

## Assessing the learning outcomes of 8th-grade students from the National Exam in 2023 in Dire Dawa, Ethiopia

Belay Sitotaw Goshu<sup>1</sup>, Ermias Abas<sup>2</sup>, Fitria<sup>3</sup>

<sup>1,2</sup>Department of Physics, Dire Dawa University

<sup>3</sup>Universitas Iskandar Muda, Indonesia

[belaystitotaw@gmail.com](mailto:belaystitotaw@gmail.com), [fitria.se.m.si@gmail.com](mailto:fitria.se.m.si@gmail.com)

### Abstract

The study aims to assess and examine the learning objectives attained by eighth-grade students who took part in the 2023 National Exam in Dire Dawa, Ethiopia. The study's descriptive research design gathers data on academic performance in the eighth grade. Every primary school, both private and public, was selected. Data was collected from the education bureau using the academic roster for the 2023 national test. The descriptive approach evaluated the student's progress toward the next level and academic accomplishment. Using Python 3.11 software, the assessment was completed by classifying the students based on their mother tongue. The findings of the study indicated that in the Afan Somali stream, the average grade points for pupils in the academic year 2023 were  $28.2 \pm 9.0$ ,  $22.3 \pm 7.3$ ,  $21.2 \pm 7.8$ ,  $16.7 \pm 7.2$ ,  $20.5 \pm 7.1$ , and  $20.0 \pm 7.3$ , respectively, in the fields of the Afan Somali language, English, citizenship, mathematics, social studies, and general science. The average grade points for students in the Afan Oromo stream in the academic year 2023 were  $28.4 \pm 10.1$ ,  $20.3 \pm 7.9$ ,  $20.4 \pm 8.2$ ,  $17.1 \pm 8.0$ ,  $22.6 \pm 8.7$ , and  $21.0 \pm 7.2$ , respectively, in the fields of the Afan Somali language, English, citizenship, mathematics, social studies, and general science. Moreover, in Amharic, the average grade points for pupils in the academic year 2023 were  $33.2 \pm 9.7$ ,  $22.6 \pm 9.3$ ,  $19.9 \pm 9.0$ ,  $18.5 \pm 8.5$ ,  $22.6 \pm 9.7$ , and  $21.2 \pm 8.4$ , respectively, in the fields of Amharic, English, citizenship, mathematics, social studies, and general science. According to these results, 26.4% of students who received scores higher than 50% and 73.6% of students who received scores lower than 50% were advanced to the next grade. However, the study suggests that primary schools should have the tools required to support high academic achievement. It is imperative to look for teachers with the necessary training, experience, aptitude for learning, and teaching abilities. According to their mother tongue languages, kids' academic performance varies, as evidenced by the results, which highlights the need for customized teaching strategies. The recommendations of the study for areas that warrant more investigation, such as studies on instructional materials and teacher quality carried out in elementary schools to get complete comparisons and identify other factors influencing learning results.

### Keywords

Academic achievement; eight-grade; language; Afa Somali; Afan Oromo; Science; Social



## I. Introduction

The definitions of success are wide and taken from several angles by Dam (2008) and Gizem (2020). According to Dam (2008) and Gizem (2020), academic performance is "the ability of humans to achieve set goals and achieve desired results in life in harmony with the environment and at peace with themselves". This study uses the term "success" to refer to academic accomplishment, much like many other research do. The achievement is a performance metric that is prioritized over instructional activities in the learning assessment process. In this case, the performance index may be the student's final assessment score Cunningham, (2003); Gizem (2020); Fan & Chen (2001).

Learners will advance to higher grades on the learning ladder based on the evaluation of their education, which is based on learning outcomes. As a result, low

learning results worry students, instructors, parents, and other education system stakeholders greatly. Olivia (2020); Luke et al. (2014). Because learning outcomes are the result of learners' interactions with their environment, psychology, and socioeconomic status, they present a significant challenge to learners. The production of highly educated, competent people who are well-suited for economic development thus requires a strong and thorough basis in both basic and post-graduate education. The nation's politics and society Kwizera et al. (2020)

Family environment largely contributes to learners' personality and psychosocial context and affects their learning outcomes Mary et al. (2016); Olivia, (2020). The school operates independently without taking into account factors related to the home environment that affect learning outcomes. Parenting style, family size, and socioeconomic status (SES) are family contextual factors that impact learning. Olivia (2020).

Academic achievement is described by Kaggwa (2003) as the quantity and quality of knowledge, skills, procedures, good attitudes, behaviors, and ideologies that students gain. Processes that provide people with the information, abilities, and attitudes needed to express their ideas and talents, engage fully in their communities, and make constructive contributions to society are all elements of quality learning.

This success is measured by the grades or scores obtained by the student in the tests or national examinations taken at the end of the subject, semester, year, or educational cycle. It states that each learner's scores and ranks indicate their degree of academic progress.

One of the factors affecting students' academic success is the teacher's teaching ability. The teaching process is linked to students' learning outcomes. Teaching theory and practice are tied to pedagogy, according to Elvis (2013). It will inform teaching strategies, teachers, assessments, and decision-making by taking learning theories, an awareness of students and their needs, and each student's history and desires.

The quality of primary education in Ethiopia is deteriorating. The decline in education quality is reflected in many aspects, including students failing national exams Goshu et al., (2022). The major failures of primary schools are due to teachers' ineffective implementation of the curriculum, school environment, and learning materials, supported by poor supervision by school principals Goshu, et al., (2022); Goshu and Woldeamanuel, (2023). Even though this topic has been extensively explored in the literature, not much study has been done to determine the causes of Ethiopian primary schools' poor academic performance. This study aims to assess eighth-grade students' academic performance on the national exam in 2023 and provide practical suggestions for their achievements and shortcomings.

### **1.1 Significance of the Study**

This study is significant because it offers a comprehensive evaluation of eighth-grade students' academic performance in 2023 across a variety of subject areas and language streams. The study identifies areas that require improvement and sheds light on the quality of education using data from national exams. According to their mother tongue languages, kids' academic performance varies, as evidenced by the results, which highlights the need for customized teaching strategies.

The importance of infrastructure, excellent teachers, educational resources, and instructional time in promoting academic attainment is also highlighted in the study. The recommendations offered provide realistic steps to enhance student performance and inform policy decisions. Along with suggestions for future study topics, the paper supports

ongoing efforts to improve educational systems and outcomes by extending knowledge and identifying new variables influencing learning outcomes.

### **1.2 Scope and Limitation of the Study**

The scope of the study includes factors affecting the academic performance of elementary school students in the 8th-grade national exam DDCEB (2023).

## **II. Research Methods**

In Dire Dawa town, 92 primary schools split into three streams were prepared for the national grade 8 exam in 2023. Due to their shared language, the lineages are Amharic, Afan Somali, and Afan Oromo. There are 725 pupils enrolled in Afan Somali, 3,266 in Afan Oromo, and 3,298 in Afan Amharic. 7,289 pupils in grade 8 DDCEB (2023) sat the national test in 2023.

### **2.1 Research design**

One possible approach to studying academic achievements obtained from the Dire Dawa Education Bureau is to employ a descriptive research design. This type of study technique aims to characterize the qualities of a particular population or phenomenon without influencing them and altering any of the variables. The researcher collects data on the students' academic achievement. The study designs are widely used in educational research to provide a broad picture of students' performance, identify trends, and understand a diversity of academic outcomes.

### **2.2 Instruments**

The data collected in this study were to evaluate students' academic success from the 2023 national exams in grade 8. Academic results are consistent with national Grade 8 exam records. Scores are assessed in six subjects: Afan Somali, Afan Oromo, Amharic, General Sciences, English, Citizenship, Social Sciences, and General Science (average of the scores obtained in each subject's area).

Quantitative data collected through the Dire Dawa City Education Office National Examination Result 2023 was analyzed using simple descriptive statistical tools such as frequencies, means, and percentages. The quantitative data was analyzed using Python 3.11 and the most recent version of the Statistical Package for the Social Sciences (SPSS version 26).

## **III. Results and Discussion**

The results of their national exam for eighth grade were examined using the records kept by the Education Office of Dire Dawa City. The paper also contains the academic outcomes of the pupils in the following subjects: general studies, citizenship, math, Afan Oromo, Afan Somali, Amharic, English, and math.

### **3.1 Results**

Table 1 shows the outcome of the proportion of students that received a 50% or higher on the 2023 national exam DDCEB (2023). Of the students who passed, 26.4% passed, and 73.6% of those who scored below 50% went on to the next grade.

**Table 1.** The number of students scoring above and below 50% in the 2023 academic year in the national exam

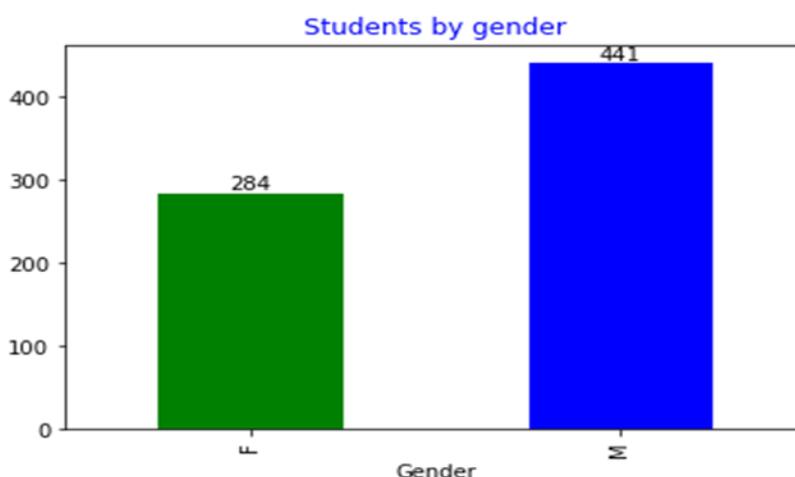
Item	Pass	Fail
Afan Oromo	520(15.2%)	2890(84.8%)
Afan Somali	78(12.0%)	571(88.0%)
Amharic	1355(40.5%)	1994(59.5%)
Total	1953(26.4%)	5455(73.6%)

Source: Dire Dawa City Administration Education Office, 2023

To analyze whether there is a difference in the results of the 8th-grade primary school exam from the national exam. There are three groups or lineages based on their mother tongue language, such as Afa Somali, Afan Oromo, and Amharic. The academic performance in the 2023 school year in Dire Dawa City has been discussed in this section.

### 3.2 Afa Somali language Stream

The number of primary schools teaching Somali Afa in Dire Dawa City is 16. The results we obtained are discussed in this perspective.



**Figure 1.** The number of pupils who took the national examination for grade eight in Dire Dawa City in 2023 from Afa Somali stream.

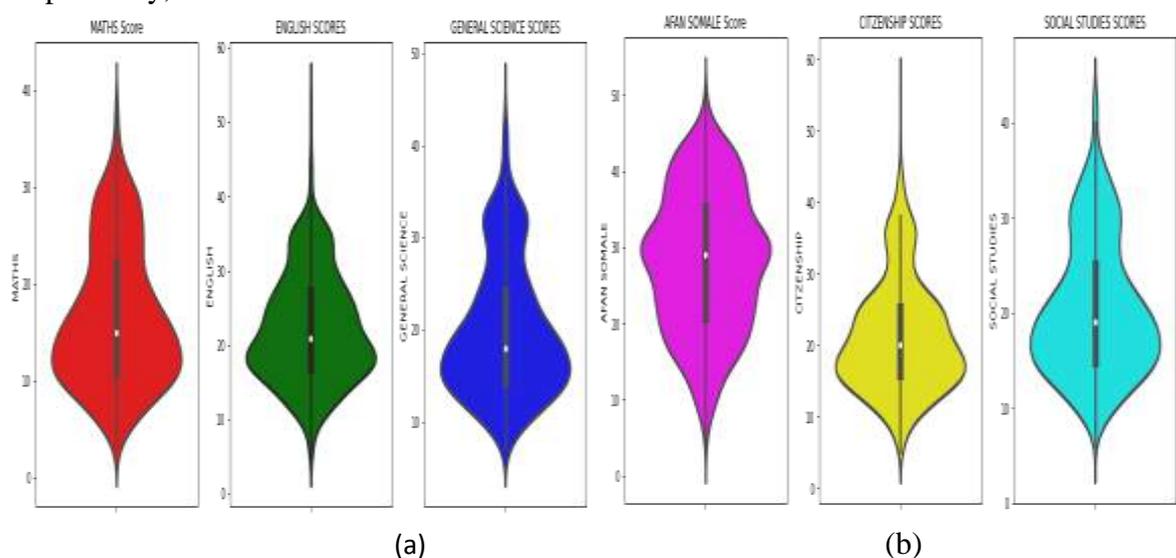
Figure 1 displays the demographic data of students who sat the grade eight national exams in the Afan Somali stream during the 2023 academic year: 60.8% (441) were men, and 39.2% (284) were women.

**Table 2.** The mean, max, min, and standard deviation of students scored in Afan Somali, citizenship, mathematics, English, social studies, and general sciences

Item	Afan Somali	English	Citizenship	Mathematics	Social Studies	General Science
<b>Mean</b>	28.7	21.5	15.6	20.4	19.8	19.2
<b>Std</b>	6.2	7.1	6.5	7.5	6.9	7.0
<b>Min</b>	4.0	5.0	3.0	5.0	3.0	7.0
<b>Max</b>	46.0	54.0	56.0	56.0	43.0	45.0

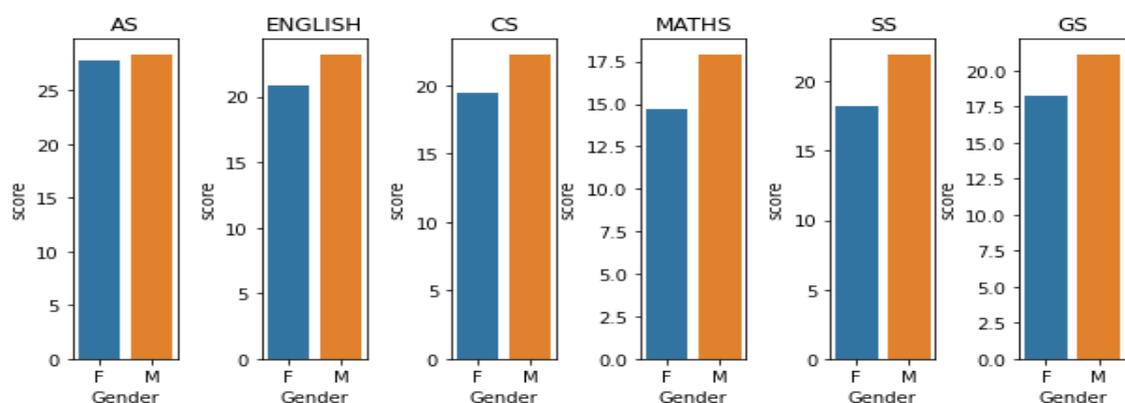
The Academic standing of grade 8 students at the Education Bureau of Dire Dawa City and the summary of the findings are shown in Table 2 in the Afa Somali language stream. The average grade points for students in the subjects of Afa Somali language, English, citizenship, mathematics, social studies, and general science during the 2023 academic year were  $28.7 \pm 6.2$ ,  $21.5 \pm 7.1$ ,  $15.6 \pm 6.5$ ,  $20.4 \pm 7.5$ , and  $19.8 \pm 6.9$ , respectively.

Table 2 indicates that the maximum grades that could be obtained in Afa Somali were 46.0, 54.0, 56.0, 39.0, 43.0, and 45.0. For citizenship, English, math, social studies, and general science, these grades were also prerequisites. In each of the six math classes, a minimum grade was achieved. Table 2 displays the average, standard deviation, lowest, and maximum scores for grade eight students in six disciplines for the academic year 2023. The topics of citizenship and mathematics had the greatest and lowest mean scores, respectively, of 54.0 and 3.0.



**Figure 2.** The academic performance of grade eight pupils in Dire Dawa City's Afa Somali stream in six disciplines in 2023.

Figure 2 shows the learning outcomes of 8th-grade students in six subjects in 2023. The results show that the scores of Afa Somali are higher than the scores of the other five subjects, and the majority of students scored above 30 points. The remaining five subjects' scores were all below 20.



**Figure 3.** The mean scored values of students versus their gender

Figure 3 demonstrates that boys do better than females in mathematics, English, citizenship, social science studies, and general science, while the results in Afan Somali were nearly proportional to gender.

OLS regression results of mathematics exams

Variable	Mathematics	R-squared results	1.0
Model	OLS	Adj. R-squared	1.0
Method	Least Square Method	F-statistic:	1.147e+32

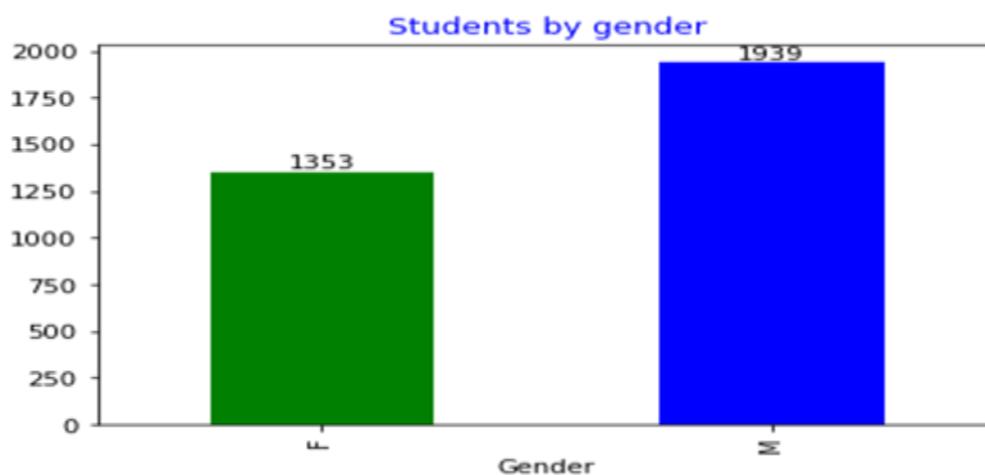
**Table 3.** The covariance of mathematics with the least square method

Covariance type	nonrobust						
	Item	Coef.	Std err	T	p> t	0.025	0.975
Afan Somali		-9.02e-17	8.37e-17	-1.08	0.282	-2.255e-16	7.42e-17
English		-1.30e-15	1.26e-16	-10.37	0.00	-1.55e-15	-1.06e-15
Citizenship		1.47e-15	1.32e-16	11.17	0.00	1.21e-15	1.73e-15
Mathematics		1.00	1.36e-11	7.33e+15	0.000	1.00	1.00
Social Studies		3.192e-16	1.46e-16	2.188	0.029	3.27e-17	6.06e-16
General Science		-5.967e-16	1.33e-16	-4.50	0.00	-8.57e-16	-3.36e-16

The results are presented in Table 2 depicting the mean squares and standard errors. The  $R^2$  is calculated uncentered (not centered) because the model does not contain a constant. The standard errors assume that the error covariance matrix is correctly specified. The skew of the results is -0.255, and Kurtosis is 4.035.

### 3.3 Afan Oromo Stream

The academic standing of grade eight pupils in the Afan Oromo stream across 36 primary schools in the Dire Dawa administration on the national test in 2023.



**Figure 4.** Students by gender in the 2023 academic year in grade eight exams in Afan Oromo streams

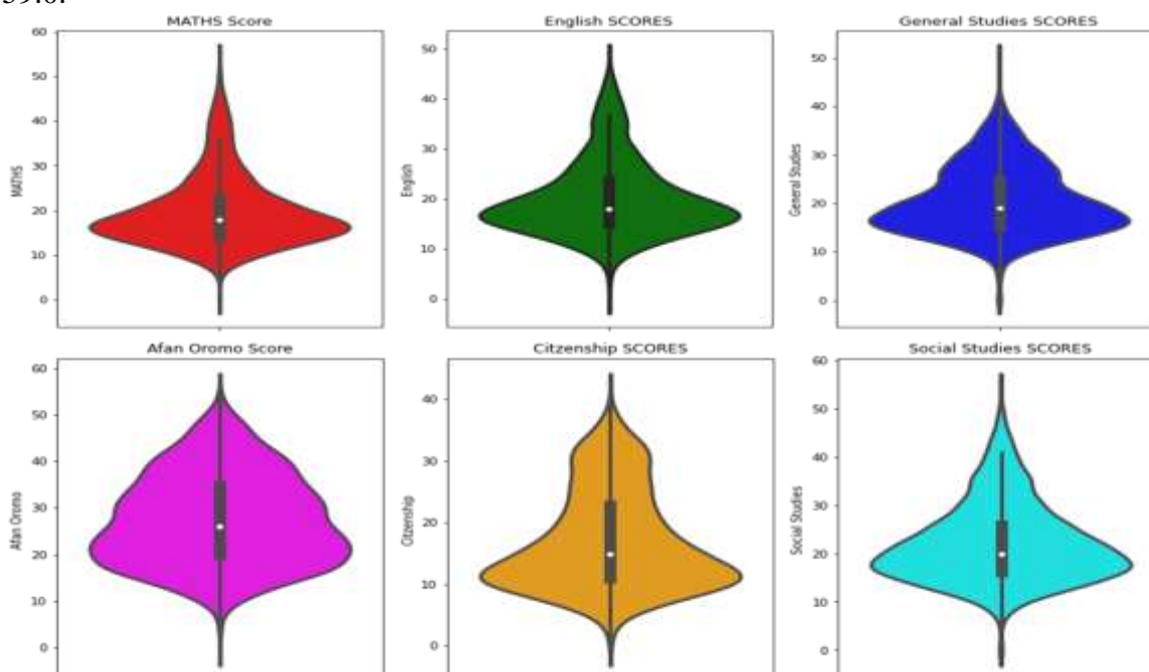
Figure 4 displays the demographic data of students who sat the grade eight national exams in the Afan Oromo stream during the 2023 academic year: 58.9% (1939) were men, and 41.1 % (1353) were female.

**Table 4.** The mean, standard deviation, min, and max scores of 8th-grade exams result in the 2023 academic year in Dire Dawa City in Afan Oromo stream.

Item	Afan Oromo	English	Citizenship	Mathematics	Social Studies	General Science
<b>mean</b>	27.6	20.2	17.1	19.7	22.2	20.6
<b>std</b>	9.8	7.6	8.1	7.9	8.3	7.1
<b>min</b>	0.0	0.0	0.0	0.0	0.0	0.0
<b>max</b>	59.0	51.0	54.0	41.0	54.0	50.0

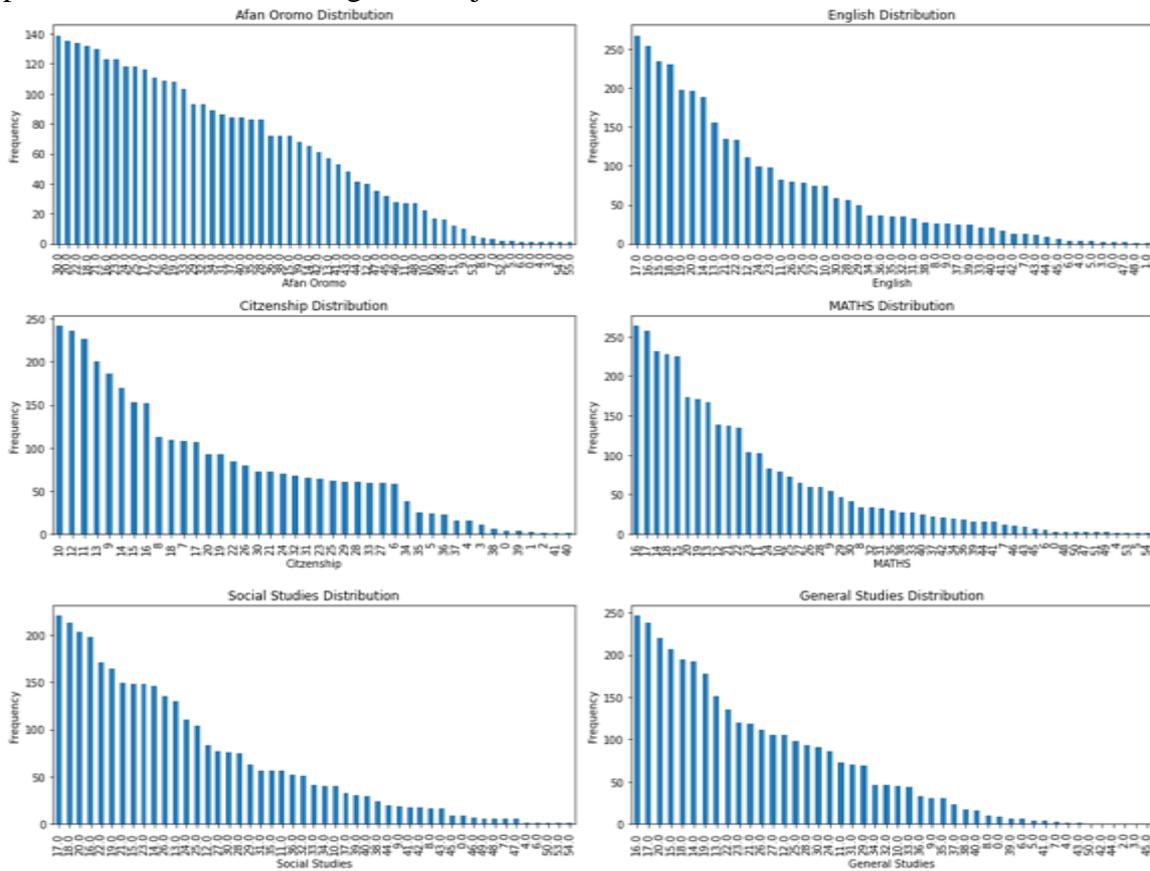
The Academic standing of grade 8 students at the Education Bureau of Dire Dawa City and the summary of the findings are shown in Table 4 in the Afan Oromo language stream. The average grade points for pupils in the academic year 2023 were  $27.6 \pm 9.8$ ,  $20.2 \pm 7.6$ ,  $17.1 \pm 8.1$ ,  $19.7 \pm 8.3$ ,  $22.2 \pm 8.3$ , and  $20.6 \pm 7.1$ , respectively, in the fields of Afan Somali language, English, citizenship, mathematics, social studies, and general science.

The highest grades that could be earned in the Afan Oromo stream were 59.0, 51.0, 54.0, 41.0, 54.0, and 50.0 were Afan Oromo, English, citizenship, mathematics, social studies, and general science, respectively. These grades were also required for citizenship, English, arithmetic, social studies, and general science. Table 1 displays the average, standard deviation, lowest, and maximum scores for grade eight students in six disciplines for the academic year 2023. The topics of Afan Oromo had the greatest mean scores of 59.0.



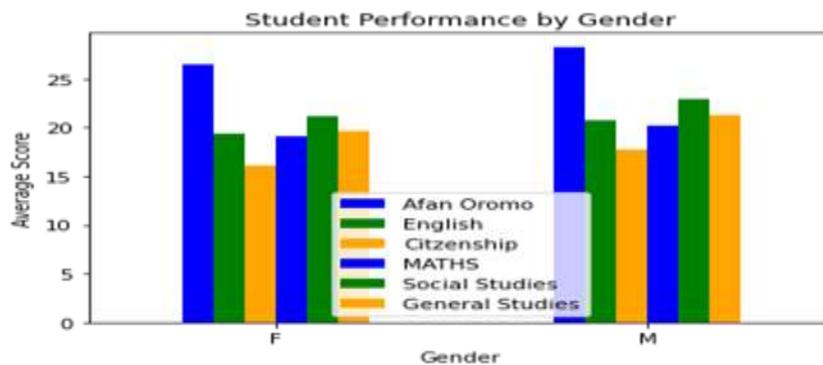
**Figure 4.** Grade eight students' academic achievement in Affan Oromo stream six subjects in Dire Dawa City in 2023.

Figure 4 shows the learning outcomes of 8th-grade students in 6 subjects in 2023 in the Afan Oromo stream. The results show that the scores of the mean Afan Oromo are higher than the scores of the other five subjects. The majority of students scored above 20 points, and in the remaining five subjects, their scores were below 20.



**Figure 5.** The distribution of students' scores in each six subjects in the Afan Oromo stream in the 2023 academic year

The distribution of students' scores is shown in Figure 5. The results revealed that the average mean scores in the Afan Oromo language are better than the other six subjects.

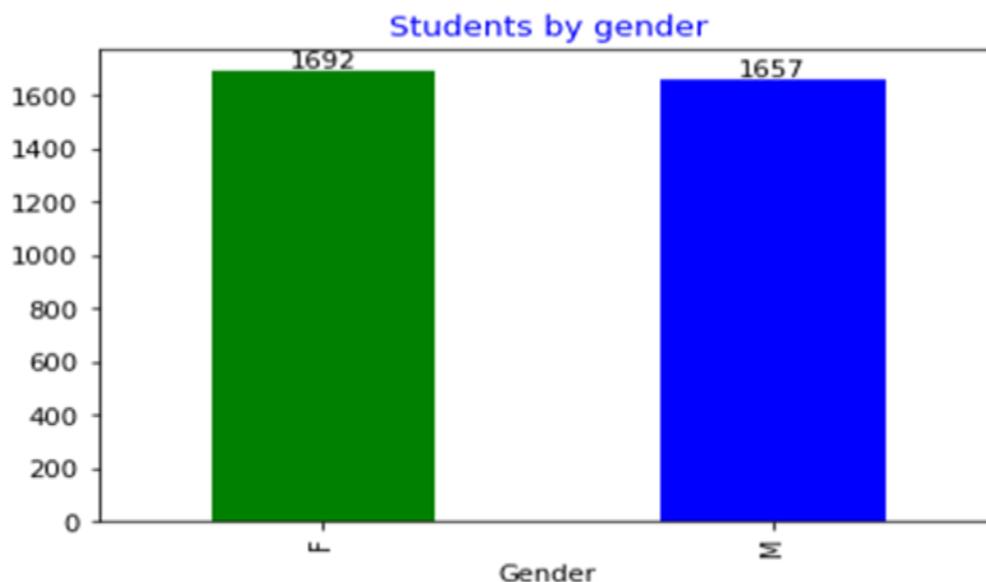


**Figure 6.** Average students' performance by gender in the Afan Oromo stream in the 2023 academic year

Figure 6 shows that the results of men and women in Afan Oromo language, mathematics, English, citizenship, social science studies, and general science are almost proportional and did not have significant differences in academic achievement between genders.

### 3.4 Amharic Stream

The number of primary schools teaching Amharic stream in Dire Dawa City is 42 in both regular and extension programs. The results we obtained are discussed in this perspective.



*Figure 7. Students by gender in the 2023 academic year in grade eight exams in Amharic streams*

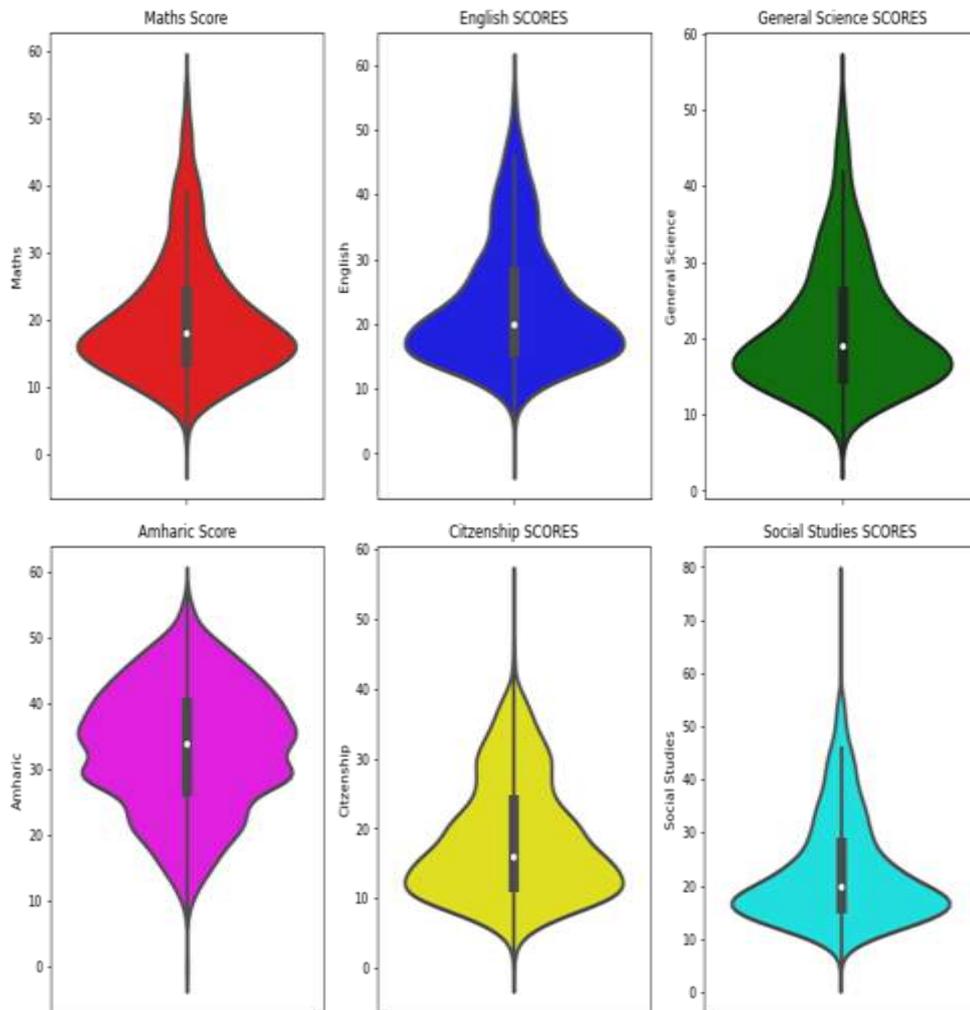
Figure 7 displays the demographic data of students who sat the grade eight national exams in the Amharic stream during the 2023 academic year: 50.5% (1692) were men, and 49.5 % (1657) were female. 62.8% of students were from government schools, and 37.8% (1226) were from private schools.

**Table 5.** The mean, standard deviation, min, and max score of grade eight exams result in the 2023 academic year in Dire Dawa City in the Amharic stream.

Item	Amharic	English	Citizenship	Mathematics	Social Studies	General Science
<b>mean</b>	33.3	23.0	18.4	20.2	22.6	21.3
<b>std</b>	9.4	9.5	8.4	9.1	9.8	8.4
<b>min</b>	0.0	0.0	0.0	0.0	0.0	5.0
<b>max</b>	57.0	58.0	56.0	54.0	76.0	54.0

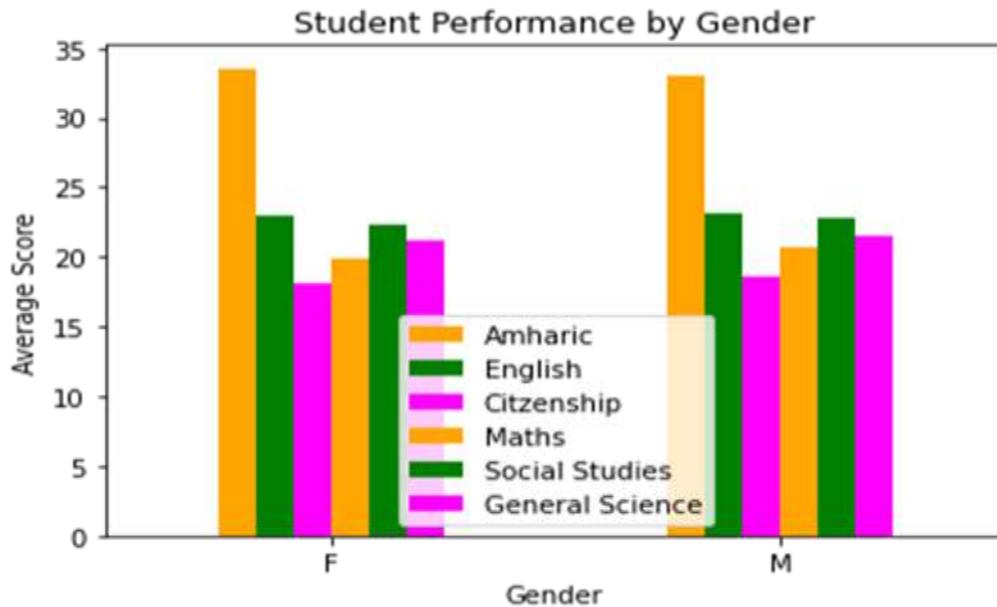
The Academic standing of grade 8 students at the Education Bureau of Dire Dawa City and the summary of the findings are shown in Table 5 in the Afan Oromo language stream. The Amharic language stream used to produce the summary of the findings is shown in Table 5. The average grade points for students in the subjects of Amharic, English, citizenship, mathematics, social studies, and general science during the academic year 2023 were  $33.3 \pm 9.4$ ,  $23.0 \pm 8.4$ ,  $18.4 \pm 9.0$ ,  $20.2 \pm 9.1$ ,  $22.6 \pm 9.8$ , and  $21.23 \pm 8.4$ , in that order.

The highest grades that could be earned in the Amharic stream were 57.0, 58.0, 56.0, 54.0, 76.0, and 54.0 in Amharic, English, citizenship, mathematics, social studies, and general science, respectively. Table 4 displays the average, standard deviation, lowest, and maximum scores for grade eight students in six disciplines for the academic year 2023. Social studies had the highest mean score of 76.0, and students' scores in this stream were higher than the other two streams.



**Figure 8.** Grade eight students' academic achievement in Amharic stream six subjects in Dire Dawa City in 2023.

Figure 8 shows the learning outcomes of 8th-grade students in 6 subjects in 2023 in the Amharic stream. The results show that the scores of the mean Amharic are higher than the scores of the other five subjects. The majority of students scored above 20 points, and in the remaining five subjects, their scores were below 20. The maximum grade was obtained in Amharic subjects and higher than the other two streams.



**Figure 9.** The average students' performance by gender in the Amharic stream in the 2023 academic year

Figure 9 shows that the results of men and women in Amharic language, mathematics, English, citizenship, social science studies, and general science are almost proportional. There are no significant differences in academic achievement between genders.

OLS regression results in mathematics in the Amharic stream the variable was mathematics and whose R-squared value is 1.00, according to the OLS model, Adj. R. squared is 1.0.

**Table 6.** shows how Amharic mathematics differs from other subjects.

Item	Coef.	Std. err	t	P> t	[0.025	0.975]
Amharic	5.55e-17	7.54e-17	0.74	0.00	1.4e-16	3.46e-16
English	1.97e-15	7.11e-17	27.68	0.00	1.83e-15	2.11e-15
Citizenship	1.7e-16	7.74e-17	2.20	0.03	1.83e-17	3.22e-16
Mathematics	1.00	7.42e-17	1.35e+16	0.00	1.00	1.00
Social Studies	-5.20e-16	7.7e-17	-6.76	0.00	-6.71e-16	-1.62e-16
General Science	-3.33e-16	8.73e-17	-3.82	0.00	-5.04e-16	-1.62e-16

Table 6 shows the mean squares and standard errors. The  $R^2$  is calculated uncentered (not centered) because the model does not contain a constant. The standard errors assume that the error covariance matrix is correctly specified. The skew of the results is -0.196, Kurtosis is 3.93, and the root mean squared in Amharic steam is 2.28e-14, which is zero.

### 3.5 Discussion

This study was conducted on the academic performance of 8th-grade students in 2023 in Dire Dawa City. The results showed that the majority of students scored below 50%. The reason is because students encounter some difficulties during the learning process. According to Altonji & Mansfield (2011), school quality, in a broad sense, is an important indicator of educational outcomes, and the school size is a potential measure of school quality and outcomes.

According to Goshu et al. (2022), the causes of the gap in student achievement are believed to be, among others, the physical environment and facilities of schools, facilities and instructional materials, competencies and training of teachers, teachers' experience, teachers' attitudes towards their work, teachers' teaching skills, parent involvement, and classroom Yasin, (2021). The home environment has an impact on students' academic achievement as well. To foster a supportive home environment that raises the caliber of students' work, parents might receive counsel and direction from school administrators. Marzano, 2003.

Additionally, other factors that influence student achievement include the methods used by teachers. Therefore, teachers are encouraged to maintain the use of active teaching, project-based, or digital learning techniques to further improve student learning outcomes. Goshu et al. (2022); Yasin, (2021). According to Seyoum and Tesfaye, (2019); and Admasie et al. (2013), the academic achievement of school-age children can be influenced by some factors such as nutritional status, demographics, and socioeconomic factors Goshu et al. (2022). Therefore, the primary analysis provides the above evidence on the issue of student achievement whether the school is in an urban or rural area.

## IV. Conclusion

Based on the results and discussions obtained, it was concluded that the academic performance of the students of the schools in the 8th-grade examination was very poor, and the study concluded that all stakeholders and the board School administrators with education offices should work together on the responsibilities of teachers and students in improving learning outcomes. In addition, the management should pay more attention to teaching resources, and Dire Dawa University should try to coordinate with the education department to improve teachers' teaching skills.

It is recommended that teachers and other stakeholders should always be vigilant, innovate, and increase the use of various teaching methods, teaching resources, and techniques to further improve student learning outcomes at secondary schools in Dire Dawa town.

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### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest for the research, authorship, and/or publication of this article.

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