dominant factors for the academic achievement of students of mathematics in Oda primary school were students' attitude towards mathematics, students studying the system of mathematics, mathematics test anxiety, and learning resources. The remaining relations, holding 43.2%, were parents' socio-economic and demographic-related factors such as parents' education, occupation, and teacher-related factors. The teacher-related factors were teacher commitment to teaching mathematics, teaching methodology and strategy, and teachers' attitudes toward teaching mathematics. These factors influence the academic achievement of students in Oda primary school.

5.2 Recommendation

Based on the basic findings, the researchers would like to recommend that mathematics teachers, parents, the college, and the concerned bodies work together to boost students' interest in learning mathematics and improve their achievement in mathematics.

6 Statement of researchers

In this section, you are expected to declare the information regarding the titles given below.

6.1 Researchers contribution rate statement:

Both authors have the same contribution to this research.

6.2 Conflict statement

The authors confirm that there are no conflicts of interest. Furthermore, they have the publication rights to this article in the Pedagogical Perspective Journal.

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