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Education Wastage: Contributing Factors and Mitigation Strategies in Government Secondary Schools of Amhara Region

Kagnew Tarekegn[1], Misganaw Alene[2], Tesfaye Ketsela[3], Getu Kassie[4], Assegid Demisse[5], Simegn Birhan[6] and Melke Kifle[7]

Abstract :*The purpose of this explanatory correlational study, which used a mixed design, was to investigate contributing factors of education wastage and to find out mitigation strategies in government secondary schools of Amhara region. Quantitative data were collected from samples of 144 school leaders, 425 teachers and 460 students in seven zones and one city administration selected by multistage proportionate stratified sampling technique. These quantitative data were collected by administering questionnaires, and results were analyzed by descriptive statistics and linear regression to assess the status of education wastage and its contributing factors and to explain associations or impacts of contributing factors on education wastage. In addition, interviews were conducted with 41 parents, school leaders, teachers and students selected by purposive sampling. Qualitative data collected through interviews and open-ended questionnaire items were analyzed using thematic and narrative methods. Findings revealed that the prevalence of school dropouts was greater than grade repetitions of students impacting education wastage.Moreover, physical resource-related, administrative-related, student-related and home-based factors contributed more to education wastage than teacher-related factors. Generally, the associations of school-based and home-based factors were found to have more impacts on education wastage than the associations of school-based and student-related factors. Hence, it is recommended that school leaders receive adequate training in school administration sensitivity training programs that help them motivate students and create conducive learning environments to minimize education wastage. Besides, school leaders should work closely with parents and the communities to take preventive measures that can help mitigate problems and challenges associated with education wastage.*

Keywords: Education wastage, contributing factor, mitigation strategy

[1] Assistant Professor, PhD Student in Curriculum Studies, AAU, Email- kagnew.tarekegn@aau.edu.et

[2] Associate Professor, College of Education, University of Gondar, Ethiopia

[3] Professor, College of Education, University of Gondar, Ethiopia

[4] Assistant Professor, College of Education, University of Gondar, Ethiopia

[5] Professor, College of Business and Economics, University of Gondar, Ethiopia

[6] PhD Candidate, College of Business and Economics, University of Gondar, Ethiopia

[7] Curriculum Expert, Amhara Region Education Bureau, Ethiopia

1. Introduction

1.1. Background to the Study

Internal effectiveness in an educational system is how well its input resources are used to produce its outputs. Promotion, repetition and dropout rates are among the most frequently used metrics to measure the effectiveness of an educational system (Ileuma, 2017; Mehlinger, 1981). The cost of producing one unit of educational output (e.g., a graduate of secondary education level) is the most basic indicator of internal efficiency (Ayodele et al., 2015; Durosaro, 2012). Ileuma (2017) considers internal efficiency as various combinations of educational inputs in the right proportions (e.g., teachers, curriculum, buildings and class size) to achieve the most efficient outcomes. Hence, internal efficiency is the same as having less education waste because both are necessary for improving education in general (Adnett et al., 2002).

Education is generally the foundation of economic prosperity, the key to technological advancement, and the creation of productive employment (Kaume-Mwinzi, 2017; Psacharopolous, 1998). However, its wastage is a major impediment within the course of the development of individuals, communities and a nation (Kapur, 2018). Therefore, the term wastage is being used within the system of education to provide a description of various aspects that would lead to the education system's failure in achieving its goals and objectives. Several studies revealed that education wastage is a global phenomenon and mainly emanates from dropouts and repetition of classes due to the failure of students to achieve the educational objectives that they have been enrolled on through inefficient use of knowledge and information, school buildings, equipment and the labour of teachers (Ekka& Roy, 2014; Samuel, 2017). Education wastage is a common problem characterized by students' repetition and dropout in secondary schools.

Therefore, understanding the causal factors for class repetition and dropout in educational institutions is important to assess education wastage. The failure of individuals to achieve the goals of educational institutions, specifically premature withdrawals of individuals from educational institutions before their educational skills are enhanced or before they have obtained degrees that lead to face unemployment, is the factor that contributes to education wastage (Ekka & Roy, 2014; Kapur, 2018; Wanjiku, 2014). The causes of such failure include sickness, brain drain, and inefficient use of educational resources (Wanjiku, 2014). Durosaro (2012) also came up with findings that dropouts, repeaters, premature withdrawals, misguided types of education, non-employment of school leavers and brain drain are among the most important indicators and factors of education wastage.

In Ethiopia, education wastage has continued to be one of the challenges of the education system. For example, absenteeism of teachers due to spending much time in meetings and focusing more on school administrative tasks than on the learning process and delivery of educational programs are among the challenges (Ministry of Education [MoE], 2018). By the same token, student class attendance as a whole is very poor, mainly owing to disinterest and delinquency. As MoE also stated, education wastage in Ethiopia is further impacted by the inefficient utilization of educational resources to achieve educational goals. This study attempts to contribute to the knowledge base by investigating the extent to which school-based, home-based and student-related factors determine the performance of secondary schools in Amhara Region of Ethiopia, thereby attempting to identify which factors play critical roles in education wastage. The study also examines the potential predictors for educational wastage that arise from repetition and dropout and their mitigation strategies in Amhara Region. The outcome of this research is expected to identify critical factors that contribute to education wastage and the ways and means by which stakeholders perceive what mitigation strategies should be employed to address the problems.

Problem Statement

The socio-economic development of every society is largely predicated on the quality of its education and the smooth operation of school systems (Cornali, 2012). Therefore, it is widely believed that a country's social and economic well-being will depend on the quality of its citizens' education. However, unfortunately, education wastage due to problems associated with student retention and completion of secondary education in Ethiopia persists, and a considerable number of students withdraw from school prematurely (MoE, 2018). For example, MoE reported that the national dropout rate among students in government secondary schools of Ethiopia registered at 9.5% in 2017. This means that many students enrolled for secondary education do not graduate at the specified period, which has huge public and private cost implications.

Moreover, the statistical report of MoE (2017) in secondary schools in Ethiopia indicated that the completion rate by students in secondary schools in 2016 did not exceed 54.1%. However, in the 2020/21 academic year alone, the dropout rate for female and male students at the national level was 13.7% and 15.2%, respectively. Moreover, the repetition rate is expected to be even higher due to internal displacement in the current situation in Ethiopia (MoE, 2021). Particularly, the data obtained from this study area, about 23.3% of secondary school students repeated the same grade over one year in the 2017 academic year and used additional resources for the same grade, whereas 3.2% of the students had left the system without completing the grade level in which they had been enrolled (Amhara National Regional State Education Bureau, 2020).

From the experience of other countries, a number of studies reveal that the factors that contribute to education wastage are also school-based, home-based and student-related (Achoka, 2007; Akinsolu, 2017; Ampiah&Adu-Yeboah, 2009; Hunter & May 2003; Ileuma, 2017; Samuel, 2017; Udo & Eni, 2019; Wanjiku, 2014). Although ample data reveal the dropout and repetition rates in Ethiopia, no study specifically addressed the extent to which the above mentioned factors contribute to education wastage. In addition, school community members implement mitigation strategies to reduce education wastage. Hence, this study is expected to fill these gaps by attempting to answer the following basic questions:

1) What is the status of education wastage, and what factors have contributed to it in government secondary schools of the Amhara region?

2) To what extent do school-based, home-based and student-related factors determine education wastage in government secondary schools of the Amhara region?

3) What mitigation strategies are devised and practised to minimize education wastage in government secondary schools of Amhara region?

1.3. Conceptual Framework on Independent and Dependent Variables

The conceptual framework of the study is adapted from Samuel (2017) and Wanjiku (2014) and presented to show associations between education wastage (dependent variable) and its contributing factors (independent variables). As Figure 1 indicates, the relationships of the variables are depicted by how the dependent variables, such as grade repetition and school dropout, are affected by school-based, home-based and student-related factors.

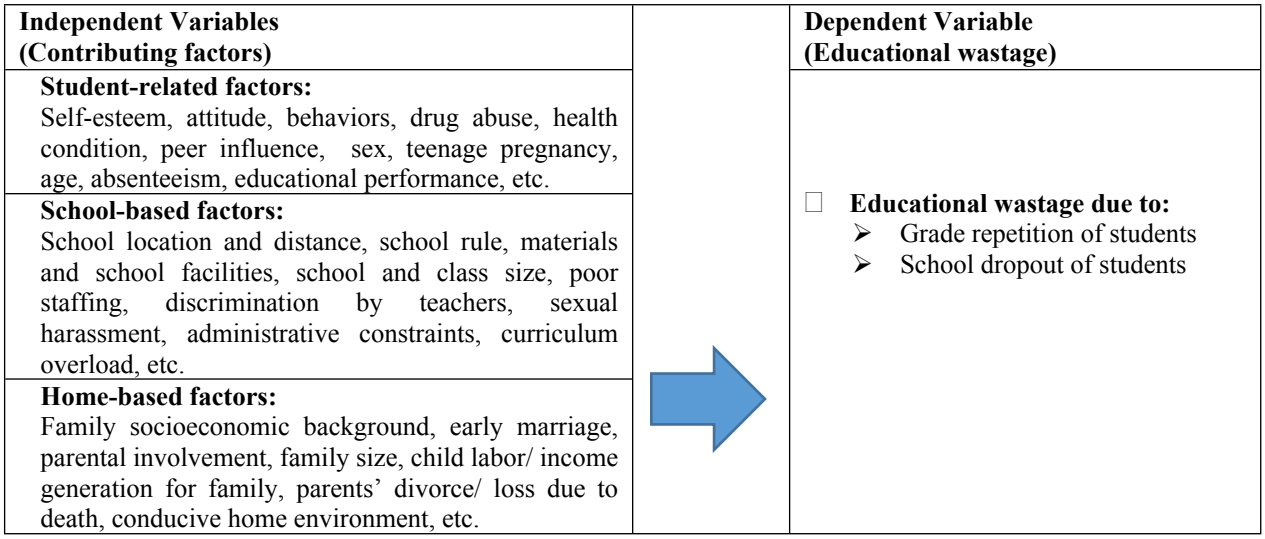

Figure 1. Associations between education wastage and its contributing factors

1.4. Definitions of terms

It is necessary to operationally define the key terms in this study context in order to easily comprehend their significance and measurement strategy.

Contributing factors: refer to variables emanated from school-based, home-based and student-related factors that hinder students' learning progress or increase education wastage.

Education wastage: is a measure of internal efficiency which manifests itself through dropout of school and grade repetition of students before the completion of grade 12.

Mitigation strategy: is an approach used to take steps by the school community such as school leaders, teachers, students and their family to reduce the negative impacts of contributing factors for education wastage.

2. Research methods

2.1. Research Design

An explanatory correlational mixed design was employed to obtain information from participants to explain the nature of school-based, home-based and student-related factors of educational wastage, their relationship with educational wastage and mitigation strategies. As supported by Creswell (2012), one basic objective of explanatory correlational research is to explain the association between or among variables. Other researchers referred to explanatory correlational research design as relational research (Cohen &Manion, 1994) and explanatory research (Fraenkel&Wallen, 2000). Marczyk et al. (2005, 151) also discussed that "…When surveys are conducted to determine relationships, they are referred to as correlational studies." Hence, explanatory correlational mixed design enabled the researchers to investigate these study variables of education wastage regarding associations among variables.

2.2. Population, Samples and Sampling Techniques : This study was conducted in government secondary schools of the Amhara region, which is the second most populous region in Ethiopia. During data collection of the study, the region had 12 zones and 3 city administrations that comprised 547 secondary schools from grades 9 to 12, including 1,092 school leaders (523=principals, 432=vice principals and 137=supervisors), 31,969 teachers (male=24,126, and female=7,843) and 735,257 students (male=362,878, and female=372,379) target populations in those government secondary schools. For this study, seven zones and one city administration such as North Gondar, South Gondar, West Gondar, Central Gondar, Awi, South Wollo, North Shoa Zones and Bahir Dar City Administration, were selected from the 12 zones and 3 city administrations using simple random sampling (lottery) technique. These selected areas covered about 50% of all zones and city administrations of the region, which are representative of all the target populations, and with a simple random sampling (lottery) technique, which according to Creswell (2012), is an adequate representative sample for the population.

In these seven zones and one city administration, there were 307 government secondary schools, including 661 school leaders, 18,231 teachers (male = 13,696 and female = 4,535) and 417,401 students (male = 206,032 and female = 211,369). The numbers of school leaders, teachers and student samples in this study were determined by the sample size determination formula given by Krejcie and Morgan in 1970. As a result, the sample sizes were 460 students (male=226 and female=234), 425 teachers (male=322 and female=103) and 144 school leaders (i.e., 108 principals/ vice principals and 36 supervisors). These were selected as samples of the study using a multistage proportionate stratified sampling technique to select an equal proportion of samples from each stage and strata using the methods used by Cohen and Manion (1994) and Creswell (2012).

The total return rate of the questionnaires was as follows: 92.61 per cent (n = 426) from students, 96.48 per cent (n = 410) from teachers and 86.11 per cent (n = 124) from school leaders. Moreover, 41 participants [that is, 10 teachers (male=7 and female=3), eight students (male=4 and female=4), 15 school leaders (male=12 and female=3) and eight parents (male=5 and female=3)] were selected purposively for interviews. In addition, participants, who were known to be working closely with schools and expected to have rich information on the issues of education wastage, were selected purposively for interview.

2.3. Data Collection Instruments

Data were collected using three different instruments: 1) questionnaire with open- and close-ended items with 1 to 5 Likert scales administered to secondary school leaders, students and teachers; 2) interview administered to secondary school leaders, students, teachers and parents; and 3) document review (i.e., grades 9 to 12 student mark lists, rosters or school annual reports) of the five years dropout and grade repetition of students from 2015 to 2019. The researchers constructed the instruments and checked for face and content validities through expert feedback and pilot testing prior to the main study data collection. The pilot test of the questionnaire items checked for its sub-scales reliability was conducted in secondary schools with similar context and participants to the main study.

The questionnaire and other instruments were distributed to 83 government secondary school leaders, teachers, and students for the pilot test. After piloting, the reliabilities of the sub-scales of the questionnaire were calculated on the SPSS version 24 software program. The Cronbach alpha reliability values of the questionnaire sub-scales were accepted as having fulfilled the standard with the minimum (r = .724) standard value. Table 1 reports the Cronbach alpha values determined from the pilot study.

Table 1. Cronbach alpha values of the questionnaire subscales calculated from the pilot study

Factors/ strategy of education wastage	**Subscales**	**No.of items**	**α-value**
School-based factors	Teacher-related	6	.761
	Physical resource-related	6	.843
	Administrative-related	8	.786
Home-based factors	Socio-economic related	5	.724
	Socio-cultural related	5	.755
Student-related factors	Student-related	8	.836
Mitigation strategies	School-based	10	.830
	Home-based	8	.878
	Student-related	10	.882

Modifications on the interview and questionnaire items were made based on the feedback from experts, the observations throughout the piloting process, the answers given to categorical and open-ended items and the statistical analysis run on the scales. The quantitative data collected through close-ended questionnaire items were analyzed to explain the relationship between the independent and dependent variables and to describe the status of education wastage. Qualitative data collected by open-ended questions were analyzed to describe the factors of education wastage. Thus, descriptive statistics such as mean, standard deviation, rank and percentage were used to determine the status of education wastage (i.e., grade repetition and school dropout of students), contributing factors (i.e., school-based, home-based and student-related

factors), and mitigation strategies. Linear regression was also employed to explain the contributions of school-based, home-based and student-related factors to education

wastage.Besides, thematic and narrative analysis techniques were used to analyze qualitative data.

3. Results and Discussions

This section presents the data analyses and discussions in line with the basic questions of the study. The main purpose of the study was to examine the status of education wastage, contributing factors to education wastage and the extent of their impacts on education wastage,and mitigation strategies for education wastage.

3.1. The Status of Education Wastage

As the data collected through document review (i.e., student mark lists, rosters or school annual reports) from the selected zones and city administration secondary schools, the indicators of actual educational wastage of this study (i.e., school dropout and grade repetition rates of secondary school students) in the five years from 2015 to 2019 are presented here. The average actual grade repetition rate of students from

grades 9 to 12 in government secondary schools was 6.49%, including a higher rate (13.85%) in 9th grade and a lower rate (1.72%) in 10th grade. In contrast, the average dropout rate of students from grades 9 to 12 in government secondary schools was 25.52%, including a higher rate (50.48%) in 10th grade and a lower rate (13.05%) in 9th and 11th grades. This implies that the dropout rate is a serious problem and one of the major causes of education wastage in secondary schools.

Financial problems have been noticed to contribute towards dropout rates. One of the students interviewed stated, "Due to financial problems, my parents cannot afford the living cost of the whole family. This situation forced me to attend classes only up to grade 10, and I had to drop out of school to get a driving license to work as a driver to help my family." A teacher interviewee stated, "I think students leave schools because some do not have educational motivation due to ill-equipped school facilities and infrastructure, and others come from low-income families who cannot cover their children's educational expenditures." A teacher added, "Others take income-generating jobs such as polishing shoes selling fruits, harvesting crops, etc., to support themselves." Dropout and repetition rates are also caused by disciplinary problems on the part of students. As stated by a parent interviewee, "students do not have interests for learning as they tend to be involved in disciplinary problems and this leads them to conflict with teachers and school administrators as a result of which they drop out of school or likely to repeat classes." A school principal stated, "As I observed, lack of jobs for graduates, health problems, the economic problem of parents, girls mostly participating in housework, getting married or involvement in sexual practice and giving birth at an early age, working as household servants, etc. and boys engaging in daily labours or discipline problems are causes of dropout and

repetition." Generally, student-related, home-based and school-based factors are mentioned here as key factors for education wastage.

3.2. The Status of Contributing Factors of Education Wastage

3.2.1. School-Based Factors of Education Wastage

In this section, the major school-based factors of education wastage in government secondary schools are presented in terms of physical resources–related, teacher-related and administrative-related factors.

Physical Resources Related Factors

In this sub-section, the responses of student, teacher and school leader participants about physical resources–related factors of education wastage are presented in Table 2.

Table 2. The Responses of Participants about Physical Resource-related Factors

Physical Resource Related Factors	**Students**			**Teachers**			**School leaders**		
	N	***M***	***SD***	***N***	***M***	***SD***	***N***	***M***	***SD***
Thereare lack of teaching materials and equipment (e.g., chair, table, textbook)	426	3.17	1.77	410	2.50	1.38	124	2.81	1.45
There are large class-student ratios or overcrowded classes	426	3.32	1.56	410	3.27	1.47	124	3.43	1.50
There is inadequate school infrastructure	426	2.83	1.69	410	3.05	1.46	124	3.34	1.44
There are shortage of laboratory equipment	426	3.25	1.56	410	3.15	1.37	124	3.38	1.37
There are shortage of library facilities (e.g., reference books, chairs and tables)	426	3.17	1.58	410	2.86	1.35	124	3.07	1.42
There are lack of clean toilet and water supply	426	2.60	1.68	410	2.85	1.43	124	2.66	1.41
Average	**426**	**3.06**	**1.64**	**410**	**2.95**	**1.41**	**124**	**3.12**	**1.43**

Table 2 depicts the descriptive statistics of the responses of students, teachers and school leaders about physical resource-related factors. The average mean responses of students (M = 3.06, SD = 1.64), teachers (M = 2.95, SD = 1.41), and school leaders (M = 3.12, SD = 1.43) were nearly equivalent to not sure (3), which was rated in the five Likert scale questionnaire levels that imply physical resource-related factors may be equally the high or the low sources of education wastage in government secondary schools of Amhara region. For example, students, teachers and school leaders similarly reported that large class-student ratios or overcrowded classes are the most contributing factor to education wastage. In contrast, students and school leaders similarly indicated that lack of clean toilets and water supply is the least contributing factor to education wastage. For teachers, however, lack of teaching materials and equipment (e.g., chairs, tables and textbooks) is the least contributing factor to education wastage.

Furthermore, a student interviewee, for example, expressed, "In our school, education resources such as laboratory equipment, classroom settings, library rooms, books and ICT access are among the major problems that negatively affect student motivation to learn, and these situations push us to drop out or repeat grades." Results from open-ended questionnaire items of teachers also include the difficult level of curriculum beyond the students' age levels and the limited amount of physical resource-related factors like laboratory apparatus, computers, internet, and books as contributing factors to education wastage. Additionally, school leaders responded generally that a limited amount of resources not utilized effectively by government secondary schools is one of the key physical resource-related factors of education wastage.

Teacher Related Factors

In this sub-section, the responses of student and school leader participants through the questionnaire and interview about teacher-related factors of education wastage are discussed. The descriptive statistics of their responses indicated that the average mean responses of students (M = 2.45, SD = 1.24) and school leaders (M = 2.36, SD = 1.06) about teacher-related factors were nearly equivalent to low (2), which was rated in the five Likert scale questionnaire levels. These imply that teacher-related factors are the low sources of education wastage in government secondary schools of Amhara region. These teacher-related factors rated by student and school leader participants from the highest to the lowest ranks are professionally disappointed teachers, teachers' encouragement to their students, assignment of less qualified teachers in teaching, assignment of less experienced teachers in teaching, discriminatory behaviour of teachers for their students, and sexual harassment practices of teachers on their students. Hence, students and school leaders similarly reported that teacher-related factors from the highest ranking factor, i.e., professionally disappointed teachers (M = 2.75, SD = 1.42) to the lowest ranking factor, i.e., sexual harassment practices of teachers on their students (M = 1.30, SD = .69) are the low contributing factors to education wastage.

Moreover, the results from student participants include their concern about the low level of support and advice for students from some teachers, the lack of knowledge and pedagogical skills of new teachers, the lack of preparedness to teach, and the inability of some teachers to understand the problems of students. Besides, school leader respondents mentioned that newly employed teachers' lack of experience, knowledge, skills and motivation to teach are some of the teacher-related factors of education wastage in government secondary schools of Amhara region.

Administrative Related Factors

This sub-section also presented the responses of student and teacher participants about administrative-related factors of education wastage in government secondary schools of Amhara region. The descriptive statistics of these participants' responses revealed that the average mean responses of students (M = 3.00, SD = 1.47) and teachers (M = 2.60, SD = 1.27) about administrative-related factors were both of them approximately equal to not sure (3) which was rated in the five scale Likert levels of the questionnaire. These imply that administrative-related factors may be equally high or low factors to be the sources of education wastage in government secondary schools of Amhara region. In other words, the administrative-related factors of education wastage rated by student and teacher participants were about lack of school principals' support and follow-up for students and teachers, incompatible school rules and regulations with the teaching-learning processes, not conducive school environment (e.g., sound pollution, nearby drug and alcohol houses), absence of guidance and counseling services in the school for students who have academic related problems, poor coordination among the school community, the school personnel use of corporal punishment on students, shortage of school budget, and lack of innovative curriculum content to meet daily experiences and needs of students.

As a result, lack of innovative curriculum content to meet the daily experience and needs of students and the school personnel's use of corporal punishment on students were rated by students as the highest contributing factors to education wastage, whereas not conducive school environment (e.g., sound pollution, nearby drug and alcohol houses), and incompatible school rules and regulation with the teaching-learning processes were rated by students as lowest contributing factors to education wastage in government secondary schools. Similarly, teachers rated the lack of

innovative curriculum content to meet the daily experiences and needs of students as the highest factor of education wastage. In contrast, a not conducive school environment (e.g., sound pollution, nearby drug and alcohol houses) and incompatible school rules and regulations with the teaching-learning processes were rated by teachers as the lowest factors of education wastage in government secondary schools of Amhara region. Besides, the results of open-ended questionnaire items of students showed that inability of principals to understand the problems of students, severe punishment of students to correct their misbehaviours, lack of school guidance on academic careers for students, lack of well-established rules and regulations of schools, and curriculum overload on students are some of the administrative-related factors contributing to education wastage.

3.2.2. Home-Based Factors of Education Wastage

In this section, the major home-based factors of education wastage in government secondary schools are presented in terms of socioeconomic–related and sociocultural-related contributing factors in government secondary schools in Amhara region.

Socioeconomic Related Factors

In this sub-section, the responses of student participants through the questionnaire and interview about socioeconomic-related contributing factors to education wastage are discussed. The descriptive statistics of the students' response show that the average mean response of students (M = 2.94, SD = 1.32) about socioeconomic-related factors were nearly equivalent to not sure (3), which was rated in the five Likert scale questionnaire levels. This implies that socioeconomic-related contributing factors may equally be the high or the low sources of education wastage in government secondary schools of Amhara region. On the other hand, the socioeconomic-related contributing

factors rated by student participants in government secondary schools are low education level of family/guardians, family demands of their children to engage in home activities, family demands of their children to participate in income-generating activities, presence of large family size in a house, and lack of material and financial support from family. Hence, students mentioned that low education level of family/guardians and family demands of their children to engage in home activities are the highest contributing factors to education wastage. In contrast, the large family size in a house and lack of material and financial support from the family are the lowest contributing factors to education wastage.

Sociocultural Related Factors

This sub-section also presents the responses of student participants about sociocultural-related factors as the source of education wastage in government secondary schools of Amhara region. The descriptive statistics of the students' response revealed that the average mean response of students (M = 2.94, SD = 1.41) about socio-cultural-related factors were nearly equivalent to not sure (3), which was rated in the five Likert scale questionnaire levels. This implies that socio-cultural-related contributing factors may be the most or the least sources of education wastage in government secondary schools of Amhara region. The sociocultural-related factors rated by student participants are the negative attitude of the family towards the value of education, parents' discriminatory beliefs between boys and girls to send to school, discouraging environment at home (e.g., addiction of family members), separation of students from family due to their parents' conflict/ death, and family demand for early marriage of their children. Hence, students mentioned that the family's negative attitude towards the value of education is the highest contributing factor to education wastage.

In contrast, the remaining sociocultural-related factors are neither positive nor negative, causing the education wastage in secondary schools of Amhara region. Additionally, students' responses to open-ended questionnaire items showed that societal values are increasingly leaning towards giving less priority to education and more value for money. Lack of active involvement of parents in their children's education, unhealthy relationship between parents and children, and separation of parents due to various reasons are respondents' major sociocultural factors of education wastage.

3.2.3. Student-Related Factors of Education Wastage

In this section, the responses of teacher and school leader participants about student-related factors of education wastage in government secondary schools of Amhara region are also presented hereunder

Table 3.Responses of Teachers and School Leaders about Student-Related Factors

Student Related Factors	**Teachers**			**School leaders**		
	N	**M**	**SD**	**N**	**M**	**SD**
Students are frequently absent from school	410	3.46	1.26	124	3.47	1.16
The effort of students for learning is low	410	3.96	1.26	124	4.01	1.08
Students use learning resources ineffectively	410	3.54	1.24	124	3.65	1.13
The motivation of students towards learning is low	410	3.96	1.30	124	4.02	1.06
There is disciplinary problems of students in classrooms	410	3.38	1.27	124	3.21	1.26
Health problem of students exist frequently	410	2.07	1.05	124	1.86	1.04
There is unwanted teenage pregnancy of students	410	1.82	1.06	124	1.73	.91
The future success expectation of students is low	410	3.59	1.37	124	3.68	1.30
Average	**410**	**3.22**	**1.23**	**124**	**3.20**	**1.11**

Table 3 shows the descriptive statistics of the responses of teachers and school leaders about student-related contributing factors to education wastage. The average mean responses of teachers (M = 3.22, SD = 1.23) and school leaders (M = 3.20, SD = 1.11) were nearly equivalent to not sure (3), which was rated in the five Likert scale questionnaire levels that imply student-related factors may be the high or the low sources of education wastage in government secondary schools of Amhara region. For example, teachers and school leaders similarly mentioned that low motivation of students towards learning, the low effort of students for learning, low future success expectation of students, students' ineffective use of learning resources, and students' frequent absent from school are the most common contributing factors to education wastage. In contrast, students and school leaders also reported that students' unwanted teenage pregnancy and frequent occurrence of health problems of students are the least common contributing factors to education wastage.

Furthermore, responses to open-ended questions for teachers disclosed that limited capability of students to realize the purpose of education more than earning money, the discouraging practice of cheating from all grade levels, the hopelessness of students to get jobs, students' disciplinary behaviour problems, students' disrespect for their teachers, students misuse of technology for irrelevant activities, absenteeism of students, inability to complete their assignments on time, and inappropriate use of textbooks are student-related contributing factors of education wastage. The majority of parent interviewees also responded that the health problem of students and lack of interest in learning and attending classes regularly. Hence, they tend to involve in disciplinary problems, are some of the student-related factors of education wastage. The findings of this study have similarities with the study conducted by Rumberger

(2008) regarding student-based factors such as attitudes, education performance, behaviours, background and teenage pregnancy and how this influenced education wastage in high schools. Moreover, as a positive attitude towards learning enhances the achievements of students in school, a negative attitude towards school and learning hinders students' achievements in school work and influences their success or failure (Tekeste, 1990).

3.3. Impacts of Contributing Factors on Education Wastage

The linear regression data analysis of the present study shows that there were associations between education wastage and its contributing factors (i.e., school-based, home-based and student-related factors). This section presents the use of the linear regression data analysis technique and the extent of school-based, home-based, and student-related factors impacting education wastage.

The linear regression data analysis of school-based and student-related factors showed that school-based and student-related factors significantly predict (impact) education wastage. In other words, student-related factors enhance considerable contribution to explaining educational wastage with school-based factors. Hence, the extent of school-based and student-related factors revealed that 22.3% (with adjusted R = 5%) of variability in educational wastage was accounted by school-based factors and student-related factors. Besides, from the linear regression data analysis of school-based and home-based factors, the researchers of the present study found that 39.1% (with adjusted R = 15.3%) of variability in education wastage was accounted for by both school-based and home-based factors. This was the extent of school-based and home-based factors impacting or explaining education wastage.

The results of the present study about the impacts of contributing factors such as school-based, home-based and student-related factors on education wastage coincide with the previous study results. Concerning school-based factors, Madeleine (2018) and Samuel et al. (2017) explained that school-based factors have a linear and significant role in education wastage. Furthermore, their study's availability of computers, teaching aids, textbooks for teachers and students, and supplies for teachers contributed to reducing the education wastage rate. Furthermore, a study by Ileuma (2017) revealed that school-based factors have a strong and positive impact on the education wastage of public universities. Ileuma also explained that schools having appropriate infrastructure, staff, and instructional support services are reputable and have a positive impact on their efficiency in reducing education wastage. In relation to student-related factors, the studies conducted by Samuel (2017) and Udo and Eni (2019) showed that student-related factors influenced education wastage. Furthermore, it was found that there exists a positive relationship between gender-related factors and education wastage. Moreover, Alelign (2018) and Deribe et al. (2015) confirmed that the major causes of education wastage in secondary schools identified for grade repetition and early dropout of school include failure to study hard, lack of interest in education, low future success expectation, frequent absenteeism, 'students' health problem and low self-efficacy due to the previous failure in exam.

3.4. Mitigation Strategy of Education Wastage

This section presents the responses of teacher and school leader participants about school-based, home-based, and student-related mitigation strategies to minimize education wastage in government secondary schools of Amhara region.

3.4.1. School-Based Mitigation Strategies

In this sub-section, the responses of teacher and school leader participants through the questionnaire and interview about school-based mitigation strategies to minimize

education wastage are discussed. The descriptive statistics of the participants' responses depicted that the average mean responses of teachers (M = 2.78, SD = 1.19) and school leaders (M = 2.73, SD = 1.15) about school-based mitigation strategies were nearly equal to not sure (3) which was rated in the five Likert scale questionnaire levels. These imply that school-based mitigation strategies may be the most or the least practiced mitigation strategies of education wastage in government secondary schools of Amhara region. The school-based mitigation strategies rated by both teacher and school leader participants are practices of developing principals' knowledge and skills in school administration, principals' practice to develop their capacity to efficiently manage school resources, practices of effective coordination between teachers and students, training availability for teachers to develop their professional competency, teachers use of flexible and appropriate methods of teaching, the practice of making attractive school infrastructure with well-equipped furniture, practices of making neat, tidy and beautiful school compound, consistent revision and reorganization of school curriculum contents, assignment of qualified and trained teachers for the required level, and provision of effective supervision.

Consequently, teachers mentioned that qualified and trained teachers were assigned for the required level (M = 3.65, SD = 1.09) as the most frequently used school-based mitigation strategies to minimize education wastage. In contrast, the revision and reorganization of school curriculum contents (M = 1.94, SD = 1.09) and the practice of making attractive school infrastructure with well-equipped furniture (M = 2.15, SD = 1.23) are the least frequently used school-based mitigation strategies to minimize education wastage in government secondary schools of Amhara region. School leaders also rated that there were no most frequently used school-based

mitigation strategies to minimize education wastage. However, the revision and reorganization of school curriculum contents (M = 1.88, SD = .97), the practice of making training available for teachers to develop their professional competency (M = 2.00, SD = 1.03), and the practice of making attractive school infrastructure with well-equipped furniture (M = 2.45, SD = 1.19) are the least frequently used school-based mitigation strategies to minimize education wastage in government secondary schools of Amhara region. In his study, Ileuma (2017) stated that school-based mitigation strategy, i.e., "teachers in the development of the curriculum to make it helpful and well implemented; furnishing infrastructural materials to the schools and accessing physical facilities such as classroom, laboratories, libraries, and furniture to the school" are mentioned strategies that could help to minimize educational wastage. Another researcher, Madeleine (2018) also found that school-based mitigation strategies such "as "development of a clear communication strategy to make aware of all stakeholders about teachers' provision of out-of-class support through homework, and allocation of resources for individual needs in addition to the school normal support" could help to minimize school-based educational wastage.

A parent interviewee commented, "I think the establishment of a regular communication system among stakeholders is important to raise the level of ethical and moral values of students starting from grade 1 as well as providing financial and material support for those who come from poor parents." Results from interviews and responses to open-ended questions by teachers disclosed that hiring pedagogically skilled teachers, creation of conducive work environment, establishing a reward system to encourage model teachers, and identifying the needs of students to provide need-based support are some of the strategies suggested to minimize education wastage in secondary schools. Similarly, school leaders indicated that a

regular collaborative meeting among school leaders, teachers, parents and students is needed to solve different problems. They also emphasized the importance of assigning qualified and adequate number of teachers and administrative personnel. Other mitigation strategies proposed by school leaders include establishing support systems, providing counseling services and monitoring disciplinary problems, and taking preventive measures by implementing school rules and regulations.

3.4.2. Home-Based Mitigation Strategies

In this sub-section, the response of parent and student participants was collected through interviews, and the response of student participants was collected through a questionnaire about home-based mitigation strategies to minimize education wastage in government secondary schools of Amhara region is discussed here. The descriptive statistics of student participants'participants' responses showed that the average mean responses of students (M = 3.09, SD = 1.46) about home-based mitigation strategies were nearly equal to not sure (3), which was rated in the five Likert scale questionnaire levels. These imply that home-based mitigation strategies may be the most or the least practiced mitigation strategies to minimize education wastage in government secondary schools of Amhara region. The home-based mitigation strategies rated by student participants are improvement of students' household income by their family, parents encouraging their children to learn, the family practice to avoid early marriage, parents' active participation in school affairs, provision of learning materials and facilities at home, continues parental follow up in their children education, decreasing practice of parents/ guardian in demanding their child to engage in labour activities, encouraging environment at home, an available conducive place for study purposes at home, and the frequent support of parents for their child's learning. As a result, students mentioned that the improvement of students' household income by their family (M = 3.60, SD = 1.26) was the most

frequently used home-based mitigation strategy to minimize education wastage in government secondary schools of Amhara region.

Besides, qualitative data results collected from interviews with parents revealed that reducing workloads of their children at home in order to allow time for them to regularly and promptly show up at their schools as well as allow time for study and homework can have a positive impact to mitigate home-based factors of education wastage. Furthermore, these interview participants indicated the importance of raising parents' awareness of the long-term benefits of education and the negative consequences of early marriage as home-based mitigation strategies.

3.4.3. Student-Related Mitigation Strategy

This section presents the responses of teachers and school leaders about student-related mitigation strategies to minimize education wastage in government secondary schools of Amhara region.

Table 4 depicts the descriptive statistics of the responses of teachers and school leaders about student-related mitigation strategies to minimize education wastage. The average mean responses of teachers (M = 2.30, SD = 1.09) and school leaders

Student related mitigation strategies	**Teachers**			**School leaders**		
	N	***M***	***SD***	***N***	***M***	***SD***
There is acceptable students' discipline in school compound	410	2.50	1.19	124	2.54	1.20
Students efficiently use school resources	410	2.46	1.14	124	2.50	1.10
Students possess the traits of diligence and resourcefulness	410	2.19	1.05	124	2.24	.94
Students have high motivation and interest towards learning	410	2.00	1.10	124	2.17	1.04
Students have effective communication with teachers and school community	410	2.64	1.11	124	2.78	1.08
The habit of students' absenteeism is avoided	410	2.07	1.04	124	2.04	.91
Students withdraw themselves from negative peer influence	410	2.36	1.07	124	2.42	1.13
Student's value parental importance for education	410	2.16	1.06	124	2.20	.98
Average	**410**	**2.30**	**1.09**	**124**	**2.36**	**1.05**

(M = 2.36, SD = 1.05) were nearly equivalent to low (2), which was rated in the five Likert scale questionnaire levels. This implies that the practice of student-related mitigation strategy to minimize education wastage is low in government secondary schools of Amhara region. Hence, teacher and school leader participants in Table 4 similarly rated that all the student-related mitigation strategies to minimize education wastage are low or the least common practices in government secondary schools of Amhara region.

In addition, the findings regarding student-related mitigation strategies collected through interviews from parents include enhancement of student awareness about what is expected of them to take responsibility for their own learning and increase their confidence. Results from interviews and questionnaire open-ended items of teachers revealed that improving students' regular class attendance and enhancing their academic achievements through regular support systems are frequently mentioned as student-related mitigation strategies for education wastage. Furthermore, student-related mitigation strategies proposed by stakeholders include helping students develop good study habits, demonstrate acceptable disciplinary behaviours, and be determined to succeed in their education by becoming active and self-directed learners. It is worthwhile to mention here that Alelign (2018) came up with a similar finding where Alelign discussed how the provision of counseling services to students can improve their behavior and their level of motivation and visions about education which in turn helps in mitigating education wastage. Muthoni (2015) and Geremew and Abdissa (2015) also found that students need to know their abilities and competencies well to perform well.

4. Conclusions and Recommendations

This section presents conclusions and recommendations of this study in line with the study findings in government secondary schools.

4.1. Conclusions

The results of this study show that the causes of education wastage are based on several factors. The causes range from absenteeism and high dropout rates to administrative problems, teacher competencies, and factors related to economic hardships and sociocultural issues.

The possessions of core competencies by secondary school leaders and teachers are the primary strategies to overcome the problem of education wastage. However, this study revealed the fact that without the required skills, knowledge and competence, secondary school leaders and teachers take a backseat, thereby making the goal of attaining quality education merely an illusion. Research participants reported this to be due to large class-student ratios and lack of innovative curriculum content to meet children's daily experience and needs are the most school-based determinant factors of education wastage. It was also evident that sexual harassment practices on the students, lack of clean toilets and water supply, lack of teaching materials and equipment, unfavourable school environment, and the use of corporal punishment by school personnel have less contributing school-based factors to education wastage. No matter how the degree of influence varies from one factor to another, these contributing factors of education wastage as school-based, home-based and student-related factors on education wastage coincide with the previous study results. Therefore, as the consequences of school-based, home-based and student-related factors, dropouts of school and grade repetition of students in government secondary schools of Amhara region are the common forms of education wastage. However, the rate of dropout of school is much higher than the grade repetition of students.

In addition, it was evident that community involvement in school management has increased accountability for both learning outcomes and school resources; involvement in curriculum development leads to a wider cuddle of the educational process. Conversely, this study uncovered that among the home-based factors of education wastage, the low education level of the family, a low attitude of the family towards the value of education, and demands of the family to participate their children in income-generating activities are the most contributing factors to education wastage. In contrast, lack of material and financial support from family and family demand for early marriage of students are the least contributing factors to education wastage in government secondary schools of Amhara region. In conclusion, this study would have several implications that school communities and concerned stakeholders can take to mitigate educational wastage. For instance, there is no doubt that low motivation and efforts of students for learning, inadequate school infrastructure and assigning professionally untrained or unqualified teachers to end with positive consequences on education wastage are found to be the most contributing factors to education wastage. In contrast, unwanted teenage pregnancy of students is the least contributing factor to education wastage in government secondary schools of Amhara region.

4.2. Recommendations

Based on the results of this study, it is recommended that the regional government recognize the importance of placing competent school leaders and teachers as one of the most critical factors in effectively and efficiently running the schools. Continuous training and staff development programs are needed to update school leaders' and teachers' skills and knowledge. The researchers also recommend that the government and all stakeholders invest their time and resources to create a conducive learning

environment, provide adequate counseling services for students, and motivate and inspire them to minimize student-related factors of education wastage. It is also recommended that schools be equipped with adequate facilities and infrastructures, without which efficiency and effectiveness in providing quality education will be compromised, which in turn contribute to the various problems leading to wastage. The regional and federal governments should set aside an adequate budget towards this end. Furthermore, parents should inculcate the value of education in their children from a tender age and persist in motivating them to reach their educational goals. At the same time, the schools should increase their effort to work with parents and regularly communicate with them regarding their children's education.

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