



**GHANA EDUCATION SERVICE (GES)
TRANSFORMING TEACHING, EDUCATION AND LEARNING (T-TEL)**

**SECONDARY EDUCATION TRANSFORMATION PROGRAMME (SETP)
BASELINE SURVEY REPORT – APRIL 2022**

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Acronyms and abbreviations

BECE	Basic Education Certificate Examination
GES	Ghana Education Service
GESI	Gender equality and social inclusion
ICT	Information communication technology
IT	Information technology
JHS	Junior high school
KMO	Kaiser-Mayer-Olkin
NaCCA	National Council for Curriculum and Assessment
NPLAF	National Pre-tertiary Learning Assessment Framework
NTC	National Teaching Council
NTS	National Teachers' Standards
OECD	Organisation for Economic Co-operation and Development
PISA	Programme for International Student Assessment
SEN	Special education needs
SHS	Senior high school
SHTS	Senior high technical school
SIP	School improvement plan
SISO	Schools improvement support officers
SPPP	School partnership performance plan
STEP	Secondary Education Transformation Programme
TLMs	Teaching and learning materials
T-SHEL	Transforming Senior High School Education, Teaching and Learning
T-TEL	Transforming Teaching, Education and Learning
WASSCE	West African Senior Secondary Certificate Examination

Executive summary

	Indicator	Baseline (March 2022)
Teachers	Percentage of SETP teachers displaying core competencies in the National Teachers' Standards (NTS).	0 percent
	Percentage of SETP teachers using digital technology to enhance their teaching.	0 percent
	Percentage of SETP teachers who are motivated and want to remain in the profession.	Teachers who are motivated (11.5 percent) Teachers who want to remain in the teaching profession (49.8 percent)
	Percentage of SETP teachers demonstrating GESI-responsive pedagogy.	0 percent
SETP Students	Percentage of secondary education students by grade who demonstrate subject knowledge and 21 st century skills.	Subject knowledge: reading literacy (12.2 percent of students are approaching proficiency and or above), mathematics literacy (30.0 percent of students are approaching proficiency and or above) and science literacy (16.3 percent of students are approaching proficiency and or above) 21st century skills (3.4 percent are proficient and or above)
SETP schools	Percentage of schools providing (a) career guidance; (b) psychosocial and emotional counselling; (c) academic counselling; and, (d) have a link with industry and tertiary institutions.	Career guidance (6 out of the 12 SETP schools) Psychosocial and emotional counselling (1 out of the 12 SETP schools) Academic counselling (8 out of the 12 SETP schools) Link with industry and tertiary institutions (0)
	Percentage of secondary schools with an inclusive, gender-sensitive environment for staff and students.	Two out of the 12 SETP schools have an inclusive gender-sensitive environment for staff and students.
	Percentage of boards and senior management teams of secondary schools that demonstrate understanding and implementation of strategy on gender and inclusion.	Two out of the 12 SETP schools have boards and senior management teams that demonstrate understanding and implementation of strategy on gender and inclusion.

	<p>Percentage of boards and senior management teams of secondary education institutions that demonstrate understanding of their roles and responsibilities and can provide evidence of how they are discharging them.</p>	<p>One out of the 12 SETP schools have boards and senior management teams that demonstrate understanding of their roles and responsibilities and can provide evidence of how they are discharging them.</p>
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1.0 Introduction

1.1 Background

The Ministry of Education (MoE) and the Ghana Education Service (GES), with financial and technical support from Transforming Teaching, Education and Learning (T-TEL) through the Mastercard Foundation, is currently working with 12 senior high schools (SHS) and senior high technical schools (SHTS) to bring about improvements in performance and learning outcomes through the Secondary Education Transformation Programme (SETP).

SETP's creation follows the minister of education's decision in 2021 to pilot some of the approaches incorporated in Ghana's Secondary Education Strategy in a sample of SHSs and SHTSs deemed to be underperforming based on schools' performance on the West African Senior Secondary Certificate Examination (WASSCE) over several years. Forty-seven underperforming schools were identified and invited to submit applications to participate in SETP. Thirty-three schools submitted applications. GES evaluated the applications and recommended that 12 be included in the programme. After some adjustments to ensure geographic coverage. The schools shown in table 1.1 were chosen and are now part of SETP, which will extend for 18 months.

Table 1.1 SETP schools

School	Region	Category ^a
Lambussie Community Day SHS	Upper West	C
Nabango Community SHS	Upper East	C
Bolgatanga SHS	Upper East	A
Gambaga Girls SHS	North East	C
Walewale Vocational/Technical	North East	C
Zabzugu SHS	Northern	C
Tatale Evangelical Presbyterian (E.P). Agricultural SHS	Northern	C
Ziavi Community SHTS	Volta	C
Ogyedom Community SHTS	Central	C
Benso SHTS	Western	B
Bosome SHTS	Ashanti	B
Mangoase SHS	Eastern	C

^a GES categorises schools based on their infrastructure and performance on the WASSCE. Category A schools are deemed to be the best, followed by schools in categories B and C. Among the 47 schools first identified as underperforming, 36 were in category C, followed by 7 in Category B, and 4 in category A. Mangoase SHS and Bosome SHTS were not among the 47 but are included in SETP to ensure geographic coverage. For the same reason Benso SHTS, which had submitted an unsuccessful application, was also included.

SETP is based on the principle that SHSs, SHTS and the stakeholders involved in their management, operations and governance are best able to understand the issues inhibiting student attainment within their schools and that, with support and facilitation, they can take the lead in owning and developing solutions to their challenges. SETP's

overall aim is to ensure that students in these 12 schools are equipped with relevant skills and competencies to progress and succeed in further studies, the world of work, and adult life.

SETP's interventions are guided by the eight thematic focus areas in the Secondary Education Strategy, specifically:

- Leadership and management
- Curriculum and assessment with structured interventions
- Professional development, teaching and learning
- Learning environment and infrastructure
- Guidance and counselling
- Gender equality and social inclusion (GESI)
- Stakeholder partnerships and community engagement
- Monitoring, evaluation and accountability

Progress against these interventions is measured through an initial baseline assessment. The present report describes the results of the baseline assessment. The assessment will be repeated at SETP's conclusion to assess whether changes have or have not occurred.

1.2 Rationale and Purpose of the Baseline study

The main objective of the baseline survey is to:

1. Provide a baseline against which to measure subsequent progress.
2. Provide qualitative insights and explanation as to why the desired changes have or have not occurred.
3. Produce robust evidence that can inform policy and practice and drive improvements in Ghana's secondary education institutions.

The baseline survey interviews, and data collection were done by GES and T-TEL staff with support from external independent researchers. Data collection took place from 8 to 18 March 2022.

2.0 Survey methodology

2.1 Sampling of students

Student assessment (year 3 students): Year 3 students in the SETP schools were stratified by subject (science and agriculture/home economics, general and visual arts and business/engineering, business trade, hospitality, fashion, and design and building trade, etc.) to ensure that students pursuing various disciplines were represented in the sample. With the exception of three schools with low enrolments (Nabango Community SHS, Ogyeedom Community SHTS, and Ziavi Community SHTS), 120 year 3 students split between males and females were randomly sampled from the other nine schools to participate in the student assessments¹. A Kish Grid was used to support the sampling process to ensure that every year 3 student was given an equal chance to participate in the assessment².

Student assessment (year 2 students): All year 2 students in each of the 12 SETP schools participated in the student assessment.

In total, 1,360 year 3 students and 3,572 year 2 students were assessed on subject knowledge (reading, mathematics, science) and 21st century skills. In addition, 1,059 students completed a questionnaire as part of a teacher lesson observation, which allowed for comparison of teachers' and students' perspectives on the same issues.

2.2 Sampling of teachers

Stratified random sampling was used to identify and survey teachers in the SETP schools. Teachers in each sampled SETP school were first categorized by subject (core and elective courses), level of teaching (year 2 and 3), and then sex, after which they were randomly selected. This approach ensured that all teachers had an equal chance of being included in the study. The goal was to randomly sample 20 teachers in each SETP school. This process yielded a sample size of 243.

2.3 Sampling of teachers

One hundred and seventy-nine teachers were randomly sampled from the 12 SETP schools. These teachers were observed in their classrooms³. The sampling ensured suitable representation of male and female teachers. In addition to having their lessons observed, the teachers were interviewed to provide insight and to triangulate the observed results. In addition, six students from the observed teachers' classrooms

¹ Female students represented 49.5 percent of all secondary students in 2020.

² A Kish grid is a way of randomly choosing survey respondents. The method avoids selection bias, which is usually a result of not using the correct procedures to choose respondents. The Kish Grid addresses this problem by assigning numbers to each respondent. The most important aspect of the grid is that it assigns an equal probability of selection for each possible survey participant. Renáta Németh, "Representativeness Problems Inherent In Address-Based Sampling And A Modification Of The Leslie Kish Grid", *Bulletin de méthodologie sociologique* [Online], 83 | 2004, Online since 09 July 2008, connection on 23 March 2022. URL: <http://journals.openedition.org/bms/248>

³ Each lesson lasted about 45 minutes for single periods and 90 minutes for double periods. Care was taken to ensure that no one teacher was observed twice even if that teacher teaches more than one subject. While the school was informed in advance that lessons of sample teachers would be observed, the selection of teachers was random. This prevented the teachers putting up a show for the lesson observation team and ensured that the lesson observation captured the exact situation in the schools.

were randomly selected to participate in the student survey and key informant interviews. The students' questionnaires were self-administered to students.

2.4 Sampling of head teachers, board and senior management staff

The head teacher and a senior management staff of each of the 12 SETP schools were interviewed to evaluate whether they understand their roles and responsibilities and can demonstrate with evidence the execution of these roles. In total, 24 people in this group were interviewed.

2.5 Summary of sample allocation for quantitative survey

Table 2.1 Sample allocation

Target stakeholder	Tool	Target	Actual	Response Rate
Head teacher and school management	Head teacher interview guide	24	24	100%
Teachers	Teacher lesson observations and interview guide	180	179	99%
	Teacher survey questionnaire	240	243	101%
Students	Student questionnaire	1,080	1,059	98%
	Student assessment	5,982	4,932	82%
Total		7,506	6,437	86%

2.6 Qualitative surveys

Qualitative data were collected via focus group discussions and key informant interviews. These methods were carried out with the school boards, teachers, students, parents and opinion leaders. Table 2.2 presents the sample distribution for the qualitative survey.

Table 2.2 Summary of sample allocation for qualitative data collection

Target stakeholder	Tool	Target	Actual	Response Rate
Board members	Board members interview guide	12	12	100%
Teachers	Teacher interview guide	36	36	100%
Students	Student focus group discussion guide	24	24	100%
Parents	Parents' interview guide	12	12	100%
Opinion leaders	Opinion leaders' interview guide	12	12	100%
Total		96	96	

2.7 Data quality assurance

T-TEL's research and learning coordinator visited data-collection teams in the 12 SETP schools to observe the data-collection process to ensure that the teams adhered to the survey protocols. The research and learning coordinator verified that nonresponses were not deliberate omissions by enumerators. Also, spot checks, re-interviews and classroom observations were conducted by the research and learning coordinator and the result triangulated with data-collection teams.

2.8 Data management and analysis

The data were imported from the SurveyCTO⁴ platform and analyzed using Stata software. A Do File was computed to store the syntax of the analysis, which will also be applied at the follow-up survey using the same computational procedures for purposes of uniformity. Data were analysed using descriptive statistics to establish disaggregated scores based on the relevant variables. Beyond the descriptive statistics, multivariate analysis was conducted using multiple linear regression models and exploratory factor analysis for relevant indicators. The multiple regression models helped measure the effect of demographic characteristics on key output and outcomes. T-tests and analysis of variance tests were conducted to test for significant differences in results where applicable. Qualitative data analysis was conducted using thematic and content analysis to explain why desired changes have or have not occurred. NVIVO software was used to analyze the qualitative data.

⁴ SurveyCTO is a powerful, field-tested platform that allows high quality data collection data using mobile phones, tablets, or computers—even offline. SurveyCTO is reliable, secure, and scalable mobile data collection platform for researchers and professionals. T-TEL and GES deployed this platform to reduce the use of paper based questionnaire to capture the data electronically for analysis and reporting.

3.0 Findings

3.1 Demographic profile of key respondents

3.1.1 Profile of SETP students

The study assessed 4,932 students on reading, mathematics, science, and 21st century skills. Slightly over half were female. One thousand fifty-nine students completed a self-assessment questionnaire to triangulate the results of the teacher lesson observation. Among these students, 55 percent were female.

3.1.2 Profile of SETP teachers

Lesson observations were conducted among 179 teachers. Seventy-four percent were male. Additionally, 243 teachers (29 percent of whom were female) completed a teacher self-assessment survey. The data revealed 37 percent of teachers surveyed have been teaching for less than five years, 31 percent have been teaching for 5 to 10 years and the remainder have been teaching for more than 10 years.

3.1.3 Profile of SETP head teachers and senior management staff

Figure 3.1 shows the sex distribution of head teachers and senior management staff interviewed. Half the SETP school head teachers were male while slightly more than half of senior management were also male.

Figure 3.1 Sex distribution of head masters, head mistresses and senior management staff



3.2 Student outcomes

3.2.1 What does the student assessment measure?

The National Council for Curriculum and Assessment (NaCCA) created a team of assessment experts in April 2022 to develop proficiency thresholds for the student assessments. The experts defined each of the assessment areas:

- Reading literacy: students' capacity to understand, use, evaluate, reflect on and engage with texts to achieve their goals, develop knowledge and potential, and participate in society.
- Mathematics literacy: students' capacity to formulate, employ and interpret mathematics in a variety of contexts. It includes reasoning mathematically and using mathematical concepts, procedures, facts and tools to describe, explain and predict phenomena.
- Science literacy: students' ability to engage with science-related issues and with the ideas of science as reflective citizens. A scientifically literate person is willing to engage in reasoned discourse about science and technology. Doing so requires the competencies to explain phenomena scientifically, evaluate and design scientific enquiry, and interpret data and evidence scientifically.
- 21st century skills address foundational knowledge, competencies, and character qualities.

3.2.2 Test administration and monitoring

The study was designed to assess all year 2 students (4,620), however, the attendance rate on the day of assessment was lower in most schools, reducing the assessment completion rate to 77 percent (please see table 3.1).

Table 3.1 Year 2 students' completion rate

	Category	Enrolment data for year 2 students as provided by the school in March 2022	Number of year 2 students present on the day of the assessment and assessed	Percent of year 2 students assessed
Lambussie Community Day SHS	C	189	105	55.6%
Nabango Community SHS	C	73	58	79.5%
Gambaga Girls SHS	C	538	442	82.2%
Walewale Vocational/Technical	C	501	326	65.1%
Zabzugu SHS	C	667	455	68.2%
Tatale E.P. Agricultural SHS	C	242	170	70.2%
Bolgatanga SHS	A	925	749	81.0%
Ziavi Community SHTS	C	94	78	83.0%
Ogyeedom Community SHTS	C	76	49	64.5%
Benso SHTS	B	263	220	83.7%
Bosome SHTS	B	453	453	100.0%
Mangoase SHS	C	599	467	78.0%
Total		4,620	3,572	77.0%

The assessments were paper-based and lasted an average of 90 minutes. Test items were a mixture of multiple-choice questions and questions requiring students to construct their own responses. Students also completed a short background questionnaire, which sought information about the students, their basic school education background, age, access to reading materials, etc.

3.3 Results of the student assessment

3.3.1 How the student assessment results are reported

This section summarises the student assessment across the four areas using proficiency levels and mean scores. The NaCCA experts developed proficiency thresholds following an analysis of the assessment instruments (please see annex 5.1 for the full report)⁵:

- a. Highly proficient – Learners show a high level of proficiency in terms of knowledge, skills and values; can transfer them automatically and flexibly through authentic performance tasks.
- b. Proficient – Learners demonstrate sufficient level of proficient, fundamental knowledge, skills and core understanding; can transfer them independently through authentic performance tasks.
- c. Approaching proficiency – Learners are approaching proficiency in terms of knowledge and skills and core understanding with little guidance; can transfer understanding through authentic performance tasks.
- d. Developing – Learners are developing proficiency in minimum knowledge and skills but need help throughout the performance of authentic tasks.
- e. Emerging – learners are struggling with their understanding due to lack of essential knowledge and skills.

Following the benchmarking of the student assessment instruments, the assessment experts identified “Approaching proficiency” as the minimum level of proficiency that learners should acquire by the end of their secondary education in reading, mathematics, and science literacy. That of the 21st century skills assessment was set at “Proficient” to align with the Organisation for Economic Co-operation and Development (OECD) Programme for International Student Assessment’s (PISA) assessment benchmark.

⁵ NaCCA’s experts developed the proficiency thresholds in the following way:

1. The experts identified the level of difficulty for each assessment item.
2. An analysis of the depth of coverage of the questions was conducted against the secondary school curriculum. Key variables included the “scope of content”, “theme” and “profile dimensions” based on the requirements for the secondary school curriculum. This analysis: (a) provided a snapshot of the themes that were not covered so that they can be addressed in subsequent assessment instruments and (b) further subjected the assessment items to detailed analysis in terms of level of difficulty to enable the NaCCA team to develop the proficiency thresholds.
3. A review of literature including the U.S. National Assessment of Educational Progress achievement levels and report card, the skill builder universal framework, the Organisation for Economic Co-operation and Development (OECD) Programme for International Student Assessment (PISA) framework and the National Pre-tertiary Learning Assessment Framework (NPLAF). Based on the literature review, the team identified five proficiency levels: highly proficient, proficient, approaching proficiency, developing, and emerging.
4. For each assessment area, the team defined what each of the proficiency levels means and provided characteristics that learners should demonstrate to be recognized as attaining a proficiency level.
5. The team then benchmarked the questions in each of the assessment instrument to the secondary school curriculum and the NPLAF using the defined proficiency levels. For each question, the team indicated how the assessment items related to each proficiency level and confirmed that the items in the four assessments are suitable for secondary students and well matched with the secondary school curriculum.
6. Finally, for each of the four assessments the team established cut scores for each of the proficiency levels. In setting the cut scores, the team considered variables such as difficulty of items, how likely it is that students would answer certain kinds of questions on the assessments, time allocated for each assessment, demographic issues, how the assessment instruments meet the requirement in the secondary school curriculum with regards to learning outcome and the agreement among the assessment experts regarding how to represent the levels of proficiency definitions on the score scale.

3.4 Reading literacy

3.4.1 How and why the SETP baseline survey assessed reading literacy

Reading achievement is essential for a wide variety of human activities – from following instructions; determining the who, what, when where and why of a situation; the many ways of communicating with others for a specific purpose or transactions. Reading is also a component of many other domains of knowledge. Real-life problems often require people to draw on their knowledge of mathematics and science. People must be able to read well to obtain the information they need. People also need to engage in the critical and analytical thinking inherent in reading as they make use of written information for their own purposes (please see item framework for reading literacy attached as annex 5.2). No less important, literacy in reading is essential for a country's social, economic and political development.

3.4.2 The framework for assessing reading literacy

The reading literacy framework (annex 5.2) conceptualizes reading literacy as an activity in which readers interact with both text that they read and with the tasks that they want to accomplish during or after reading the text. To be as complete as possible, the assessment covered three dimensions: texts (the range and format of the reading material), aspects (the type of reading task or reading processes involved) and situations (the range of contexts for which the text was constructed).

Text type

The reading literacy framework classified text type along six dimensions:

- Description (process in a technical manual, catalogue, blog, diary)
- Narration (novel, comic strip, report in a newspaper)
- Exposition (essay, entry into encyclopedia)
- Argumentation (letter to the editor, posts in an online forum)
- Instruction (recipe, instructions for operating software)
- Transaction (personal letter to share news, text messages to arrange meeting)

Aspects/cognitive processes

The assessment framework for reading literacy identified three aspects or cognitive processes:

- Access and retrieve within a text (navigating a text to locate and retrieve a particular piece of explicitly stated information). Search for and select relevant text.
- Integrate and interpret (processing what is read to make internal sense of a text). Represent literal information (comprehending the literal meaning of sentences and passages). Integrate and generate inferences (going beyond the literal meaning of information)
- Reflect and evaluate (drawing upon knowledge, ideas or attitudes beyond the texts to relate the information provided in the texts to one's own conceptual and experiential frames of reference). Assess quality and credibility, reflect on content and form and detect and handle conflict (determining whether multiple texts corroborate or contradict each other).

Situations

Situations refer to the contexts and purposes for which the text was constructed. Four situations are identified:

- Personal (letters, fiction, diary- style blogs)
- Public (public notices, news websites)
- Occupational (job advertisement in a newspaper or online)
- Educational (textbooks, interactive learning software)

Cognitive demand

- Low – Recall of a fact, term, principle or concept or locate a single point of information.
- Medium – Use and apply conceptual knowledge to describe or explain phenomena.
- High – Analyse complex information, synthesize or evaluate evidence, justify reason given using several sources, develop a plan or sequence of steps to approach and resolve a problem.

The assessment of reading literacy included 40 items, of which 18 were multiple choice and 22 were open-ended. Students were allowed 80 minutes to complete the assessment. The time allocated for this, and the other three assessments was based on a psychometric analysis.

3.4.3 Proficiency levels for reading literacy

The results of the assessment of reading literacy are reported using proficiency levels (based on work done by NaCCA, see annex 5.1) and mean scores. Table 3.2 describes the proficiency levels for reading literacy used in the SETP baseline survey.

Table 3.2 Proficiency levels for reading literacy

Level of proficiency	Score	Characteristics of tasks
Highly proficient	80 - 100%	<p>Highly proficient readers can comprehend lengthy and abstract texts in which the information of interest is deeply embedded and only indirectly related to the task. They can compare, contrast and integrate information representing multiple and potentially conflicting perspectives, using multiple criteria and generating inferences across distant pieces of information to determine how the information may be used.</p> <p>Highly proficient readers can reflect deeply on a text's source in relation to its content, using criteria external to the text. They can compare and contrast information across texts, identifying and resolving intertextual discrepancies and conflicts through inferences about the sources of information, their explicit or vested interests, and other cues as to the validity of the information.</p> <p>Tasks at this level typically require the reader to create elaborate plans, combining multiple criteria and generating inferences to relate the task and the text(s). Materials at this level include one or several complex and abstract text(s), involving multiple and possibly discrepant perspectives.</p>
Proficient	68 - 79%	<p>Readers at the proficient level can comprehend lengthy texts, inferring which information in the text is relevant. They can perform causal or other forms of reasoning based on a deep understanding of extended pieces of text. They can also answer indirect questions by inferring the relationship between the question and one or several pieces of information distributed within or across multiple texts and sources.</p> <p>Reflective tasks require the production or critical evaluation of hypotheses, drawing on specific information. Readers can establish distinctions between content and purpose, and between fact and opinion as applied to complex or abstract statements. They can assess neutrality and bias based on explicit or implicit cues pertaining to both the content and/or source of the information. They can also draw conclusions regarding the reliability of the claims or conclusions offered in a piece of text.</p> <p>For all aspects of reading, tasks at proficiency level typically involve dealing with concepts that are abstract or counterintuitive, and going through several steps until the goal is reached.</p>
Approaching proficiency	54 - 67%	<p>Readers at this level can identify the main idea in text of moderate length. They can understand relationships or construe meaning within a limited part of the text when the information is not prominent by producing basic inferences, and/or when the text(s) include some distracting information.</p> <p>They can select and access a page in a set based on explicit though sometimes complex prompts and locate one or more pieces of information based on multiple, partly implicit criteria.</p> <p>Readers at this level can, when explicitly cued, reflect on the overall purpose, or on the purpose of specific details, in</p>

		texts of moderate length. They can reflect on simple visual or typographical features. They can compare claims and evaluate the reasons supporting them based on short, explicit statements. Readers at this level may involve comparisons or contrasts based on a single feature in the text. Typical reflective tasks at this level require readers to make a comparison or several between the text and outside knowledge by drawing on personal experience and attitudes.
Developing	40 - 53%	Developing readers can evaluate the literal meaning of simple sentences. They can also interpret the literal meaning of texts by making simple connections between adjacent pieces of information in the question and/or the text. Readers at this level can scan for and locate a single piece of prominently placed, explicitly stated information in a single sentence, a short text or a simple list. They can access a relevant page from a small set based on simple prompts when explicit cues are present.
Emerging	39% and below	Few emerging readers can understand and affirm the meaning of short, syntactically simple sentences on a literal level and read for a clear and simple purpose within a limited amount of time.

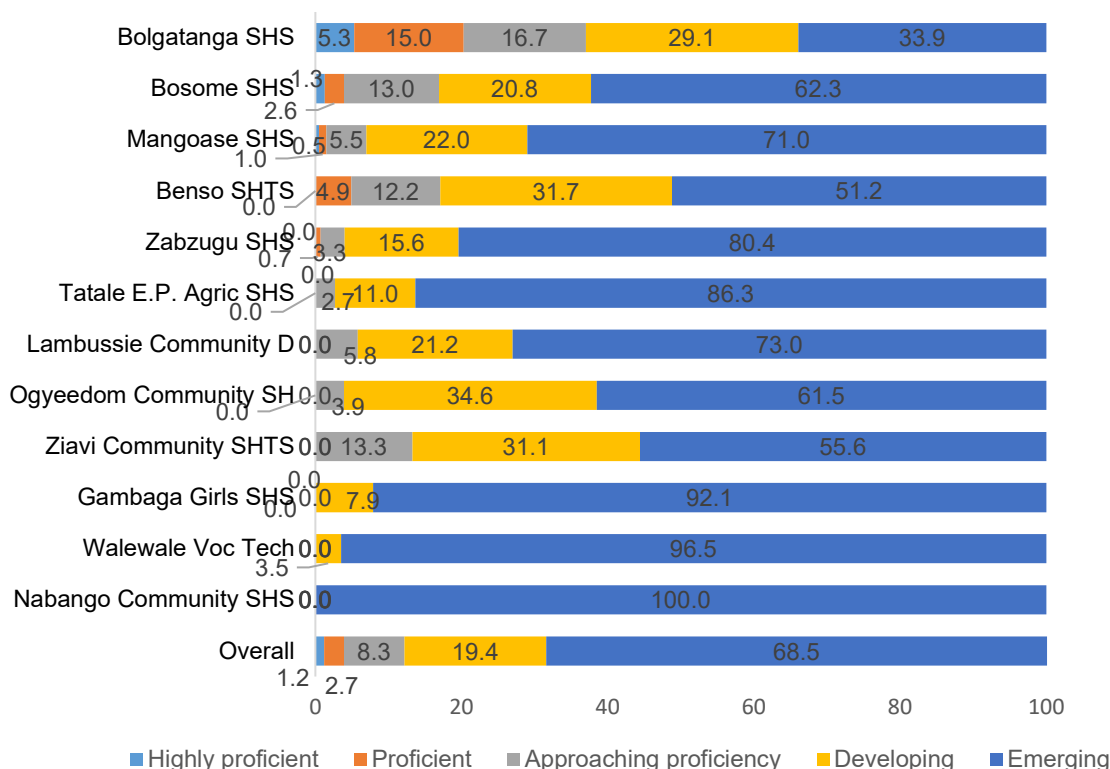
3.4.4 How students performed in reading

Some 12.2 percent of students across the 12 SETP schools are approaching proficiency or higher in reading (figure 3.2). At the minimum, these students can identify the main idea in a piece of text of moderate length. They can understand relationships or construe meaning within a limited part of the text when the information is not prominent by producing basic inferences, and/or when the text(s) include some distracting information. Approaching proficiency level represents the benchmark agreed by NaCCA for the student assessment in reading literacy.

Around 3.9 percent of students on average across the 12 SETP schools are top performers in reading literacy, meaning that they attained proficient or highly proficient in the reading literacy assessment (figure 3.2). At the minimum, students are able to comprehend lengthy texts, deal with concepts that are abstract or counterintuitive, and establish distinctions between facts and opinion.

Majority of the SETP school students (68.5 percent) are currently emerging students in reading literacy (figure 3.2). Only few of these can understand and affirm the meaning of short, syntactically simple sentences on a literal level and read for a clear and simple purpose within a limited amount of time.

Figure 3.2 Percentage of students at different levels of reading literacy, by school



120

Figure 3.2 further presents the distribution of SETP school students across the five levels of reading proficiency.

Highly proficient

The largest proportions of students who scored at this level of proficiency were from Bolgatanga SHS (5.3 percent), Bosome SHTS (1.3 percent) and Mangoase SHS (0.5 percent). Across regions, 4.9 percent of students in Upper East region, 1.3 percent of students in Ashanti Region and 0.5 percent of students in the Eastern region attained at this level.

Proficient

The largest proportion of students who attained this level of proficiency are from Bolgatanga SHS (15.0 percent) followed by Benso SHTS (4.9 percent) and Mangoase SHS 1 percent. In 7 of the 12 SETP schools (most of which are category C schools), no student performed at this level (see figure 3.2). The Upper East region recorded the highest number of top performers in reading literacy.

Approaching proficiency

Analysis at the school level also reveals that Bolgatanga SHS (16.7 percent), Bosome SHTS (13.0 percent) and Benso SHTS (12.2 percent), had the highest proportion of students scoring at this level of proficiency. None of the students in Gambaga Girls SHS, Walewale Vocational/Technical or Nabango Community SHS attained at this level (See figure 3.2).

Developing

A third of students in Ogyeedom Community SHTS (34.6), Benso SHTS (31.7 percent) and Ziavi Community SHTS (31.1 percent) attained this level of proficiency. Across regions, central region had the highest number of students attaining this level.

Emerging

A majority (80.9 percent) of the students who performed at this level are from category C schools. Interestingly, all the students in Nabango Community SHS were at this level.

Table 3.3 Student performance in reading literacy by demographic characteristics

	Highly proficient (%)	Proficient (%)	Approaching proficiency (%)	Developing (%)	Emerging (%)
<i>Year 2</i>	1.6	2.9	7.8	17.4	70.3
<i>Year 3</i>	0.0	1.9	9.7	24.6	63.8
<i>Category A</i>	5.3	15.0	16.7	29.1	33.9
<i>Category B</i>	0.9	3.4	12.7	24.6	58.5
<i>Category C</i>	0.1	0.4	3.4	15.2	80.9
Sex					
<i>Male</i>	1.0	5.9*	12.3	33.5*	47.4
<i>Female</i>	0.7	2.3	10.8	30.0	56.3*
Type of JHS attended					
<i>Public JHS</i>	0.7	3.7	11.8	30.5	53.4
<i>Private JHS</i>	1.6	6.4	9.5	40.5	42.1
Overall	1.2	2.7	8.3	19.4	68.5

*p≤0.05

3.4.5 Students' performance in different aspects of reading literacy

As discussed in section 3.4.2, the assessment items for reading were developed to cover three subscales (text, cognitive process, and situation). The average scores for the reading literacy domains are provided in table 3.4. Students had relatively low average scores (17.8 percent) on “narration” and on “argumentative” (17.2 percent) within the text dimension. Similarly, the assessment recorded low average scores (7.9 percent) for “personal” items within the situations dimension. As expected, students obtained higher average scores for questions with lower difficulty levels. Of note, the differences between year 2 and 3 students are negligible and suggests that an extra year of school provides little to no improvements in students' reading skills.

Table 3.4 Students' performance in different aspects of reading literacy (mean percent)

Domain	Year 2	Year 3	Overall mean
Text type			
<i>Description</i>	41.0	43.4	41.7
<i>Narration</i>	18.2	16.9	17.8
<i>Argumentative</i>	17.8	15.6	17.2
<i>Instruction</i>	20.4	20.2	20.3
Cognitive process			
<i>Access and retrieve</i>	38.2	41.0	39.0
<i>Integrate and interpret</i>	26.3	28.7	27.0
<i>Reflect and evaluate</i>	19.6	18.1	19.2
Situation			
<i>Personal</i>	8.1	7.4	7.9
<i>Public</i>	34.6	36.1	35.0
Cognitive demand			
<i>Low</i>	37.4	39.7	38.1
<i>Medium</i>	22.0	23.6	22.5
<i>High</i>	20.8	18.8	20.3

Table 3.5 presents the output of a multiple linear regression model in which students' scores are used as the dependent variable. Student and school demographic characteristics are the regressors. The coefficient of determination, R-square, is 24 percent, suggesting that the independent or demographic variables are explaining only 24 percent of the variations in students' scores in reading literacy. Based on the output of the model, female students obtained 1.9 percent lower scores compared with male students. The results further suggest that students from private JHS obtained about 1.8 percent higher scores compared with students from public JHS.

Table 3.5 Multiple linear regression for reading literacy

Characteristics	Coefficient	P-value	95% confidence interval
Sex			
<i>Male</i>	Reference		
<i>Female</i>	-1.866	0.022	-3.468, -.265
Level of student			
<i>Year 2</i>	Reference		
<i>Year 3</i>	3.050	0.000	1.348, 4.752
Category			
<i>A</i>	11.679	0.000	9.391, 13.966
<i>B</i>	13.589	0.000	11.473, 15.704
<i>C</i>	Reference		
Type of JHS attended			
<i>Public JHS</i>	Reference		
<i>Private JHS</i>	1.820	0.156	-0.696, 4.336

3.4.6 Qualitative insights from English language teachers on why students are unable to read

In-depth interviews were conducted with some English language teachers from the 12 SETP schools to ascertain why students are underperforming in reading. Teachers were asked to rate the performance of their students in reading literacy (by giving a mark out of 10). Across the schools, the rating range from (as low as 1 to a high of 6). When asked to provide reasons for their scores, most of the teachers talked about factors such as the poor Basic Education Certificate Examination (BECE) aggregates of SHS 1 entrants. According to the teachers, the BECE results of the students that are posted to their school keep getting worse each year. The result is that many students are ill-prepared for SHS. Teachers further stated that the majority of these students cannot read, construct simple sentences, and speak eloquently. They explained further that they spend several contact hours teaching these students how to read and write instead of focusing on their lessons. No less important, even after completing high school, many SHS graduates are not suitably prepared to advance to tertiary education or to obtain jobs that require the ability to read or write.

Others reasons provided for the underperformance of the students include the inability of school leadership to ensure that the teachers with the right qualification (i.e. bachelor of education in English or bachelor of arts in English) are teaching the English Language course, lack of infrastructure especially library (including reading textbooks and story books) for students, and in some category C schools the stress of students commuting for hours to get to the schools, cater for their own accommodation, and feeding them.

“Usually, when the BECE results are out, we get the poor performing students. I think we have not admitted any better grade than 40 and above. The last two admissions we had; we have not gotten any students with aggregate score of 25. Most of our students are from deprived schools. They can’t read”.

“It is because they are coming from poor academic background and they have issues of understanding concepts, critical thinking and the ability to even write simple essays. It makes it difficult for them to understand us when we teach. They do not reason as compared with the brilliant ones who can think critically about issues. English language, technically, as you know is a difficult subject and a student who cannot even read or understand will not be able to excel in it”.

“The gap has to do with, you know some of our teachers are not actually language teachers, excuse me to say they have not done English courses at the university. They have not done pure English. With that said, I must say some of the teachers do not have the requisite knowledge to actually handle the English subject and deliver to the satisfaction of the students. That is the biggest gap, and I must say management is not aware, you know we teachers protect each other. So, we are unable to actually report this situation to management”.

“You know, the school is deprived. We don’t have the infrastructure. We don’t have library facility and I think the absence of library facility also affects the performance of

students. Apart from the normal reading and comprehension we do in class, they don't have any other place to go and read other materials. So, I think the lack of a library has impacted negatively on the performance of students as far as English language is concerned".

"You know, in this area, it is not every student that has the money to take a car to school. They walk all the way to the school every day because the school is far from town. There are times that before the students enter the class, they are already tired. So, when we teach, and they are tired they can't concentrate on the lessons, and this makes them not to perform well".

"At times we don't have the teaching materials as teachers to teach the students. We will wait and complain but we don't have the materials. Even the students do not have the English textbook. Some parents purchased the textbooks for their children but most of them do not have the textbook and are therefore not reading. You know the more they read and learn new words, the more fluent they become and are able to express themselves. Unfortunately, that is not the case".

3.5 Mathematics literacy

3.5.1 How and why the SETP baseline survey assessed mathematics literacy

Competence in mathematics assists students in recognizing the role that mathematics plays in the world and in making well-founded judgements and decisions needed to be constructive, engaged, and reflective citizens.

3.5.2 The framework for assessing mathematics literacy

Mathematical literacy includes making mathematical deductions and applying mathematical concepts, procedures, facts and tools to describe, explain and predict phenomena (please see mathematics item framework attached as annex 5.2). Such literacy helps people to identify and understand the role that mathematics plays in the world, and to make the well-founded judgments and decisions required in life.

The literacy framework for mathematics comprises four interrelated aspects:

- the **content area** in which tasks are embedded
- the **contexts** involved
- the **competencies/processes** used and
- the **cognitive domain** that students need to apply

Content areas

The mathematics literacy framework classified content area along

- Cover quantity
- Space and shape
- Change and relationships
- Uncertainty and data.

Contexts

The mathematics literacy framework identified context to include:

- Personal
- Occupational
- Societal and scientific.

Competencies and processes

Competencies and processes include

- Formulating situations mathematically
- Employing mathematical concepts, facts, procedures and reasoning
- Interpreting, applying and evaluating mathematical outcomes

Cognitive domain.

- Low
- Medium
- High.

The assessment of mathematics literacy included 40 items, of which 36 were multiple choice and 4 were open-ended. Students were allowed 90 minutes to complete the assessment.

3.5.3 Proficiency levels for mathematics literacy

As discussed in previous sections, student performance in the assessments is reported on a scale. The scale is divided into levels of proficiency that indicate the kinds of tasks that students at those levels are capable of completing successfully. Table 3.6 illustrates the range of mathematics achievements covered by the SETP baseline assessment and describes the skills, knowledge and understanding that are required at each level of the mathematics scale.

Table 3.6 Proficiency levels for mathematics literacy

Level of proficiency	Scores	Characteristics of tasks
Highly proficient	80 - 100%	Highly proficient students can conceptualise, generalise and utilise information based on their investigations and modelling of complex problem situations, and can use their knowledge in relatively nonstandard contexts. They can link different information sources and representations together and flexibly translate among them. Students at this level are capable of advanced mathematical thinking and reasoning. These students can apply this insight and understanding, along with a mastery of symbolic and formal mathematical operations and relationships including formal proofs, and to develop new approaches and strategies for attacking novel situations. Students at this level can reflect on their actions and can formulate and precisely communicate their actions and reflections about arguments and the appropriateness of these to the original situation through high level mathematization.
Proficient	68 - 79%	At this level, students can develop and work with models for complex situations, identifying constraints and specifying assumptions. They can select, compare and evaluate appropriate problem-solving strategies for dealing with complex problems related to these models. Students at the proficient level can work strategically using broad, well-developed thinking and reasoning skills, appropriately linked representations, symbolic and formal characterisations, and insight pertaining to these situations. Students at the proficient level have begun to develop the ability to reflect on their work and to communicate conclusions and interpretations in written form.
Approaching proficiency	54 - 67%	Approaching proficiency students can execute clearly described procedures, including those that require sequential

		decisions. Their interpretations are sufficiently sound to be a base for building a simple model or for selecting and applying simple problem-solving strategies. Students at this level can interpret and use representations based on different information sources and reason directly from them. They typically show some ability to handle percentages, fractions and decimal numbers and to work with proportional relationships. Their solutions reflect that they have engaged in basic interpretation and reasoning.
Developing	40-53%	Developing students can interpret and recognise situations in contexts that require no more than direct inference. They can extract relevant information from a single source and make use of a single representational mode. Students at this level can employ basic algorithms, formulae, procedures or conventions to solve problems involving whole numbers. They are capable of making literal interpretations of results.
Emerging	39% and below	Few emerging students can demonstrate the ability and initiative to use mathematics in simple-life situations. These students may not be able to make meaningful connections between mathematical concepts.

3.5.4 How students performed in mathematics literacy

On average across the 12 SETP schools, 30 percent of students attained approaching proficiency or higher in mathematics. At the minimum, these students can execute clearly described procedures, including those that require sequential decisions. Their interpretations are sufficiently sound to be a base for building a simple model or for selecting and applying simple problem-solving strategies.

Eight SETP schools had students who scored at proficient or higher in mathematics literacy. These students can model complex situations mathematically, and can select, compare and evaluate appropriate problem solving strategies for dealing with them.

Majority of the SETP school students (41.4 percent) are developing students in mathematics. These students can interpret and recognise situations in contexts that require no more than direct inference.

Figure 3.3 Percentage of students at different levels of mathematics literacy, by school

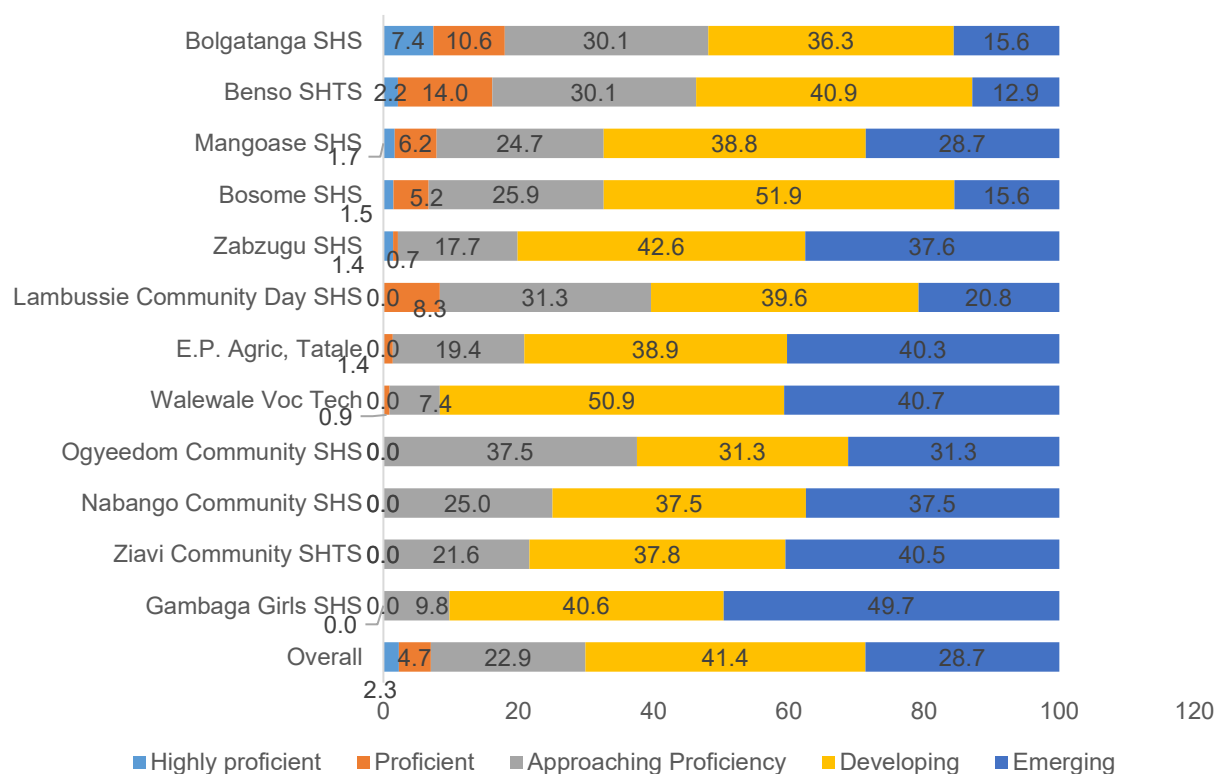


Figure 3.2 further presents the distribution of SETP school students across the five levels of mathematics proficiency.

Highly proficient

The largest proportions of students who scored at this level of proficiency were from Bolgatanga SHS (7.4 percent) followed by Benso SHTS (2.2 percent) and Bosome SHTS (1.5 percent). Two category C schools (Mangoase SHS 1.7 percent and Zabzugu SHS 1.4 percent) had students performing at this level.

Proficient level

Benso SHTS had the highest percentage of students (14 percent) who are proficient in mathematics followed by Bolgatanga SHS (10.6 percent). Student at five category C schools, Lambussie Community Day SHS (8.3 percent), Mangoase SHS (6.2 percent), Tatale E.P. Agricultural SHS (1.4 percent), Walewale Vocational/Technical (0.9 percent) and Zabzugu SHS (0.7 percent), performed at this level. In all remaining SETP schools, less than 1 percent of students attained this level of proficiency in mathematics literacy.

Approaching proficiency

Ogyeedom Community SHTS (37.5 percent) had the highest proportion of students approaching proficiency followed by Lambussie Community Day SHS (31.3 percent).

Developing

A little over 50 percent of students in Bosome SHTS and Walewale Vocational/Technical achieved this benchmark. Across regions, Ashanti Region (51.9 percent) had the highest number of students achieving this level.

Emerging

The schools with high percentages of emerging students include Gambaga Girls SHS (49.7 percent), Walewale Vocational/Technical (nearly 41 percent) and Ziavi Community SHTS (slightly over 40 percent). Significantly more female than male students performed at this level (table 3.7). North East (45.8 percent) and Volta (40.5 percent) regions have the highest number of students performing at this level in descending order of that share.

Table 3.7 Student performance in mathematics literacy by demographic characteristics

	Highly proficient (%)	Proficient (%)	Approaching proficiency (%)	Developing (%)	Emerging (%)
<i>Year 2</i>	2.4	3.9	21.2	42.2	30.3
<i>Year 3</i>	2.0	6.6	27.3	39.4	24.7
<i>Category A</i>	7.4	10.6	30.1	36.3	15.6
<i>Category B</i>	1.8	8.8	27.6	47.4	14.5
<i>Category C</i>	0.7	2.4	18.2	41.4	37.4
Sex					
<i>Male</i>	4.0	6.4	27.1*	39.4	23.1
<i>Female</i>	0.6	3.1	19.1	43.3*	33.9*
Type of JHS attended					
<i>Public JHS</i>	2.1	4.1	22.1	42.6	29.1
<i>Private JHS</i>	3.3	7.7	27.6	34.8	26.5
Overall	2.3	4.7	22.9	41.4	28.7

* $p \leq 0.05$

3.5.5 Students' performance in different aspects of mathematics literacy

Table 3.8 presents the results from the item analysis within the domains (as discussed in section 3.5.2) of the mathematics assessment. As seen in the table, students scored low on "quantity" within the content area. Also, students obtained low scores as the cognitive demand increases.

Table 3.8 Students' performance in different aspects of mathematics literacy (mean percent)

Domain	Year 2	Year 3	Overall
Content area			
<i>Quantity</i>	28.8	31.8	29.6
<i>Space and shape</i>	40.3	41.4	40.6
<i>Change and relationship</i>	34.0	35.9	34.6
<i>Uncertainty and data</i>	38.4	40.5	39.0
Contexts			
<i>Personal</i>	25.9	28.3	26.6
<i>Occupational</i>	31.0	34.2	31.9
<i>Societal</i>	60.3	62.4	60.9
Competencies/processes			
<i>Formulating situations mathematically</i>	30.2	31.2	30.5
<i>Employing mathematical concepts, facts, procedures, and reasoning</i>	24.6	27.7	25.5
<i>Interpreting, applying, and evaluating mathematical outcomes</i>	48.9	50.0	49.2
Cognitive domain			
<i>Low</i>	48.4	52.2	49.5
<i>Medium</i>	23.7	24.3	23.9
<i>High</i>	22.3	24.5	22.9

Table 3.9 presents the output of a multiple linear regression model in which students' scores are used as the dependent variable. Student and school demographic characteristics are the regressors. The coefficient of determination, R-square, is 16 percent, suggesting that the independent or demographic variables are not efficiently explaining the variations in students' score for mathematics literacy. Based on the output of the model, female students obtained 4.5 percent lower scores compared with male students. Also, schools in category A and B schools obtained 11.5 and 7.6 percent higher scores than students in category C schools. The results further suggest that students from private JHS obtained about 0.9 percent higher scores compared with students with public JHS school background.

Table 3.9 Multiple linear regression for mathematics literacy

Characteristics	Coefficient	P-value	95% confidence interval
Sex			
<i>Male</i>	Reference		
<i>Female</i>	-4.522	0.000	-5.971, -3.073
Level of student			
Year 2	Reference		
Year 3	4.934	0.000	3.304, 6.563
Category			
A	11.545	0.000	9.642, 13.449
B	7.617	0.000	5.693, 9.542
C	Reference		
Type of JHS attended			
<i>Public JHS</i>	Reference		
<i>Private JHS</i>	0.867	0.406	-1.179, 2.915

3.5.6 Qualitative insights from mathematics teachers on why students are underperforming on mathematics literacy

Mathematics teachers in the 12 SETP schools were asked to rate the performance of their students in mathematics on a scale of 1 to 10 (10 being the highest level of performance) during the in-depth interviews. The teachers gave a range of 3 to 7. Just like the English Language teachers, the mathematics teachers stated that their students do not have the needed foundation in mathematics. Specifically, they indicated that their students are unable to solve basic mathematics problem or think critically around mathematics problems before solving them.

The teachers also indicated that some of their students do not have mathematics textbooks, calculators and mathematical instruments (such as compass, rulers etc) to enable them study mathematics. These students are therefore unable to follow lessons and participate fully in class. They are also unable to revise lessons taught or learn on their own.

Teachers also indicated that some students perceive mathematics to be a difficult subject, and so opted to read arts with the perception that even when they perform badly in mathematics, they can still pursue further studies even though this is not the case.

“The biggest issue is that the students have poor background in mathematics. It is as though there were not well taught at their basic school, or they just didn’t learn the mathematics. You will try teaching them a simple concept like a Venn diagram and they will be struggling to understand. These concepts were supposed to be taught at the basic level; we are then to add up. But we are now taking them through. Just think of the time that we will be spending taking them back. It is really bad”.

“What I can say purposely is that the students do not have the textbooks, mathematical set, calculators, and other things to use. When you ask them to get these learning materials, they will say it is free education, so they expect the government to provide. I usually tell them that although the government is paying everything, you don’t have to fully rely on the government, you must purchase some of the items”.

“Some of these students fear mathematics as a subject, especially the female. So, when they are choosing their secondary school programme, they normally go for home economics, visual arts, general arts with the hope that even when they do not perform in the core mathematics, they can still further their study. We both know that is not the case. I remember during their orientation; we the mathematics teachers had a section with them to explain the importance of mathematics and alleviate their fear. Only few switched their course to read science. So, you see, when you are teaching students who have this notion that your course is difficult, you are forced to do extra work. This issue needs to be addressed at the basic school level”.

“As you can see, this school is in a rural area, it is not easy for parents in this area to raise funds to purchase textbooks and other learning materials for their children”.

3.6 Science literacy

3.6.1 How and why the SETP baseline assessed science literacy

The assessment of science literacy measured students' ability to engage with science-related issues and with the ideas of science, as reflective citizens (please see item framework for science literacy attached as annex 5.2). Engaging in reasoned discourse about science and science-based technology requires a sound knowledge of facts and theories to explain phenomena scientifically. Such discourse also requires knowledge of the standard methodological procedures used in science and knowledge of the reasons and ideas used by scientists to justify their claims, to evaluate (or design) scientific enquiry and to interpret evidence scientifically.

3.6.2 The framework for assessing science literacy

Scientific literacy is defined as the knowledge and understanding of the content of science, the procedures or methods of designing and evaluating a scientific enquiry, and the rationale behind the usual practices and fundamental terms in scientific enquiry.

Three scientific competencies underpin scientific literacy: (a) the ability to explain phenomena scientifically; (b) the ability to design and evaluate scientific enquiry; and, (c) the ability to interpret data and evidence scientifically within a range of personal, local, national and global contexts. The assessment framework for science includes three subdomains:

- The **contexts** in which tasks are embedded
- The **competencies** that students need to apply
- The **knowledge domains** involved

Contexts

- Personal (self, family, and peer groups)
- Local
- National
- Global (life across the world) in health, natural resources, the environment, hazards and the frontiers of science and technology

Competencies

Area 1: Identify scientifically oriented issues

Area 2: Explain phenomena scientifically

Area 3: Use scientific evidence

Knowledge domain

- Knowledge of content of science (physical systems, living systems, technology systems and earth and space science),
- Knowledge about science: scientific Inquiry and scientific explanations

Cognitive demand

- Low - Recall of a fact, term, principle or concept or locate a single point of information from a graph or table. Merely requires the recollection of one piece of information and requires low cognitive demands, even if the knowledge itself might be complex.
- Medium - Use and apply conceptual knowledge to describe or explain phenomena, select appropriate procedures involving two or more steps, organise and display data, interpret or use simple data sets or graphs. Requires the recollection of more than one piece of information and requires a comparison.
- High - Analyse complex information or data, synthesise or evaluate evidence, justify, reason given based on various sources, develop a plan or sequence of steps to approach a problem.

The assessment of science literacy included 40 items, of which 34 were multiple choice and 6 were open-ended. Students were allowed 60 minutes to complete the assessment.

3.6.3 Proficiency levels for science literacy

Student performance in science literacy is reported as a score on a scale and also as mean scores. To help interpret what students' scores mean in substantive terms, the scale is divided into proficiency levels (based on work done by NaCCA, see annex 5.1) that indicate the kinds of tasks that students at those levels are capable of completing successfully. Table 3.10 illustrates the range of proficiency levels for science literacy and describes the skills, knowledge and understanding that are required at each level of the science scale.

Table 3.10 Proficiency levels for science literacy assessment

Level of proficiency	Lower score limit	Characteristics of tasks
Highly proficient	80 - 100%	Highly proficient students can draw on a range of interrelated scientific ideas and concepts from the physical, life, and earth and space sciences and use content, procedural and epistemic knowledge to offer explanatory hypotheses of novel scientific phenomena, events and processes or to make predictions. In interpreting data and evidence, these students are able to discriminate between relevant and irrelevant information and can draw on knowledge external to the normal school curriculum. They can distinguish between arguments that are based on scientific evidence and theory and those based on other considerations.
Proficient	68 - 79%	At this level, students can use abstract scientific ideas or concepts to explain unfamiliar and more complex phenomena, events and processes involving multiple causal links. These students are able to apply sophisticated epistemic knowledge to evaluate alternative experimental designs and justify their choices and use theoretical knowledge to interpret information or make predictions. Proficient-level students can evaluate ways of exploring a given question scientifically and identify limitations of data sets, including sources and the effects of uncertainty in scientific data.
Approaching proficiency	54 - 67%	At the approaching proficiency level students can draw on moderately complex content knowledge to identify or construct explanations of familiar phenomena. In less familiar or more complex situations, students can construct explanations with relevant cueing or support. They can draw on elements of procedural or epistemic knowledge to conduct a simple experiment in a constrained context.
Developing	40 - 53%	Developing students are able to draw on everyday content knowledge and basic procedural knowledge to identify an appropriate scientific explanation, interpret data and identify the question being addressed in a simple experimental design. They can use basic or everyday scientific knowledge to identify a valid conclusion from a simple data set. Developing students demonstrate basic epistemic knowledge by being able to identify questions that can be investigated scientifically.
Emerging	39% and below	Students are unlikely to use basic or everyday scientific knowledge to recognise aspects of familiar or simple phenomena. They might not be able to identify simple patterns scientific

		terms and follow explicit instructions to conduct a scientific procedure.
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3.6.4 How students performed in science literacy

Some 16.3 percent of students are approaching proficiency or higher in science on average across the 12 SETP schools. At the minimum, these students can draw upon moderately complex content knowledge to identify or construct explanations of familiar phenomena.

On average across the 12 SETP schools, 4.8 percent of students are top performers in science, meaning that they are proficient or highly proficient in science. In addition to skills associated with lower proficiency levels, these students can creatively and autonomously apply their knowledge of and about science to a wide variety of situations including unfamiliar ones.

Majority of the students (52.2 percent) across the 12 SETP schools are emerging students in science. Only few of these students can use basic or everyday scientific knowledge to recognise aspects of familiar or simple phenomena.

Figure 3.4 Percentage of students at different levels of science literacy, by school

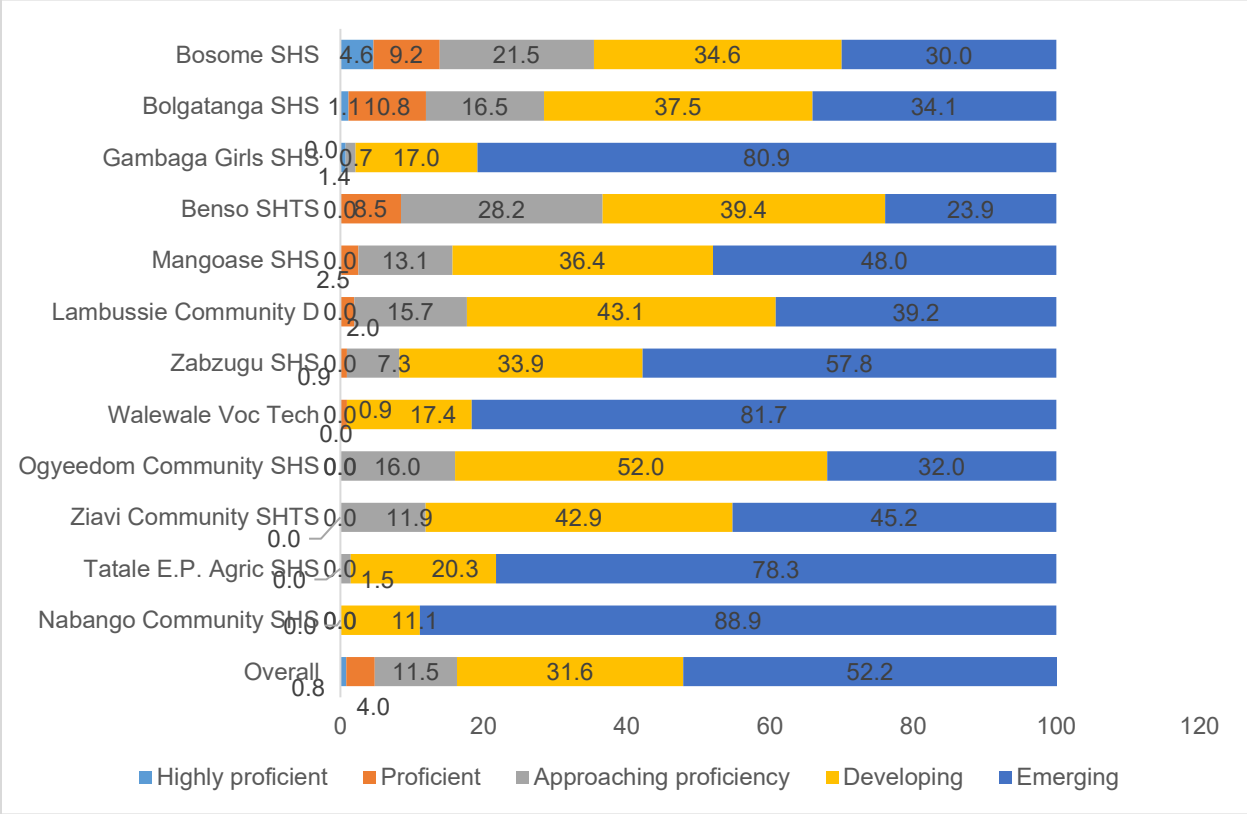


Figure 3.4 further presents the distribution of SETP school students across the five levels of science proficiency.

Highly proficient

The largest proportions of students who scored at this level were found in Bosome SHTS (4.6 percent), Bolgatanga SHS (1.1 percent), and interestingly, one of the category C schools, Gambaga Girls SHS (0.7 percent). Again, across regions, 4.6 percent of students in Ashanti Region, 1.3 percent of students in Upper East and 0.4 percent of students in the North East Regions attained the highest proficiency level in science literacy.

Proficient

Ten percent of Bolgatanga SHS students are the top performers in science, followed by Bosome SHTS (9.2 percent) and Benso SHTS (8.5 percent). By contrast in 5 of the 12 SETP schools such Nabango Community SHS, Tatale E.P. Agricultural SHS, Gambaga Girls SHS, Ziavi community SHTS and Ogyeedom Community SHTS, fewer than one in 100 students were top performers (See figure 3.3). Upper East Region recorded the highest percentage of proficient students in science while none of the students from Central and Volta Regions performed at this level.

Approaching proficiency

The results show that significantly more students in category B schools (23.9 percent) are approaching proficiency compared with students in C schools. Benso SHTS (28.2 percent) had the highest proportion of students approaching proficiency followed by Bosome SHTS (21.5 percent). None of the students in Walewale Vocational/Technical or Nabango Community SHS met the minimum proficiency level in science literacy.

Developing

Ogyeedom Community SHTS had the largest proportion of students (52 percent) who performed at this level followed by Ziavi Community SHTS (42.9 percent).

Emerging

Few emerging students are able to use basic or everyday scientific knowledge to recognize aspects of familiar or simple phenomena. This is true for 52.2 percent of students in the 12 SETP schools, particularly students in Nabango Community SHS (88.9 percent), Walewale Vocational/Technical (81.7 percent) and Tatale E.P. Agricultural SHS (78.3 percent).

Table 3.11 Student performance in science literacy by demographic characteristics

	Highly proficient (%)	Proficient (%)	Approaching proficiency (%)	Developing (%)	Emerging (%)
<i>Year 2</i>	0.8	3.8	11.2	30.5	53.7
<i>Year 3</i>	0.9	4.3	12.2	34.0	48.7
<i>Category A</i>	1.1	10.8	16.5	37.5	34.1
<i>Category B</i>	3.0	9.0	23.9	36.3	27.9
<i>Category C</i>	0.1	1.1	7.1	29.0	62.7
Sex					
<i>Male</i>	1.0	5.9*	12.3	33.5*	47.4
<i>Female</i>	0.7	2.3	10.8	30.0	56.3*
Type of JHS attended					
<i>Public JHS</i>	0.7	3.7	11.8	30.5	53.4
<i>Private JHS</i>	1.6	6.4	9.5	40.5	42.1
Overall	0.8	4.0	11.5	31.6	52.2

3.6.5 Students' performance in different aspects of science literacy

As discussed above, assessment of science literacy covers three domains (i.e., context, competencies and knowledge). Table 3.12 provides the domain analysis of the science literacy by the grade level of students. Students obtained the lowest average scores on the “use of scientific evidence” in the competencies domain followed by “knowledge about science” in the knowledge domain.

Table 3.12 Students' performance in different aspects of science literacy (mean percent)

Domain	Year 2	Year 3	Overall mean
Contexts			
<i>Local/national/social</i>	51.09	55.80	52.50
<i>Global (life across the world)</i>	48.98	50.67	49.53
Competencies			
<i>Identify scientifically oriented issues</i>	39.62	42.39	40.50
<i>Explain phenomena scientifically</i>	33.71	34.52	34.01
<i>Use scientific evidence</i>	22.01	22.94	22.34
Knowledge domains			
<i>Knowledge of science (physical, living and technology systems, etc.)</i>	39.57	41.93	40.32
<i>Knowledge about science (scientific inquiry and explanations)</i>	29.23	29.49	29.34
Cognitive demand			
Low	54.95	57.49	55.77
Medium	32.71	33.79	33.08

Table 3.13 presents the output of a multiple linear regression model in which students' scores are used as the dependent variable. Student and school demographic characteristics are the regressors. The coefficient of determination, R-square, is 17.9 percent, suggesting that the independent or demographic variables are not efficiently explaining the variations in students' scores for science literacy. Based on the output of the model, female students obtained 1.8 percent lower scores compared with male students. Also, schools in category A and B obtained 11.7 and 13.4 percent higher scores than students in category C schools. The results further suggest that students from private JHS obtained about 2 percent higher scores compared with students with public school backgrounds.

Table 3.13 Multiple linear regression for science literacy

Characteristics	Coefficient	P-value	95% confidence interval
Sex			
<i>Male</i>	Reference		
<i>Female</i>	-1.827	0.024	-3.440, -0.238
Level of student			
<i>Year 2</i>	Reference		
<i>Year 3</i>	3.065	0.000	1.365, 4.766
Category			
<i>A</i>	11.690	0.000	9.407, 13.973
<i>B</i>	13.424	0.000	11.324, 15.525
<i>C</i>	Reference		
Type of JHS attended			
<i>Public JHS</i>	Reference		
<i>Private JHS</i>	2.095	0.100	-0.404, 4.595

3.6.6 Qualitative insights from science teachers on why students are underperforming on science literacy

Qualitative insight was obtained from science teachers in the 12 SETP schools on why students are underperforming in science literacy. Science teachers revealed that some of their students perceive science as a tedious and difficult subject to study. They revealed that some of them had these ideas before entering secondary school. This misconception and fear, according to the teachers, is preventing students from learning and excelling in science literacy.

Another reason provided by the teachers is the limited time for practical work in science. According to the teachers, the science syllabi is huge, containing a lot of topics that must be covered before the end of each term. They further indicated that most of these topics are theoretical rather than practical, making understanding of science difficult for the students. The teachers also explained that their schools lack the necessary equipment and infrastructure to teach the practical aspects of the course.

Science teachers identified indiscipline as another factor. According to the teachers, some of their students lack the discipline to stay on campus and commit to their studies. They use various strategies to avoid classes, going to town to engage in indiscipline acts.

“When you enter the class to teach them, and you are interacting with them, they will tell you that science is difficult and when you asked them why they perceive science to be difficult, they will say, they heard it from others. There are some that said their parents do not want them to read science because their parents perceive science to be difficult”.

“Our science laboratories are not in good condition; we lack equipment and practical materials. Just this past Monday, I was taking the students through a practical lesson, all I needed was ethanol but the quantity we had was small. So instead of setting up several stations for the students, I was able to set up only two and asked to take turns. These are the challenges we are facing, so as teachers, we have to make do with the traditional method of teaching. I know it makes students to have less interest in the subject”.

“One of the biggest challenges is truancy. For instance, there are no accommodation for teachers on campus, the head teacher is the only one staying on campus with the students. How will the students learn at night?”.

3.7 Twenty-first century skills

3.7.1 The framework for assessing 21st century skills

Twenty-first century skills as defined by the MoE's secondary education strategy cover three broad areas i.e., foundational knowledge, competencies, and character qualities.

- Foundational knowledge includes literacy, numeracy, scientific literacy, ICT and digital literacy, financial literacy and entrepreneurship, cultural identity, civic literacy and global citizenship.
- Competencies includes critical thinking and problem solving, innovation and creativity, collaboration, and communication.
- Character qualities include discipline and integrity, self-directed learning, self-confidence, adaptability and resourcefulness, leadership, and responsible citizenship.

The framework for assessing 21st century skills is attached as annex 5.2. The framework provides a broader explanation of the elements entailed in the three areas under 21st century skills.

The assessment of 21st century skills included 50 multiple choice items. Students were allowed 80 minutes to complete the assessment.

3.7.2 Proficiency levels for 21st century skills

The proficiency levels for the 21st century skills are aligned with the OECD's PISA benchmark in terms of scoring. These proficiency levels are described in table 3.14.

Table 3.14 Proficiency levels for 21st century skills

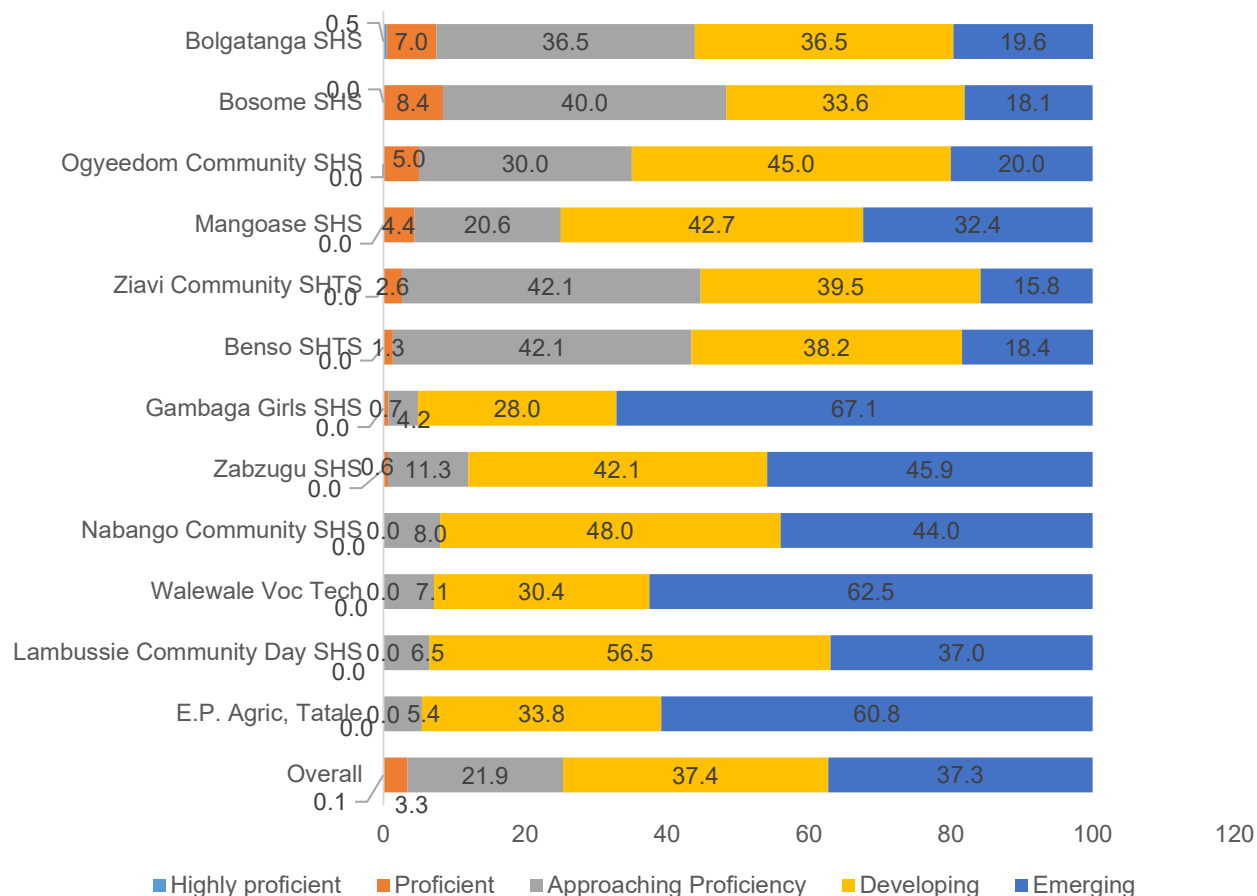
Level of proficiency	Score	Characteristics
Highly proficient	80 - 100%	At this level, students can identify and analyse multiple perspectives. They can reason about ideas and make predictions well beyond the information given in a problem while also effectively evaluating large amounts of information. Students at this level can reason with large amount of information without additional support provided, meaning they can make connections across elements of various problems on their own. These students can effectively explain situations and aspects of situations that require complex thinking such as recognizing unintended consequences, evaluating information to differentiate between biased and unbiased sources and identifying short- and long-term consequences of actions.
Proficient	68 - 79%	Proficient students can identify and analyse as many problems as possible. Students at this level can provide descriptions of situations that are less familiar or require deeper reasoning such as ones that require causal reasoning. These students can also provide explanations of situations and aspects of situations. They demonstrate consistency in their ability to assess, describe and/or explain situations across multiple activities within a problem.
Approaching proficiency	54 - 67%	Approaching proficiency students can identify and analyse moderate problems and resolve them. Here, a trade-off is observed between students' ability to reason beyond the explicit information provided in a given problem and the amount of information that must be evaluated. Approaching proficiency students can explain a given situation or aspects of the situation. They demonstrate consistency in being able to assess, describe and/or explain situations across multiple activities within a given problem.
Developing	40 - 53%	Developing students can identify and analyse basic problems and resolve them.
Emerging	39% and below	Emerging students are low achievers in 21 st century skills. Few of these students can think critically and solve problems.

3.7.3 How students performed on 21st century skills

Only 3.4 percent of students demonstrated proficiency or higher in 21st century skills, the “minimum level of proficiency” for the 21st century skills assessment. At the minimum, these students can identify and analyse as many problems as possible. Students at this level can provide descriptions of situations that are less familiar or require deeper reasoning such as ones that require causal reasoning.

Thirty-seven percent of the SETP school students are developing students in 21st century skills. These students can identify and analyse basic problems and resolve them.

Figure 3.5 Percentage of students at different levels of 21st century skills, by school



Highly proficient

Among the 4,932 secondary students assessed in the SETP schools, only five students (Bolgatanga SHS) attained the highest level of proficiency in 21st century skills. None of the students in category B or category C schools attained this level of proficiency.

Proficient

The highest proportion of proficient 21st century skills students were from Bosome SHTS (8.4 percent), Bolgatanga SHS (7 percent), Ogyeedom Community SHTS (5 percent) and Mangoase SHS (4.4. percent). The remaining schools scored 2 percent and below.

Approaching proficiency

Significantly more male students (24.8 percent) are approaching proficiency compared with female students (19.8 percent) (see table 3.18). Four of 10 students in Benso SHTS and Ziavi Community SHTS are approaching proficiency (See figure 3.5).

Developing

A little over half of the students in Lambussie Community Day SHS (56.5 percent), Nabango community SHS (48.0 percent), Ogyeedom SHTS (45.0 percent), Mangoase SHS (42.7 percent) and Zabzugu SHS (42.1 percent) performed at this level (See figure 3.5). There is no significant difference between female and male students at this level (table 3.18).

Emerging

A plurality of the students (41.2 percent) who performed at this level are females (table 3.18) and from category C schools. The results show that over 6 out of 10 students in Gambaga Girls SHS, Walewale Vocational/Technical and Tatale E.P Agricultural SHS attained this level. (See figure 3.5).

Table 3.15 Student performance in 21st century skills by demographic characteristics

	Highly proficient (%)	Proficient (%)	Approaching proficiency (%)	Developing (%)	Emerging (%)
<i>Year 2</i>	0.0	2.8	21.7	37.0	38.6
<i>Year 3</i>	0.3	5.1	22.6	39.1	33.0
<i>Category A</i>	0.5	7.0	36.5	36.5	19.6
<i>Category B</i>	0.0	6.1	40.7	35.1	18.2
<i>Category C</i>	0.0	1.6	12.8	38.4	47.3
Sex					
<i>Male</i>	0.2	4.7	24.8*	38.5	31.9
<i>Female</i>	0.0	2.3	19.8	36.7	41.2*
Type of JHS attended					
<i>Public JHS</i>	0.1	3.1	20.0	38.7*	38.1*
<i>Private JHS</i>	0.0	5.3	37.6	27.1	30.1
Overall	0.1	3.3	21.9	37.4	37.3

*P ≤ 0.05

3.7.4 Students' performance in different aspects of 21st century skills

Table 3.16 provides an analysis of the domain for 21st century skills. The results show that students performed best on “discipline and integrity” followed by items on “responsible citizenship”. Of note in the results are the low average scores (27.3 percent) on “critical thinking and problem solving”. Students also obtained comparatively low mean scores on questions related to “financial literacy and entrepreneurship”.

Table 3.16 Students' performance in different aspects of 21st century skills (mean percent)

Domain	Year 2	Year 3	Overall mean
Discipline and Integrity	66.5	64.4	65.9
Responsible citizenship	49.7	47.9	49.1
Cultural identity, civic literacy, and global citizenship	47.5	47.2	47.4
ICT and digital literacy	52.1	50.3	51.5
Self-discipline	44.8	42.5	44.0
Adaptability and resourcefulness	49.6	45.9	48.4
Leadership	47.8	44.1	46.5
Financial literacy and entrepreneurship	36.9	35.8	36.5
Critical thinking and problem solving	27.8	26.4	27.3

Table 3.17 presents the output of a multiple linear regression model in which students' scores are used as the dependent variable. Student and school demographic characteristics are the regressors. The coefficient of determination, R-square, is 16.7, suggesting that the independent or demographic variables are not efficiently explaining the variations in students' scores for 21st century skills. Based on the output of the model, female students obtained 2.9 percent lower scores compared with male students. Also, schools in categories A and B obtained 10.2 and 9.5 percent higher scores than students in category C schools. The results further suggest that students from private JHS obtained about 3 percent higher scores compared with students entering senior high school from public JHS.

Table 3.17 Multiple linear regression for 21st century skills

Characteristics	Coefficient	P-value	95% confidence interval
Sex			
<i>Male</i>	Reference		
<i>Female</i>	-2.901	0.000	-4.215, -1.587
Level of student			
<i>Year 2</i>	Reference		
<i>Year 3</i>	0.849	0.241	-.570, 2.269
Category			
<i>A</i>	10.224	0.000	8.417, 12.032
<i>B</i>	9.481	0.000	7.716, 11.245
<i>C</i>	Reference		
Type of JHS attended			
<i>Public JHS</i>	Reference		
<i>Private JHS</i>	3.016	0.005	0.890, 5.142

3.7.5 Qualitative insights from teachers on why students are underperforming on 21st century skills

Insight was also obtained from the SETP teachers on 21st century skills and why most of their students are underperforming on 21st century skills, notably critical thinking and problem solving. First, the teachers were asked whether they understand 21st century skills. Few of the teachers were able to explain what 21st century skills are. Most of

them indicated that they are not aware or that they have heard about it but do not know much about 21st century skills.

“I heard about 21st century skills in the media, I do not know what it is about”. Female science teacher.

“I know it is related to what students need to be competitive in this modern world. They need skills like ICT, programming, to compete with their counterparts from other parts of the world”. Male mathematics teacher.

“I have not heard anything about 21st century skills and what they are supposed to achieve, I have not heard this from anywhere not even in our meetings”. Male English teacher.

The interviewers took time to explain what 21st century skills are to the teachers, listing the domains and explaining what each of the domains are. The purpose is to elicit insight on why students are not performing well on critical thinking and problem solving as well as financial literacy and entrepreneurship. The teachers were asked to explain why their students are underperforming on 21st century skills especially critical thinking, problem solving, financial literacy and entrepreneurship. The teachers stated that there are no courses in secondary schools relating to these areas. They further indicated that the current curriculum is silent on 21st century skills. They also indicated that most of the lessons in secondary schools are theoretical instead of practical because of the course structures, lack of equipment and infrastructure. For teachers, the foundation for critical thinking and problem solving is through interactive lessons and practical work.

The teachers also indicated that the mode of assessment in the secondary schools pushes students to focus more on passing their exams than learning core skills that are needed in the modern world. They mentioned that as teachers, they are evaluated based on student performance in the subject area they teach. They therefore cannot focus on teaching skills that are outside of their course area.

“There is no course or subject that prepare students in financial literacy and entrepreneurship so obviously they cannot talk or write much about it”. Male English teacher.

“There is nothing like this in our course content, but it would be good to have a content like this to help students become more independent after secondary education so that, those who will not have the opportunity to further their education would be able to start something for themselves”. Female Science teacher.

“The opportunity to think and bring out solutions to problems is not the focus at the secondary school level. The teacher’s aim is to complete the syllabus and students are supposed to focus and pass their exams, so less attention is paid to 21st century skills”. Male mathematics teacher.

“Students did not perform well on critical thinking and problem-solving skills because, from their basic schools, such skills are not taught, the foundation is not there. Here in the secondary schools, we do not teach these either”. Science teacher, Secondary School.

3.8 Teacher-related results

3.8.1 SETP schoolteachers who are motivated and want to remain in the profession

The study measured the motivation of teachers in SETP schools and their desire or expectation to remain in the teaching profession until they reach the retiring age⁶. The survey asked teachers in SETP schools to self-rate whether they agree or disagree (5-point Likert scale) with questions relating to teacher motivation. In measuring this indicator, the score was computed by dividing the average score obtained by five (i.e., the average maximum score for the indicator). For instance, if the average score obtained is 3.8; the score would be computed as $(3.8/5 * 100) = 76.0$ percent. In measuring teachers' intent to remain in the profession, the study also asked questions relating to teachers' intention to remain or leave the profession. The results are presented in table 3.21.

The results show that 11.5 percent of the teachers in SETP schools are motivated (table 3.21). Some of the challenges cited by the teachers are lack of better teaching conditions (45.1 percent), inadequate remuneration (43.2 percent) and lack of adequate TLMs (6.3 percent). The results further show that about half of the teachers (49.8 percent) want to remain in the teaching profession despite the low level of motivation, with slightly more female than male teachers, but the difference is not significant. The results are appealing. Teachers who are not motivated are unlikely to be able to motivate or be interested in motivating their students. For whatever reasons, the educational system seems to be relatively successful in retaining these teachers. It is also interesting to note that the longest tenured teachers are also the ones least likely to want to remain as teachers.

Not surprisingly, teachers who are motivated are the most likely to express an interest in remaining in the teaching profession. Among the motivated teachers, nearly 90 percent want to remain in teaching. Among the unmotivated, 55 percent do not want to remain in the profession.

Table 3.18 Teachers who are motivated and want to remain in the profession (%)

Category	Motivated teachers	Teachers who want to remain in the profession
Sex		
<i>Male</i>	12.2	47.7
<i>Female</i>	9.9	54.9
<i>Category A</i>	9.1	50.0
<i>Category B</i>	17.1	46.3
<i>Category C</i>	10.6	50.6
Years of teaching		
<i>Less than 5 years</i>	12.0	54.4
<i>5 to 10 years</i>	10.7	53.3
<i>More than 10 years</i>	11.8	40.8
Overall	11.5	49.8

⁶ The survey adopted a tool used by the World Bank (2017). "Teacher skills and motivation both matter (though many education systems act like they don't)". https://doi.org/10.1596/978-1-4648-1096-1_ch6

Table 3.19 presents the results of the questions on teacher motivation. The results observed are the proportion of teachers who strongly agree/agree to the questions on motivation. The results reveal that about 89.7 percent of teachers in the SETP schools agree that their remuneration is insufficient. About 68.3 percent also indicated that they would leave if another job with the same or slightly higher salary were available to them.

Table 3.19 Teachers who strongly agree/agree to questions on motivation (%)

Items assessed for teacher motivation	Male	Female	Overall
As a teacher, I am contributing positively to the lives of my students.	97.7	98.6	97.9
Every teacher can continue to improve their practice throughout their career.	95.4	97.2	95.9
I feel confident about my abilities as a teacher.	94.8	97.2	95.5
If a student does not remember information in a previous lesson, I would know how to help them remember.	95.4	95.8	95.5
I can make my classroom a safe space for students, both emotionally and physically	93.0	93.0	93.0
I can get students to work in groups or pairs.	91.9	94.4	92.6
With the help of my colleagues, we can identify innovative practices.	91.3	91.6	91.4
I can motivate students who show low interest in school.	89.5	94.4	91.0
With the help of my colleagues, we can solve student issues.	91.3	87.3	90.1
My pay as a teacher is insufficient to support my needs	91.3	85.9	89.7 [^]
If a student in my class is undisciplined, I know some techniques to direct him or her.	84.9	95.8	88.1
When a student gets a better grade than he or she usually gets, it is because I found a better way.	84.3	84.5	84.4
My head teacher treats me with respect.	78.5	85.9	80.7
I can get through to even the most difficult or unmotivated students.	82.0	76.1	80.3
I feel exhausted at the end of the school day.	79.7	77.5	79.0 [^]
I feel energized when my class greets me each day	77.3	74.7	76.5
My colleagues at school make it a fun place to be.	71.5	85.9	75.7
I ask my colleagues for feedback.	72.7	70.4	72.0
I ask my supervisor for feedback.	73.3	63.4	70.4
I can help students overcome some difficult at their home and or in their community	73.3	62.0	70.0
If I were offered another job outside the teaching profession at about the same or a slightly higher salary, I would accept that offer.	73.8	54.9	68.3 [^]
I have the ability to get parents involved in their children's education.	64.5	62.0	63.8
Some teachers at my school want to transfer to other specific schools	69.8	49.3	63.8 [^]

My head teacher praises me for my efforts in the school.	58.7	56.3	58.0
I can influence some of the decisions that are made in the school.	58.7	49.3	56.0
I plan lessons with a colleague	49.4	54.9	51.0
Parents value my work as a teacher.	48.8	54.9	50.6
If I had to choose again, I would still want to be a teacher.	47.7	54.9	49.8
Teaching is mentally draining.	44.8	50.7	46.5 [^]
I feel fatigued when I get up in the morning and have to face another specific day at school	44.8	35.2	42.0 [^]
As a teacher, I am given more responsibilities than I can manage.	39.5	25.4	35.4 [^]
I do not get paid on time.	29.7	32.4	30.5
Teachers in my school work closely with the district schools improvement support officers (SISO)	26.2	22.5	25.1

NOTE: [^] Respondents who agree/strongly agree to a negative statement. In the computation of the rubric, the highest score was allotted to those who disagree strongly and the least score to teachers who agree strongly.

As part of the analysis, the study conducted an exploratory factor analysis using principal component analysis to determine the variables relevant in measuring teacher motivation based on the Likert scale used for the assessment⁷. Thirty-four questions, using a five-point Likert scale (5= strongly agree, 4= agree, 3= neither, 2= disagree, 1= strongly disagree), were used in the model. The result of the factor analysis generated a Kaiser-Mayer-Olkin (KMO) value of 0.787⁸. This value indicates that the test is adequate for factoring. Result in table 5.1 in annex 5.4 show that 11 factors are adequate in explaining the motivation of teachers in the SETP schools⁹. The list of factors in the varimax transformation matrix in table 5.1 in annex 5.4¹⁰.

3.8.1.1 Qualitative insights on teachers who are motivated and want to remain in the profession

As seen from table 3.21, almost 88 percent of teachers are not motivated in their teaching profession and 52 percent do not want to remain in the teaching profession. Qualitative insight revealed that these teachers cited low remuneration and poor condition of service such as lack of accommodations, non-availability and sometimes inadequate teaching and learning resources, poor conducive environment, inadequate infrastructure, unpaid arrears, and delays in promotion.

Some teachers further revealed that they are not motivated because to them teachers are not appreciated in Ghana. They indicated that teachers are not accorded any form of respect in Ghana. They cited instances of disrespect from community members and

⁷ Factor analysis is a general name denoting a class of procedures primarily used for data reduction. In many research, there may be large number of variables, most of which are correlated and which must be reduced to a manageable level. Relationships among sets of many interrelated variables are examined and represented in terms of a few underlying factors.

⁸ KMO is used to examine the appropriateness of factor analysis. High values (between 0.5 and 1) indicate factor analysis is appropriate.

⁹ This is based on the results of the eigenvalues that represent the total variance explained by each of the factors and the scree plot. There are two rules in factor extraction i.e. the eigenvalue-greater-than-one and the scree plot presented

¹⁰ Varimax transformation matrix is a statistical technique used at one level of factor analysis as an attempt to clarify the relationship among factors. Generally, the process involves adjusting the coordinates of data that result from a principal components analysis. In other words, the varimax rotation simplifies the loadings of items by removing the middle ground and more specifically identifying the factor upon which data load.

students who compare them with other professions such as politicians and doctors and conclude that those professions are better than teaching.

Others mentioned that the quality of the new batch of students coming to the secondary schools is the reason why they are not motivated. They explained that the students that are posted to their schools are unable to read, think critically or ask challenging questions that will enable them to prepare well and deliver quality lessons. They feel depressed and demotivated teaching these students as they spend several hours explaining simple concepts and often times organize remedial lessons on reading and numeracy for these students.

Some quotes from teachers are shown below.

“I will define motivation as those things that should be in place to tie the teacher to give his best. Things such as adequate remuneration like sufficient salary for the teacher. You see, the economy is hard now, like somebody will tell you that there is high cost of living now and if the net salary is what we are seeing now, then it means that there is nothing that is going to motivate the teacher to give his/her best. The salary that I am making does not correspond to the work that I am doing, therefore I will do anything and just leave”.

“Because of the recognition...I am looking at how teachers are regarded in the country and again our money issues i.e., remuneration wise, compared with other professions of the same academic qualification, it is quite difficult”.

“I am not motivated because looking at the sort of students we have, sometimes you are well prepared, you are energetic to come to class to teach but when you enter the class, they just demoralize you. That motivation is not there to teach, imagine teaching a payroll question...taking a payroll question and students in class, asking them to copy it. If you do not tell them to copy, they will never copy it. The next time you give them a similar question to solve, not a single student will be able to solve it. When you ask them, why they are unable to answer the questions, they will say we did not copy the note. You see, with such behaviour, how are you motivated to teach. You will just be demoralized”.

“Infrastructure is the main reason why I am not motivated in this school. Because there are some categories of schools that have a lot of infrastructure in this country. When you enter these schools, you will be amazed, you will see that your colleagues in these schools are happy, their classrooms are big, they have furniture, teaching equipment, even fans in their class. They have bungalows. Why can't all schools in Ghana have this infrastructure? Why should some of us suffer while others live a comfortable life? Every school deserves to have infrastructure. This will motivate teachers to teach and students to learn”.

“No, I am not motivated. Why? When you compare this school with other schools, I have been to other schools, and I see the facilities they have there. Once you get to

this school, the environment alone demoralizes you, so in a way it demotivates as compared with other schools”.

However, a few of the teachers who are not motivated indicated that they will remain in the teaching profession. For these teachers, teaching is their source of joy despite their remuneration and other challenges they face. These teachers further explained that they will remain in the teaching profession because they are passionate about the profession. Others indicated that there are no jobs in Ghana and so they have no option other than to remain in the profession. Some indicated that they would do their best to move upwards to teach at the tertiary level.

“Even though I want to remain in the teaching profession, I would like to advance to the highest level. I do not want to teach in the secondary school, the challenges are too much”.

“When you teach, the students understand, with all this challenges there are some topics that they understand it perfectly, so when you see that they understand it... and sometimes in my own small way when you give them some small work and they can do it. When they are able to do it, you will hear them saying ‘madam, we thought the questions are difficult but apparently, they are not’, especially when we are doing practical work such as pocket design in fashion, they were scared at the beginning when I said cut 8×8, they didn’t know what it was. But later on, when they were able to sew the pocket, they said ‘madam, it is actually not difficult’”.

Qualitative insights were also obtained from teachers who are motivated and wanted to remain in the profession. These teachers defined motivation as encouragement to improve their work. Others indicated that they are motivated when they see their students progressing to further studies or to the world of work. They further stated that no matter the challenges they experience in the teaching profession, they will remain and continue to teach as that is their source of happiness.

“A positive appraisal from management or the head teachers and assistant head teachers likewise from the heads of department”.

“Looking at people that we have been able to train and how they turn out, it motivates me as a teacher to give out my best. I think turning people’s life is a great motivation for me”.

“Because I derive a lot of joy. I am happy when I teach, and I have some sort of fulfillment when I impart knowledge to others”.

“As a teacher, I am motivated when I see my students smiling, once I see them happy, once I know I inspired them it keeps me going. You see, I just love to impact. It is just a passion like we jokingly say, ‘I was born to be a teacher’. Some would say it is a calling, but I just love to impact. Knowing I played a role in that student’s life in which a

day to come, he will look back and be very grateful that I met Mr. Raymond somewhere down the line. It makes me happy. This is why I will continue to be a teacher”.

Below are quotes from teachers on what should be done to ensure that teachers are motivated and want to remain in the teaching profession.

“Okay, so the first thing I will talk about is teachers having a conducive environment to teach. If I should talk about conducive environment, let’s say teachers are provided with facilities where they will sleep, then the teaching and learning materials and lastly, I will touch on the salary, government needs to increase our salary”.

“I think management should organize a meeting and encourage teachers to teach. They should say that even though the school is situated in a remote area, the knowledge that the teachers have is not remote. Therefore, we teachers should give our best by ensuring good academic success”.

“The government needs to provide equipment, infrastructure and all the needed teaching and learning materials (TLMs) to enable us to teach. I have some pictures of how bad our lab is. I will show it to you. In this school, we learn under trees. We do practicals under trees.

“To me the best is to give us good students. Good students that will encourage us to research and give our best. Students who will ask questions, challenge us the teachers. This will motivate us”.

3.8.2 Teachers displaying competencies in NTS

The National Teachers' Standards (NTS) represent Ghana's first ever collectively agreed standards to guide teachers' preparation and practice. The NTS have been developed as a professional tool to guide teacher educators, teachers, student teachers and other stakeholders in education to identify in clear and precise terms what teachers are expected to know and be able to do, qualities they are expected to possess and behaviours they are supposed to exhibit. The NTS set a clear baseline of expectations for the professional knowledge, practice, conduct, attitude, rights, and obligations expected of teachers working in schools at the pretertiary level.

3.8.2.1 Teachers' awareness of NTS

Table 3.20 provides information on the proportion of teachers who are aware of the NTS. Of the 243 teachers surveyed, almost two-thirds indicated that they are aware of the NTS, with significantly more males than females reporting awareness of the NTS. A higher proportion of teachers who claimed awareness of the NTS teach in category B (78.1 percent) schools, followed closely by teachers in category C (63.3 percent) and category A (54.6 percent) schools.

Table 3.20 Percentage of teachers that are aware of the NTS

Category	Percent
Sex	
<i>Male</i>	69.2 *
<i>Female</i>	54.9
Category	
<i>A</i>	54.6
<i>B</i>	78.1
<i>C</i>	63.3
Years of teaching	
<i>Less than 5 years</i>	63.0
<i>5 to 10 years</i>	66.7
<i>More than 10 years</i>	65.8
Overall	65.0
Total (N)	243

*P ≤ 0.05

The survey asked teachers who indicated awareness of the NTS whether they have copies (hard and electronic copies) of the NTS. Results presented in table 3.21 show that about one-third of the teachers that are aware of the NTS have copies with slightly more female (38.5 percent) than male teachers (27.7 percent). There is some irony here. Female teachers are less likely than male teachers to be aware of the NTS but are more likely than males to have the NTS.

Table 3.21 Proportion of teachers that have the NTS (%)

Category	Percent
Sex	
<i>Male</i>	27.7
<i>Female</i>	38.5
Category	
<i>A</i>	41.7
<i>B</i>	40.6
<i>C</i>	26.3
Years of teaching	
<i>Less than 5 years</i>	31.0
<i>5 to 10 years</i>	34.0
<i>More than 10 years</i>	26.0
Overall	30.4
Total (N)	158

3.8.2.2 Percentage of teachers in SETP schools displaying core competencies in the NTS

As depicted in box 3.1, the NTS are divided into three domains, each with its subdivisions. In measuring the associated indicator, the mean composite scores for lesson observation, teacher interview, and students' scores were triangulated. In computing the mean percentage composite score, the overall mean attained by a teacher is divided by four and a percentage calculated. For example, for the lesson observation, if a teacher obtains an average score of 3.2 out of 4¹¹ (the maximum score attainable), this will be equivalent to $3.2/4 \times 100$ or 80.0 percent. For the teacher interview, if a teacher attained a total score of 45 of 63, this would be equivalent to $45/63 \times 100$ or 71.0 percent. For student triangulation, if students had an average score of 2.8 (of 5), this will be equivalent to $2.8/5 \times 100$ or 56.0 percent. Therefore, the composite score for the indicator would be $(80+71+56)/3$ or 69.0 percent. Teachers are deemed as satisfying the criteria for the indicator if they obtain minimum score of 75 percent or higher.

Box 3.1. Main domains and subdivisions of the NTS

- ❖ Professional Values and Attitudes
 - Professional Development
 - Community of Practice
- ❖ Professional Knowledge
 - Knowledge of Educational Frameworks and Curriculum
 - Knowledge of Learners
- ❖ Professional Practice
 - Managing the Learning Environment
 - Teaching and Learning Assessment

Based on the results of the analysis, no teacher achieved the minimum score. Table 3.25 presents the competency scores obtained by teachers. The results show that almost 60 percent of the teachers “exhibited ethical teacher codes of conduct during lessons” while about a third also obtained the minimum scores for “giving constructive feedback to students” and “creating safe learning environment for students”¹². Significantly low scores were observed for the other competencies measured.

¹¹ Lessons were assessed on a scale of 0 to 4, where 0= Not observed, 1= Poor demonstration, 2= Fair demonstration, 3=Good demonstration, 4= Excellent demonstration.

¹² These results are from interview with teachers; the other competencies were observed during lesson observations.

Table 3.22 Teacher NTS lesson observation competencies (%)

	Male	Female	Overall
Teacher exhibits ethical teacher codes of conduct during the lesson delivery	57.9	65.2	59.8
The teacher listens to students and gives constructive feedback	32.3	41.3	34.6
Creates a safe, encouraging learning environment	30.1	45.7	34.1
Understands how children develop and learn in diverse contexts and applies this understanding in their teaching	13.5	19.6	15.1
Teacher uses age and grade(s) appropriate strategies to enact in the lesson	9.0	13.0	10.1
The teacher demonstrates effective, growing leadership qualities in the classroom	3.0	2.2	2.8
Pays attention to all students, especially girls and students with special educational needs, ensuring their progress	2.3	2.2	2.2
Explains concepts clearly using examples familiar to students	1.5	0.0	1.1
Employs a variety of instructional strategies that encourage student participation and critical thinking	0.8	0.0	0.6
Uses a variety of assessment modes during teaching to support learning	0.0	0.0	0.0
Produces and uses a variety of teaching and learning resources that enhance learning, including ICT	0.0	0.0	0.0

Table 5.3 in annex 5.4 further provides disaggregated data for each of the 12 SETP schools. Low scores were recorded across at least 8 of the 11 competencies for the NTS for all 12 SETP schools. Specifically for the competency “the teacher produces and uses a variety of teaching and learning resources that enhance learning, including ICT” where only 11 percent of the teachers in Bolgatanga SHS, 12 percent in Ogyeedom Community SHTS and 13 percent in Nabango Community SHS were observed demonstrating this competency. Another key competency of interest is the teacher “employs a variety of instructional strategies that encourage student participation and critical thinking”. The highest score recorded for this competency was from Bosome SHS at 39 percent, followed by Lambussie Community Day SHS and Walewale Vocational/Technical at 30 percent. Ziavi Community SHTS (19 percent) scored lowest on this competency among the 12 SETP schools.

3.8.2.1 Qualitative insights on teachers understanding and application of NTS

Insight from the qualitative interview revealed that some teachers are aware of the NTS. These teachers explained that they had heard of the NTS from representative of the National Teaching Council (NTC) who visited their schools to discuss the examination for teacher licensure. A few teachers further stated that, upon hearing about the NTS from the NTC representatives, they downloaded the soft copy from the internet but are yet to read it. Some teachers also indicated that they received hard copies from their teacher association groups, others indicated that they have never heard of the NTS before and that the first time they are hearing of the NTS was during the interview.

“I think the last time NTC came here to organize a program for us, they spoke about something like that. They said that the licensure exams will be on the NTS. They left without giving us a copy. So, I have not seen the document before”.

“Do you mean the National Teachers’ Standard? Yes, I heard of it. I saw them sharing it. I think it’s some Ghana National Association of Teachers members holding and sharing it”.

“I am now hearing it for the first time. Even though it is something relating to my profession. Will you be sharing copies with us?”

“National teachers’ standard. Is it an accompanying document or part of the current curriculum that was rolled out for basic schools? I have not heard of it before”.

“Yes, as I mentioned earlier when we were being oriented into the government public service, I think during the workshop it was mentioned that as a teacher we are guided by some teaching standards, and they recommended that we download it. I have a soft copy, but I don’t have the hardcopy and I have not gotten time to go through it thoroughly”.

For those who claim to have read the NTS, they were asked to explain in simple terms what NTS means. Most of them could not explain what they are. Those who attempted indicated that the NTS are about the behaviours teachers should demonstrate in and out of class as well as what they should expect from their employer. None of these teachers were able to state the components or domains of the NTS

“The NTS has to do with what is expected of me as teacher, how I am supposed to deliver in a classroom and also my professional life, how I am supposed to go about them. The expectation from me by my employers and from me as a professional teacher”.

“What I know about the NTS is not much. I think the NTS are just things we have to put in place to guide us at our workplace. For instance, as a teacher, before you teach you prepare your scheme of work, prepare your lesson notes before you go to teach. I think it’s the standards. Basically, the things we have agreed that we must do so that at the end of the day, we have good results as teachers”.

“The little I know about it is that the NTS is a standard in which teachers are supposed to perform their job”.

“I am not very clear as to which aspect of the educational policy you are even referring to as the National Teachers’ Standard. I am not very clear about it. I think I have heard about it, but nobody has ever taken me through, and I have not gotten a document that could guide me to get an understanding of the NTS”.

“It basically has to do with what we do or what we should do as teachers, basically and what we may also expect from our employers”.

“The standards is about obeying the instruction and policies of GES, coming to school early and making sure that the classroom is well swept and the student comport themselves in class and so on and forth”.

During the qualitative interview, the teachers (especially those who are aware of the NTS) were asked to explain the methods that they use to teach to improve students understand (perhaps to see whether they apply the NTS).

“So, I used to teach at St. Benedette Technical Institute, there, we had good students but when I came here, in 2017, the students that we have been receiving so far are not really good, they performed poorly at the JHS level. So, mostly when I go to the class to teach a subject, I bring the lesson to their level. They get confused when you attempt using accounting terms. So, you try to bring it down to their level to understand”.

“I give exercises. I give them practical exercises, group exercises and then individual work. I say to them, ‘If you don’t understand some part, ask your course mate to help you’. Communicate among yourselves”.

“For me, sometimes during lesson time, I ask questions, I interact with them. Other times too...let’s say when I give class work, I go round, checking whether what they are doing is right and whether they understand the lesson that I am teaching. If I notice that they are not able to answer the questions, I repeat the lesson”.

“My go-to strategy is to ask questions after the lesson, when they are able to provide answers, that means they understood what I taught. I sometimes give them homework”.

“Sometimes I use peer teaching. You know, for some, no matter how much you take your time to explain a concept, they won’t understand. Strangely, they understand when their friends explain the same concept to them. Maybe it has something to do with their age. I also use assessment a lot to check whether they understand the lesson that I taught”.

“The difficulty about using these teaching strategies is that (for instance questioning method) you go to the class, you pose a question, and it is like the whole class is silent. They have no idea about the concept you intend to introduce. Sometimes you have to adopt the lecturing method not because that is what you desire but to cover a lot of areas in the curriculum. At least some of them will follow the lesson”.

These quotations from the teachers validate findings from the quantitative interview that teaching in the SETP schools is largely lecturing rather than learner centered. Few teachers apply the NTS competencies in their lessons.

3.8.3 Teachers in SETP schools using ICT and digital technologies to enhance their teaching

This indicator measures the extent to which digital technologies are used to support and enhance learning in a multitude of ways and with a hands-on approach for students. Digital technologies include electronic tools, systems, devices, and resources that generate, store, or process data. Well-known examples include social media, online games, multimedia, and mobile phones. In computing this indicator, three assessment tools were used. First, sampled teachers were observed using or referencing digital technologies during lessons based on the measurement criteria. An interview was also conducted with teachers to triangulate the results of the lesson observation. Finally, students also completed a self-assessment to triangulate the lesson observation results. For a teacher to meet the minimum criteria for this indicator, a minimum of 75 percent average score is required.

Box 3.2 Observation criteria for the use of digital technologies

- Relevance of ICT to curriculum and topic taught
- Teacher uses digital technology to support learning in a multitude of ways, a hands-on approach for learners
- Gives appropriate resources to students with special needs
- Produces and uses a variety of teaching and learning resources that enhance learning, including ICT.

None of the teachers met the minimum criteria for this indicator. Based on observations of teachers’ lessons, table 3.23 shows the percentage of teachers who met the criteria for competency with ICT and digital technologies. Few teachers obtained the minimum criteria in all the competency areas.

Table 3.23 Teachers who met the minimum criteria on lesson observation competencies (%)

	Overall
Relevance of ICT to curriculum and topic taught	5.0
The teacher uses digital technology to support learning in a multitude of ways, a hands-on approach for learners	0.0
The teacher gives appropriate ICT resources to students with special needs	8.9
Produces and uses a variety of teaching and learning resources that enhance learning, including ICT.	0.6
Total (N)	179

Table 5.4 in annex 5.4 further provides disaggregated data for each of the 12 SETP schools. As seen from the table, low scores were recorded across the 12 SETP schools. For instance, for the competency the “teacher uses digital technology to support learning in a multitude of ways, a hands-on approach for learners,” none of the teachers in Gambaga Girls SHS, Bolgatanga SHS, and Ziavi Community SHS were observed demonstrating this competency. Again, for the competency the teacher “produces and uses a variety of teaching and learning resources that enhance learning, including ICT,” none of the teachers in Tatala E.P. Agricultural SHS or Bolgatanga SHS demonstrated this competency in their lessons.

The survey also measured the proportion of teachers who have received training in digital technologies in their schools (table 3.24). Only 15.2 percent of teachers had received training in digital technologies.

Table 3.24 Teachers who have received training in digital technologies

Category	Percent
Sex	
<i>Male</i>	17.4
<i>Female</i>	9.9
Category	
<i>A</i>	18.2
<i>B</i>	24.4
<i>C</i>	12.8
Years of Teaching	
<i>Less than 5 years</i>	9.8
<i>5 to 10 years</i>	14.7
<i>More than 10 years</i>	22.4
Overall	15.2
Total (N)	243

3.8.3.1 Qualitative insights into teachers' use of digital technologies

Key informant interviews were conducted with the SETP teachers to learn why they are not using ICT and digital technologies to enhance their teaching. The teachers provided several reasons. They indicated that ICT and digital devices are limited. In most schools, especially category C schools, these devices are not available. According to the teachers, ICT and digital devices are a prerequisite in an interactive classroom. Some teachers commented that they have personal devices such as smartphones, laptops and even projectors, but they believe it is unethical to use personal devices to teach students. Some further explained that one or two personal devices will not be enough to teach an average class of 45 students for instance. For these teachers, to ensure an interactive class where teachers use ICT and digital technology, there should be an adequate number of devices for students to use during lessons.

“No, we don’t teach using ICT or digital devices, we do teach with marker boards and textbooks. I mean looking at the teaching methods that are being introduced, we will be happy to use projectors to teach. Some of us have certain lessons in PowerPoint that will help students, but we don’t have that equipment. So, on occasions that we decide to use our laptop, we struggle a lot. We have to go and show the lessons on the laptop to the students one after the other”.

“You will go to the head’s office, and they will tell you that the projector is not working, they have only one and they are using it at the lab”.

“I tried to use my iPad to teach, initially, I made the diagrams bold on the iPad but they couldn’t see. There was no projector, so I had to ask them to move it around the class. But you see, that is a difficult thing to do. How can you use one device to teach a large

class like mine? So, I stopped using it. Ideally, it would have made the lesson interesting. I teach geography. None of the students have seen snow before. The best way for them to see it is via a technological device which we don't have".

"Some of us have the laptops and they are just white elephants, we don't even use them but I in particular, at least I have some basic knowledge in some applications but then I wouldn't mind if I get some training on how to use technology to teach".

"I have a laptop but no I do not use it to teach students because let's say I download a video and I want to show them the video, where is the projector? The projector we have at the science lab is lost. Someone took it and we can't find it again".

"No, sir. I have my own personal phone, but the school hasn't provided me with an ICT tool. Even though, the school hasn't provided me with one, I try to use my phone to research around my course. I use Google to get ideas on how to teach my subject. I do not use the phone to teach because the screen as you can see is very small".

The teachers also indicated their lack or inadequate pedagogical knowledge on ICT and digital technology. They believe that before they can effectively use ICT and digital technology, there need to be relevant in-service training. According to these teachers, they do not yet possess such skills that will enable them to adequately make lessons interactive through ICT and digital technology. With the exception of ICT teachers, few teachers believe they possess such skills and can demonstrate them during lessons.

"The challenge is our competency level with the ICT tools. Our level of understanding on how to use them is not up to date. Technology keeps changing, and it is difficult to keep track of the latest approaches to teaching using ICT".

"If you are giving me this laptop to help me do my work, at least you should be prepared to teach me how to use it. When the government provided us with laptops, no training was given to us. So, the training is very important. If you know much about ICT, teaching shouldn't be a problem".

"I have a laptop and a phone, but I do not use them to teach. I use them to prepare lesson notes and to research. I am not computer literate enough to be using the laptop or computer to teach students".

"With this one teacher one laptop, obviously some of us have laptops. I mean you can simply prepare a PowerPoint and present it to the class. You can easily show them videos of lessons without any sweat. Sometimes it becomes very difficult to do that because there is no projector. So we download the videos on our phones, we increase the brightness as much as possible and show them to the students. We ask them to pass the phone or laptop around. Other times, we just play the video or show the picture in front of the class without the projector. Those who are at the front can see. Those who say they are not able to see, we ask them to move closer".

“As I indicated, I teach ICT, there are laptops, a few. We deal with group work instead of individual computing because the computers are not enough for the students, so the practical work is done in groups. We use demonstration software, if I have to teach keyboarding skills, I have software that I use. Our keyboard explorer is there and then the other ones like word processors, if we are teaching word processors, we have Microsoft office suit installed on the computers”.

The teachers also indicated that the school environment is not conducive to enhance teaching using ICT and digital technologies. According to the teachers, the lack of electricity (and or electrical wiring include sockets and power sources) in the classrooms prevents them from using ICT and digital technology. They further indicated that ICT and digital technology usage will be effective only in small classrooms unlike the large number of classrooms they currently have. Teachers further indicated that students are mostly interested in passing their exams and are not ready to spend time to learn new skills.

“Yes, I use ICT in my lesson. I download videos from YouTube onto the laptop and show it to my students. But you see, it’s not all the classrooms that have plugs to charge and use the laptop. So most often I use the phone. But when the laptop is fully charged then I use it. I usually go round with it because we don’t have overhead projector. If we were having a projector, we can project it on the board for them to see. But if we don’t have a projector, we just hold it and move around the class”.

The teachers also reported that the poor background of students in ICT is another hindrance to their use of ICT and digital technologies. According to the teachers, most of the students come from basic schools where ICT is not taught or taught theoretically without actual practice. These students therefore have limited interaction with ICT and digital technology devices. Using ICT and digital technology become problematic as the lesson will shift from focusing on the topic that is being taught to teaching ICT.

“No, I do not use ICT in my lesson. My lesson is a two-hour lesson and with this our students, they are not the smart ones. Take a lesson like ledger books in financial accounting, I should be teaching them these topics using the computer but looking at the kind of students we have, you will end up doing just something small within the two hours”.

“If I decide to teach using ICT instead of focusing on what is in the curriculum, during their examination, they will complain that madam did not teach us anything. She was only using her computer every time. But if, we introduce ICT in our lessons, it will be good”.

3.8.4 Teachers demonstrating GESI-responsive pedagogies

This indicator tracks teachers' demonstration of gender-responsive pedagogy using the criteria shown in box 3.3. In computing the indicator, three methods were employed to provide a composite score: lesson observation, a follow-up interview with teachers, and self-administered questionnaires with students. A teacher is expected to obtain a minimum of 75 percent on the mean composite score to satisfy the criteria of the indicator.

None of the teachers met the minimum criteria to be deemed as demonstrating GESI-responsive pedagogies.

Table 3.25 details the teacher competency scores on GESI-responsive pedagogies. About a third of teachers were observed “creating a safe and encouraging environment”. Also, most of the teachers performed poorly on the rest of the GESI competency areas especially on the use of “gender responsive strategies to challenge gender roles and norms”.

Box 3.3 GESI-responsive instructional strategies

- ❖ The teacher applies all teaching methods equally to male and female students
- ❖ The teacher uses gender-responsive strategies to challenge gender roles and norms
- ❖ Creates a safe, encouraging learning Environment
- ❖ Pays attention to all students, especially girls and students with Special educational needs (SEN), ensuring their progress.
- ❖ Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes.
- ❖ Understands how children develop and learn in diverse contexts and applies this in their teaching
- ❖ Identifies and remediates learners' difficulties or misconceptions, referring learners whose needs lie outside the competency of the teacher

Table 3.25 Teacher competency scores on GESI-responsive pedagogies (%)

	Male	Female	Overall
Creates a safe, encouraging learning environment	30.1	45.7	34.1
Understands how children develop and learn in diverse contexts and applies this in their teaching	13.5	19.6	15.1
The teacher applies all teaching methods equally to female and male students.	14.3	15.2	14.5
Teacher uses age and grade(s) appropriate strategies to enact in the lesson	9.0	13.0	10.1
Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes.	3.0	2.2	2.8
Identifies and remediates learners' difficulties or misconceptions, referring learners whose needs lie outside the competency of the teacher	3.0	2.2	2.8
Pays attention to all students, especially girls and students with special educational needs (SEN), ensuring their progress.	2.3	2.2	2.2
The teacher uses gender responsive strategies to challenge gender roles and gender norms.	0.0	0.0	0.0

Table 5.5 in annex 5.4 further provides disaggregated data for each of the 12 SETP schools. Almost all the 12 SETP schools scored low on at least six of the eight competencies that measure teachers' GESI-responsiveness. For instance, teachers in Bosome SHTS scored highest (32 percent) on the competency “the teachers use gender responsive strategies to challenge gender roles and gender norms” while only 1 percent of teachers in Nabango Community SHS were observed demonstrating this competency. Again, for the competency the teacher “employs instructional strategies

appropriate for mixed ability, multilingual and multi-age classes”, the score ranged from 39.5 percent for Bosome SHTS, 27.4 percent for Benso SHTS to as low as 12.9 percent for Ziavi Community SHTS.

3.8.4.1 Qualitative insights into teachers’ demonstration of GESI responsive pedagogy

Qualitative insight was obtained from the teachers on how they demonstrate GESI-responsive pedagogy in their lessons. The teachers were first asked to explain what GESI-responsiveness means. Few teachers were able to define GESI-responsiveness. Of note in their definition of GESI is the focus on male and female only. Most of the teachers were silent on issues of social inclusion.

“Gender equality is...let say you have a standard for male students, that same standard should be used for the female students in every aspect of teaching and learning. So, if the male student is grade to a standard A, automatically there should be the same standard for the female student as well”.

“In simple terms, I will say involving women also into the social world”.

“What I understand as gender and inclusion is that what is given to the boys should be also giving to the girls to also try. When there is a special information, the ladies should also get the opportunity to obtain certain positions in the school to show what they have also learnt”.

“Gender equality is it not what men can do; women can also do it?”

“This involve both sexes. That is male and female and how we interact with them. That of the female students is sensitive compared with the male. But this is a single-sex school, in a mixed school situation woman are fragile and that is the most sensitive part in this case, they are not assertive and are shy in mixed schools”.

The teachers were then asked to demonstrate how they apply GESI-responsiveness in their lessons. Only a handful of the teachers were able to appropriately explain how they apply GESI-responsiveness in their lessons.

“I try to give the opportunity to both the boys and girls to say whatever thing they want to. So, what I make the ladies do, I try to make the guys do the same do. That is where it is tricky. I teach clothing and textile, when it comes to practicals, the guys shy aware from using needles etc. They perceive it to be for the girls. I do my best to explain it to them, but they don’t want to understand”.

“At times I’ll give an exercise, or a problem, or write a question on the board, then I’ll say now I want to see between the men and the women, who will finish first. When they are done, I will collate the scores and announce the winner, this generates healthy competition among the male and female students”.

The teachers further noted the challenges they encounter in implementing GESI-responsiveness. Most of the teachers indicated that their students tend to label

programmes based on sex, saying that home economics is regarded as a female programme. Male students who are in this programme are teased and vice versa.

“Like I talked about the social setting, where the girl child is being looked down upon. so I think it is also having impact on them in the classroom. Because when you go to teach, you see that the male students are active more than the females. Those are some of the challenges I face so we need to bring them out of that shield”.

“Normally, it is difficult. The guys think some of the subjects like catering is for the girls, so they shy away from the entire home economics programme. For those that apply, sometimes when you tell them to do something, during practical, they are unwilling to do it”.

“Okay the challenges we face here let’s say in fashion department they feel sewing is just for the females so if guys are among them, they rather mock them and building and construction they feel it is only for boys and so when the girls are there, they mock them that that work is not for girls but boys”.

When teachers were asked to recommend ways to improve GESI-responsiveness in their schools. They indicated the need to pay attention to sexual harassment in their schools. They further emphasized the need to focus on both sexes instead of a particular sex.

“Okay, so more education is on the girl child, wanting the girl child to be in school. I think there should be another education on the male child in school as well so that the equilibrium will stabilize or becomes the same”.

“We need to organize a symposium in this school to discuss sexual harassment. It is happening and we know it. We need to talk to the students so that they will have that knowledge on this sexual harassment and its effects and preventions”.

3.9 School-level outputs

3.9.1 Boards and senior management teams of SETP schools that demonstrate understanding of their roles and responsibilities

This indicator focuses on leadership and management of SETP schools. The objective of the indicator is to evaluate whether the leaders of the SETP schools understand their roles and responsibilities and can demonstrate with evidence the execution of these roles. In computing the indicator, the study interviewed a member of the school board, head teacher and senior management staff. The data from the interviews were triangulated to establish commonality and scoring. Box 3.4 presents the criteria for determining the indicator score.

Box 3.4 Criteria for measuring roles and responsibilities

- ❖ Developing and implementing vision and mission statements
- ❖ Developing and implementing school improvement plans
- ❖ Developing strategies to support professional development and teaching practices
- ❖ Developing strategies to support improvements in students' achievement
- ❖ Establishing and capitalizing on linkages with industry and tertiary institutions.
- ❖ Setting up committees to address issues in the school

The results of the analysis reveal that 8.3 percent of the boards and school management teams demonstrated an understanding of their roles and responsibilities. Table 3.26 provides a detailed analysis of the areas where the school boards and management met the competencies for the indicator and where they fell short.

About two-thirds of the boards and senior management teams developed mission statements that align with GES, only 4 of 10 had their vision statements aligned with GES. None of the school boards and senior management teams developed strategies to support improvements of student performance and professional development of teachers.

Table 3.26 Competency scores for boards and senior management (%)

Competencies evaluated	Total
School mission statement is shown and aligns with GES	66.7
School vision statement is shown and aligns with GES	41.7
School has a school improvement plan (SIP) or a school partnership performance plan (SPPP) and has been shared	25.0
Ensuring the availability for students of (a) career guidance; (b) psychosocial and emotional counselling services; (c) academic counselling; and, (d) a link with industry and tertiary institutions	16.7
Have a GESI targets in the school's SIP/SPPP	16.7
Have teaching and learning targets in your SIP/SPPP	16.7
Have in your SIP/SPPP leadership and management focused targets or school has leadership and management focused targets	8.3
Have any institutional partnership/community engagement targets in your SIP/SPPP or as a school	8.3
Have student engagement/performance targets in your SIP/SPPP or as a school?	8.3
School board has set up committees to address issues in the school	0.0
Have developed strategies to support the professional development of teachers	0.0
Have developed strategies to support improvements in student performance	0.0

3.9.1.1 Qualitative insight on how boards and senior management are performing their roles in the SETP schools

Qualitative insight was obtained from board members and senior management staff on how they support their schools. The board members and senior management staff outlined specific actions they took to support their school to improve teaching and learning. For instance, both board members and senior management indicated that they monitor teaching and learning and help address issues of indiscipline. Some board members also indicated that they support their school to raise funds for infrastructure development. Others stated that they provide an oversight role with regards to budget (i.e., guiding the school to prepare their annual budget).

When board members were asked about the challenges they face when trying to support their school, most of the board members indicated that they did not receive any training and would like to be trained. For those who were trained, they indicated that GES and nongovernmental organisations had facilitated the training sessions. They further stated that the training covered areas such as management of accounting process, store management and ICT skills for management. They would have wished that the training covered areas on governance and leadership.

The board and school management also cited various challenges they face in their roles and responsibilities which hinders them from executing their roles effectively. Some board members cited intimidation from fellow board members as a challenge. They explained that some board members who are perceived to be in higher ranks such as district directors, regional officers and government appointed members make them feel as though their contributions are not valuable. This has made it difficult for

some board members to participate and contribute to decisions because their opinions might be looked down on. Other board members also cited unresolved conflicts and misunderstanding between staff, management and the school boards which leads to board decisions and resolutions being rejected by staff of the school. Some senior management and board also cited interferences from external influencers, mainly GES in board decisions which demotivates them in managing the school.

“As a board member I help my school a lot. Challenges or issues between a teacher and a student, the head teacher sometimes call me to help solve them. I sometimes go to the head teacher and if some teachers are using cane that will make students lose interest in school, I intervene. If there is something going wrong, I meet the head and we discuss the way forward”.

“I really like education so sometimes when I visit the school and teachers are not in class, I go to the classrooms and ask the students questions. I interact with them to find out their interest. I sometimes take their timetable to check and follow up to find out why the teacher did not show up”.

“Yes, we were not trained but since I was appointed as a board member, I took it upon myself to help the school improve the WASSCE results of the students. I supplied past questions, I visit as and when possible, to interact the head teacher and staff. I even go to some of the classroom to observe how the teachers are teaching. I know this school will be a great school one day”.

“As the school head, I supervise and monitor the work as well as seek the welfare of both my students and staff, manage the school’s finances and check on accountants for the judicious use of the school’s financial resources, take proper care of the school properties and ensure effective teaching and learning is done”.

“If you look at all the buildings here, except these two storey buildings and the female dormitory, it is the board that played an active role to get the buildings constructed. Same for the fence wall. We ensure that the head teacher is performing his duty well. There previous head was a drunkard, we organized a disciplinary meeting and had him suspended. It is our duty to ensure that the school is well governed. That is what we are doing”.

“All their budgetary issues, disciplinary issues whether it is teachers or students we are briefed, any project coming in, any developmental project, whatever they want, we ensure that they get it. For instance, the board chair, PTA chair and I met the vice president of Ghana on the development of the school. We lobby to ensure that the school gets its fair share of the national cake”.

“I go round the classrooms to see what is happening, I advise students on what to do, how to study and handle themselves to pass their exams. I also advise them on their learning capabilities, how they should learn and succeed. I monitor my teachers and ensure that they are always around to teach”.

“Here was a building with bad roofing, it was a big problem for me. I complain to the head teacher that even if it’s going to be 10 bags of cement, but it is all about money. Sometimes, you will notice that there is a broken chair etc. I get scared. The school lacks funds to address issues”.

“As the headmaster my role involves administrative work, overall supervision of academic, domestic and administrative activities in the school”.

“One thing that worries me a lot is how stakeholders compare our school with others. Even though this school is not an excellent school, I believe that in some years to come, the school will rub shoulders with the likes of Opoku Ware SHS and Prempeh SHS (category A schools)”.

“ I can’t tell you that I need training in this way or that way. I am prepared to be trained in any area/topic the office wants to train me. I have devoted my time for the school, so anything that they want to train me or want to educate me, I will come and learn so that I can work on, I will work on it to work”.

“Learning is an ongoing thing so we can never say that we are okay with whatever we have, even new management staff have come on board. If we get the management training, it will be of help”.

“If I consider my position as representing the nonteaching staff, I have a low rank; the one representing the teachers is higher than me. When we meet, the municipal director, the regional director, director general, elders of the community and assembly man make up the board. Because of such personalities as part of the board, if care is not taken, you wouldn’t make any contribution till the end of the meeting. I remember for once, I told my head mistress that there was an issue I have to put forward when we meet and she told me that, she even has a lower rank when they meet because when the regional director and municipal director are around, there is that level so the ability to make contributions are low”.

3.9.2 SETP schools with an inclusive, gender-sensitive environment for staff and students

This indicator measures the extent to which SETP schools provide an inclusive and gender-sensitive environment for staff and students. In computing this indicator, responses from school management (including review of documentation) were triangulated with data from teacher lesson observations and student self-assessment questionnaires. For a school to successfully meet the criteria required for the indicator, a minimum score of 60 percent from the triangulated results is required.

The results revealed that 2 of the 12 SETP schools met the criteria to be classified as having an inclusive, gender-sensitive environment for staff and students.

Box 3.5 Criteria for measuring inclusive, gender-sensitive environment

- ❖ Dedicated spaces/admission for students from disadvantaged backgrounds
- ❖ Transparent reporting system for harassment
- ❖ Recourse and reprimand for harassment
- ❖ Procedure in place to provide an inclusive and gender-sensitive environment for staff and students
- ❖ Health and safety procedures in place for staff and students
- ❖ Gender-responsive infrastructure like washrooms and changing rooms
- ❖ Infrastructure in the school accessible to all students (including those with special education needs)

Tables 3.27 presents the results from head teachers on the competencies for this indicator. While almost half of the head teachers scored themselves high on ensuring that “health and safety procedures are in place for staff and students” and the presence of “gender-responsive infrastructure like washrooms and changing rooms”, the triangulated scores from the students (table 3.28) and teachers (table 3.29) are low. This accounts for the low overall score for the indicator. For instance, only 4.5 percent of the students agree that the “infrastructure in their schools is accessible to all students”.

Table 3.27 Competency scores for an inclusive, gender-sensitive environment, by head teachers (%)

Competencies	Overall
Health and safety procedures in place for staff and students,	58.3
Gender-responsive infrastructure like washrooms and changing rooms etc.	58.3
A transparent reporting system for harassment	58.3
Recourse and reprimand for harassment	41.7
Infrastructure in the school accessible to all students (including those with special education needs)	50.0
Dedicated spaces/admission for students from disadvantaged backgrounds	41.7
Procedure in place to provide an inclusive and gender-sensitive environment for staff and students	33.3

Table 3.28 Competency scores for inclusive, gender-sensitive environment for staff and students, student triangulation results (%)

Competencies	Overall
Heard of actions being taken against someone who abused a student in your school	30.5
Aware of any channels in place to report sexual harassment and gender-based violence in the school	30.3
Aware of the existence of dedicated officers assigned to oversee reports on sexual harassment and gender-based violence in the school	28.2
Course structures promote GESI	17.9
Classroom practices are GESI responsive	17.9
Teaching and learning materials (e.g., blackboard writing and drawing charts, posters, maps, diagrams, graphs, photographs) are GESI responsive	5.1
Infrastructure in the school is accessible to all students (including those with special education needs)	4.5

Table 3.29 Competency scores for inclusive, gender-sensitive environment for staff and students, teacher triangulation results (%)

Competencies	Overall
Creates a safe, encouraging learning environment	34.1
Understands how children develop and learn in diverse contexts and applies this in their teaching	15.1
The teachers apply all teaching methods equally to female and male students.	14.5
Teacher use of age and grade(s) appropriate strategies to enact in the lesson	10.1
Identifies and remediates learners' difficulties or misconceptions, referring learners whose needs lie outside the competency of the teacher	2.8
Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes.	2.8
Pays attention to all students, especially girls and students with SEN, ensuring their progress.	2.2
The teacher uses gender responsive strategies to challenge gender roles and gender norms.	0.0

Tables 5.6 to 5.8 in annex 5.4 further disaggregate the competency scores by schools. While the head teachers scored their schools high on most the criteria, the students and teachers were more critical and scored their schools low. As an example, the leadership at one school reported having a “transparent reporting system for harassment” and establishing “recourse and reprimand for harassment”. In contrast, less than a third of students at this school were aware of any channels in place to report sexual harassment and gender-based violence in the school or had heard of actions being taken against someone who abused a student in your school.

The leadership of several SETP schools indicated that the “infrastructure in the school is accessible to all students (including those with special education needs)”, not a single student from these schools agreed (please see table 5.6 to 5.8 in annex 5.4).

3.9.2.1 Qualitative insight on how boards and senior management are ensuring an inclusive, gender-sensitive environment for staff and students.

Generally, board members and senior management have a fair understanding of GESI and how to ensure an inclusive gender-responsive environment. The board members and senior management staff indicated that they make efforts to elect male and female school prefects to ensure balance in leadership among students. They further added that they made provision for washrooms for both male and female staff and students in their schools.

When the issue of recruitment and female student enrolment came up, the board and senior management were quick to state that they do not have the authority to recruit teachers. They noted with concern the disparity in the number of male and female teachers in the school but added quickly that all they can do is to make a request to the regional education office. Some also indicated that most of the female teachers that get posted to their school do not report or seek transfer because of the location of the school.

With regard to the admission of students, the schools' leaders mentioned that this is handled at the national level. A few head teachers indicated that in addition to the students that are posted from the national level, they are also allowed to admit few students from their locality. They indicated that they use that opportunity to admit female students.

When the schools' management was asked how they respond to sexual harassment, some indicated that they are guided by the GES code of conduct to set up a committee to investigate the issue and sanction the offenders.

“When we talk about the school environment, washrooms have been set setup such that both gender have a convenient place. Our dormitories are well structured for both genders. We have a few structures meant for students with special needs. Walkways have been structured for students with special need”.

“Sometimes when the males' uniforms are ready while the females' uniforms are not ready, I consult with the head to know the reason. You know...when you are an elder, you take care of everyone. So, with regards gender and inclusion, your eagerness in helping the males when they have issues should be the same for the females also. I do not have to be partial. I attend to the needs of the males and the females. If the males have TLMs and the females don't have, I have to make sure there is equality for all to have. I make sure I treat them equally. Even if the inequality is coming from a teacher, I make sure it is checked”.

“We met with the staff and informed them that when they want to appoint prefects, they should make sure that both boys and girls are appointed as prefects”.

“I just had a discussion with the head mistress about issues of gender in the school. Sometimes, when these female teachers get posted to the school, they don't even want to come, so once they are not here what do you do?”

“We know how sensitive the issue of gender, inclusion and ensuring a safety environment is for both gender especially the girls and female teachers. That is why we try to accommodate the girls on campus and provide rooms for some female teachers to monitor them. There is also a security man here to safeguard them. But we need more dormitories for the girls”.

“In terms of the teachers, we encourage management to give female teachers equal opportunities just like the male teachers. We inform them to provide them with all the TLMs that they need and help them get accommodation closer to the school”.

“When there is an issue of sexual harassment, we use the GES code of conduct, we set up a committee to investigate. Not too long ago, a report was made to the senior house mistress and the disciplinary committee met, and the students involved were suspended, parents were brought in. The students were made to sign a bond of good behaviour after serving their suspension”.

3.9.3 SETP schools providing (a) career guidance; (b) psychosocial and emotional counselling services; (c) academic counselling; and (d) have a link with industry and tertiary institutions

This indicator measures the percentage of SETP schools providing various services to students (see box 3.6). Head teachers completed a questionnaire asking them whether their schools have full- or part-time counsellors (or counsellors that combine their counselling responsibilities with a full teaching workload) that routinely and regularly provide one-on-one:

Box 3.6 Criteria for measuring provision of services

- ❖ SETP schools providing career guidance, psychosocial and emotional support, and academic counselling to students
- ❖ SETP schools with trained and dedicated officers to provide counselling support services to students
- ❖ SETP schools provide evidence of links with industries
- ❖ SETP schools to provide evidence of links with tertiary institutions

(a) Career guidance, which is provided to students to help them acquire the knowledge, information, skills, and experience necessary to identify career options and narrow them to make a career decision.

(b) Psychosocial and emotional counselling services that support the process of overcoming environmental, emotional, or social concerns; and,

(c) Academic counselling, which helps students acquire and apply effective and efficient study skills with the intention of improving students' academic performance.

The results were triangulated with students' responses to parallel items¹³. Further follow-up was done to verify the availability of the services at the schools. Head teachers were also asked about the number of formal and active linkages with (a) industry and (b) tertiary institutions.

From table 3.30 below, more than half (66.7 percent) and half of the SETP schools provide academic counselling and career guidance respectively. Only one SETP school (Lambussie Community Day SHS) provide psycho-social and emotional counselling services. Also, none of the SETP schools have links with industries and tertiary institutions.

Table 3.30 Percentage of SETP schools providing services to their students (%)

	Total
SETP schools providing career guidance	50.0%
SETP schools providing psycho-social and emotional counselling services	8.3%
SETP schools providing academic counselling	66.7%
SETP schools with link with industry and tertiary institutions.	0.0%

¹³ Students were asked to agree or disagree, using a Likert scale, with the following (or similar) statements: (a) counselling services at my school are a priority in supporting (i) my educational progress and (ii) my emotional well-being and (b) the career guidance I have received at my school has helped me make a decision about what I should do with my life in terms of further education or the world of work.

3.9.4 Boards and senior management of SETP schools demonstrating understanding and implementation of gender and inclusion practices

This indicator assesses the extent to which boards of SETP schools and senior management teams demonstrate understanding and implementation of a strategy on gender and inclusion (see box 3.7). In computing this indicator, the study conducted key informant interviews with the boards of SETP schools and triangulated the results with senior management teams.

Seventeen percent of the boards and senior management of SETP schools demonstrated understanding and implementation of strategies on gender and inclusion.

Table 3.31 provides the competency scores used to measure the indicator. As shown in the table, a majority of the boards and senior management teams of the SETP schools obtained low scores on GESI responsiveness of TLMs and not having GESI targets in their SIP/SPPP.

Box 3.7 Criteria for measuring gender and inclusion strategies

- ❖ SETP schools have GESI targets in SIP/SPPP
- ❖ Infrastructure in school is accessible to all students
- ❖ TLMs are GESI responsive
- ❖ All school infrastructure is GESI responsive
- ❖ School syllabi promote GESI
- ❖ Assessment methods take GESI issues into consideration
- ❖ Teachers are skilled in addressing

Table 3.31 Competencies on boards' understanding and implementing strategy on gender and inclusion (%)

Competencies	Overall
Infrastructure in school is accessible to all students	58.3
School infrastructure is GESI responsive	58.3
Syllabi promote GESI	41.7
Assessment methods/ approaches take GESI issues into consideration	33.3
Teachers are skilled in addressing GESI issues	25.0
TLMs are GESI responsive	16.7
SETP schools have GESI targets in SIP/SPPP	16.7

Table 5.9 in annex 5.4 disaggregates the results for each of the 12 SETP schools. Majority of SETP schools self-reported not undertaking most of the competencies especially Benso SHTS, Ziavi Community SHTS, Walewale Vocational/Technical and Tatala E.P. Agricultural SHS.

3.10 Student Behaviour

Table 3.32 presents the specific activities students agree or strongly agree are acts of indiscipline. Based on the results, a majority of students perceive their colleagues to demonstrate acts of indiscipline when these colleagues are “messing about while they are trying to learn”. Most students also consider noise making as an act of indiscipline.

Table 3.32 Activities students agree/strongly agree are acts of indiscipline (%)

	Male	Female	Overall
Colleague students messing about when I am trying to learn	73.2	70.6	71.8
Students making noise	70.5	70.1	70.3
Students who leave school without permission	70.7	68.9	69.7
Students who get the whole class into trouble	70.5	68.7	69.5
Fighting	67.6	70.1	68.9
Students using bad language	70.1	65.9	67.8
Students who skip class	67.2	67.1	67.1
Bullying	65.9	65.9	65.9
Students who take your stuff	64.9	66.6	65.8
Students who argue with the teacher	65.9	64.5	65.2
Sexual harassment	66.3	63.7	64.9
Things being thrown around the room	63.2	61.5	62.2
Name calling	58.0	60.6	59.4
Students who use smartphones and other electronic devices in class	57.5	55.8	56.6

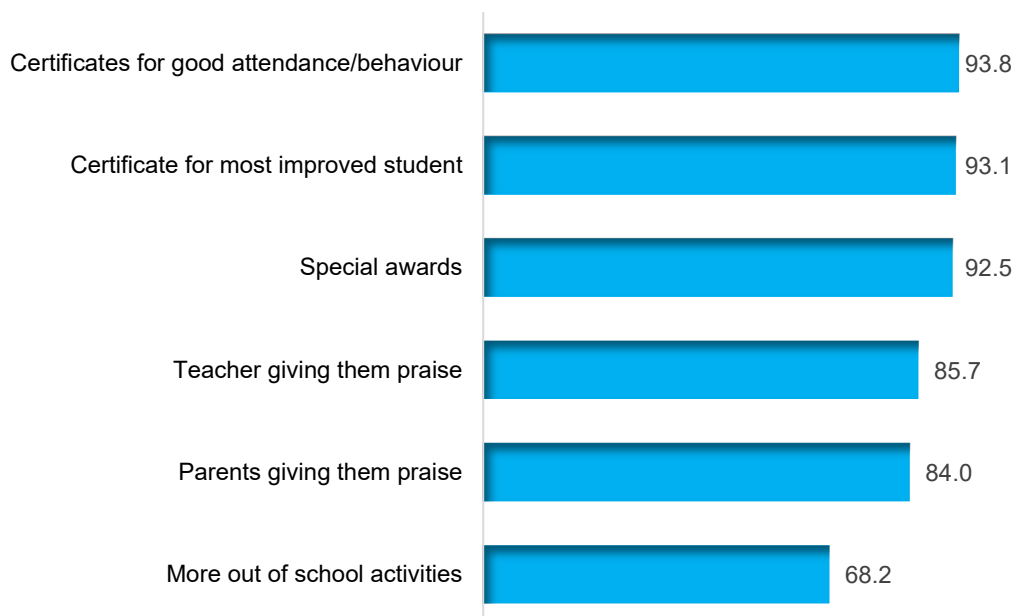
Students were also asked why they think students behave badly in school. Based on the results in table 3.33, most students agree that students display acts of indiscipline through bad influence.

Table 3.33 Students' perception of why other students behave badly (%)

	Male	Female	Overall
They hang around with students who behave badly	69.3	67.8	68.5
They do not like school	65.5	66.1	65.8
They are showing off in front of their friends	65.3	65.2	65.3
They find the school challenging	64.2	65.1	64.7
They have problems at home	63.2	64.4	63.8
They are angry about something	59.8	60.9	60.4
They do not like the teachers	59.0	58.4	58.6
The teachers do not listen to their side of the story	59.0	58.4	58.6
They get a bad comment on their report	52.3	56.6	54.7
They get low scores in assessments	52.1	54.2	53.3
They stay up too late	51.1	49.9	50.4
To revenge the perceived bad treatment meted to them by teachers	47.3	45.4	46.3
The teachers cannot control them	44.4	47.9	46.3

For students to improve upon their bad behaviours, over 90 percent recommend the award of certificates to recognise good behaviour (see figure 3.6). They also recommend awarding certificates to the most improved students in learning outcomes. A few also recommended having a scholarship scheme for students who behave and perform well.

Figure 3.6 Perceived approaches that can be used to improve discipline the SETP schools by students (%)



4.0 Discussion & implication of findings for policy and practice

4.1 Discussion

The data provided in this report are disheartening. With the possible exception of Bolgatanga SHS, the single category A school, the educational system is failing to meet the needs of thousands of students. Their performance in each of the four assessment areas demonstrates limited proficiency in subjects that are vital to the students' ability to pursue further education or to move successfully and productively to the world of work.

Many students were unable to demonstrate even modest proficiency in core subjects. In several areas as well, year 3 students performed at the same – or even at a lower level – than year 2 students. In other words an additional year of study did not improve performance. This suggests that a year of opportunity to gain additional skills and knowledge has been wasted on some or perhaps even many students.

The responsibility for this situation is widely shared. When students begin their secondary education, many are ill-prepared, so teachers are forced to focus on remediation of essential skills rather than focusing on appropriate grade-level topics. Students who cannot read or comprehend what is being taught are likely to be bored and find it difficult to develop an interest in what is being taught and why. This issue is especially germane to science literacy but is also evident with literacy in reading and mathematics.

The results for 21st century skills are similarly discouraging. Less than 4 percent of SETP students are either proficient or highly proficient in these skills compared with nearly 75 percent of students who are in the two lowest levels of proficiency. The SETP schools (and probably many others in Ghana) are producing graduates who will struggle in their quest to lead productive lives and to contribute to Ghana's social, economic, and political development.

Many students share some of the responsibility for their poor performance. Absenteeism is consistently high. Thirty to forty percent of students in four schools were absent on the day when their peers completed the assessment instruments. Skipping classes seems to be common. Had these “skippers” been included in the assessments, schools' scores could well have been lower than those reported. Among students who do attend regularly, indiscipline is a recurring problem.

Teachers in SETP schools are commonly demoralized and lack motivation. They believe their efforts are underappreciated, their remuneration too low, the expectations for their performance and the amount that should be taught are too high, and the basis for the evaluation of their performance dependent on students' performance on standardized tests. Teachers commonly find themselves with students without textbooks and without essential teaching and learning materials. These conditions make it difficult to teach effectively. It is not surprising, therefore, to find that many

teachers feel they have more responsibilities than they can manage and would like to leave the profession. Nearly 60 percent of teachers with the most experience do not want to remain in their current positions.

ICT provides an example of why teachers might be frustrated with what is expected of them. They are expected to incorporate ICT and digital technologies into their classrooms but cannot do so because their schools typically suffer from insufficient equipment and the absence of electricity to power this equipment. Even if they do have access to the equipment, many teachers do not yet know how to use it.

In some schools, teachers are not properly trained for the subjects they teach, and their pedagogical skills may be weak. In such circumstances, a teacher's enthusiasm for the subject may be limited, rote learning will be encouraged and motivating students' interest is a challenge. The challenges are exacerbated when schools face teacher absenteeism and a lack of professionalism among some teachers.

The NTS represent an admirable effort to improve the quality of instruction in Ghana's schools. The standards identify what teachers are expected to know and be able to do. Despite this expectation, many teachers are not aware of the NTS. Among those with copies of the standards, many teachers have not yet read them. For those who do have the NTS, many do not reflect the standards in their teaching.

Given the results of the assessments, school heads and members of school boards face a herculean task. Interviews with these leaders suggest that many are conscientious and committed to improve the quality of education in their schools. Unfortunately, there is a seeming disconnect between good intentions and desired results. Of the 12 SETP schools, in only one did the heads and members of the school board demonstrate an understanding of their roles and responsibilities. None of the school boards and senior management teams have developed strategies to support improvements in students' performance or professional development of teachers.

At the national level, the GES and NaCCA are to be commended for the commitment to enhancing the quality of education in Ghana. Doing so will be difficult, however, in the absence of sufficient resources and a substantial increase in in-service training for teachers, schools' leaders, and school board members.

Finally, some people might assert that Ghana's Free Senior High School policy, in effect since 2017, has overwhelmed the ability of secondary schools to accommodate and suitably educate the larger enrolments that have occurred as a result of the policy. This need not be the case. According to the OECD, Brazil, Indonesia, Mexico, Turkey and Uruguay enrolled many more 15-year-olds in secondary education between 2003 and 2018 without sacrificing the quality of the education provided¹⁴.

¹⁴ OECD, PISA 2018 Results (Volume 1): What Students Know and Can Do

4.2 Recommendation for policy and practice

No shoe fits all feet, and this is also true for approaches to enhance the achievement of educational outcomes in the SETP schools and, by extension, all public secondary schools in Ghana. There is no silver bullet that can be applied universally; each school has a unique set of issues and challenges that reflect their diverse circumstances. Some schools are new with significant infrastructure constraints. Other, older schools experience problems with leadership and declining academic performance.

Despite these differences, the data in this report clearly justify a holistic response that addresses all the shortcomings in the environment in which schools operate. Attention to teachers is necessary, but solutions that focus only on teachers will be insufficient and ignore other equally important issues.

The 12 SETP schools have agreed to develop and implement a school improvement plan (SIP). Upon approval of the plans by GES, each school will be eligible for a grant of up to GHS 100,000 to implement their plans and to achieve their objectives. Each plan must have at least four objectives, but no more than five. The first two objectives are the same for all schools:

- To improve the quality of leadership and management through the provision of structured and accredited leadership training for school management and school boards.
- To improve the quality and relevance of teaching and learning through the introduction of regular, structured professional learning community sessions for all teachers.

To accommodate differences among schools and to reflect local ownership of SIPs, schools can choose the additional objectives, which they have done. For example, nine schools have chosen objectives related to improved discipline among students and teachers and strengthened guidance and counseling. Five schools have chosen to increase teachers' access to practical teaching and learning resources and equipment. In total, the 12 SIPs include more than a dozen objectives.

Although each plan will be different, several share common objectives. At the end of the 18-month programme, knowing what caused any improvements in desired outcomes will be desirable, especially because SETP is intended as a pilot programme that may be extended to other secondary education institutions. Which of the objectives will be successful and lead to measurable improvements? The answer remains to be seen but efforts should be made to identify which interventions provide value for money and which are most and least efficient. For example, are there low-cost interventions with high pay offs versus high-cost interventions with few benefits? Answering this question will require both baseline data and measurable targets for outcomes (versus activities and outputs) and a system to validate the changes the schools claim at the end of the project. Under ideal circumstances, the SEPT schools

will be able to provide data on how much money was spent to address each objective. It would be a shame to end the programme without knowing what worked well (or not) and why.

As an illustration, if one believes that teachers are the key to higher levels of proficiency, then approaches that enhance their motivation and pedagogical skills are essential. Are there low-cost ways of doing so? For four schools their SIP objectives include efforts to create an award scheme to motivate teachers, students, and nonteaching staff. Increasing teachers' salaries and paying them on time offer another albeit more expensive approach.

To address the problem with too many poorly prepared students, MoE and the West African Education Council should revise the BECE to reduce the number of such students. Students who do not pass the examination might be retained in JHS for an additional year in a remedial programme that strengthens the skills necessary to succeed in SHS. Allowing ill-equipped students to enroll in secondary education institutions serves no one well, including such students, plus teachers, well-prepared students, and members of school boards.

5.0 Annexes

5.1 Report on agreed proficiency thresholds for student assessment



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5.2 Data-collection tools



final SETP tools.zip



Item_Framework_for_
Assessments.zip

5.3 Additional analysis

Table 5.1 Rotation matrix of 34 survey questions of teachers

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Uniqueness
Teaching is mentally draining.	-0.070	-0.050	0.532	0.024	0.492	-0.003	0.096	0.208	-0.075	-0.216	0.177	0.332
With the help of my colleagues, we can solve student issues	0.433	-0.007	0.099	0.446	0.235	-0.125	-0.068	-0.010	-0.027	0.124	-0.230	0.459
I feel exhausted at the end of the school day	0.236	-0.004	-0.051	0.035	0.737	0.003	0.040	-0.146	0.015	0.088	0.112	0.353
My pay as a teacher is insufficient to support my family	0.521	-0.087	-0.020	-0.055	0.213	0.102	0.176	0.118	-0.022	0.174	0.338	0.472
I feel fatigued when I get up in the morning and have to face another day at school	-0.083	0.186	0.040	0.059	0.529	-0.187	0.424	0.076	0.113	0.127	0.075	0.418
I have the ability to get parents involved in their children's education	0.104	0.081	0.053	0.042	0.047	0.158	-0.115	0.003	0.128	0.800	-0.059	0.278
I ask my colleagues for feedback.	0.084	-0.008	0.108	0.628	-0.021	0.085	0.030	0.081	-0.004	0.391	-0.026	0.418
With the help of my colleagues, we can identify innovative practices.	0.318	-0.028	0.057	0.484	-0.236	-0.329	0.118	0.173	-0.146	0.182	-0.107	0.388
As a teacher, I'm given more responsibilities than I can manage	0.038	0.092	0.052	0.043	0.116	-0.174	0.312	-0.042	0.554	0.341	0.232	0.367

Some teachers at my school want to transfer to another school	0.034	0.008	0.009	0.045	0.125	-0.069	0.036	-0.062	0.100	-0.074	0.807	0.305
I do not get paid on time.	-0.001	-0.185	-0.031	0.003	-0.021	0.122	-0.019	0.020	0.803	0.055	0.028	0.300
I can make my classroom a safe space for students, both emotionally and physically	0.227	0.068	0.617	-0.082	-0.055	-0.006	0.230	0.022	-0.191	0.197	-0.056	0.421
As a teacher, I am contributing positively to the lives of my students	0.715	0.050	0.027	0.021	0.021	-0.061	0.181	0.187	-0.043	0.100	-0.088	0.393
I feel energized when my class greets me each morning	0.345	0.085	0.151	0.091	0.060	0.140	0.071	0.612	0.083	0.035	0.034	0.430
If I had to choose again, I would still want to be a teacher	0.027	0.211	0.050	0.019	-0.366	-0.092	-0.534	0.349	0.071	0.164	0.163	0.344
My head teacher treat me with respect	0.063	0.826	-0.026	0.048	0.061	-0.005	-0.089	0.003	-0.209	0.045	0.038	0.252
My colleagues at school make work a fun place to be.	0.128	0.069	-0.013	0.087	-0.105	0.119	-0.040	0.747	-0.047	-0.026	-0.099	0.375
My head teacher praises me for my efforts in the school.	0.076	0.804	0.047	0.002	0.051	0.273	-0.037	0.103	-0.021	0.025	0.010	0.255
Parents value my work as a teacher	0.105	0.265	0.016	0.068	-0.038	0.659	-0.082	0.095	-0.012	0.203	-0.248	0.359
I plan lessons with a colleague.	-0.026	0.150	-0.039	0.748	0.085	0.173	-0.020	0.063	0.070	-0.150	0.142	0.327
I feel confident about my abilities as a teacher	0.630	0.052	0.182	0.087	-0.020	0.201	0.051	-0.098	-0.106	0.072	0.025	0.490

If a student does not remember information in a previous lesson, I would know how to help them remember	0.663	0.164	0.253	0.044	0.038	0.141	-0.010	0.108	0.049	-0.050	0.055	0.427
When a student gets a better grade than he or she usually gets, it is because I found a better way	0.457	0.198	0.384	0.185	-0.132	0.227	0.188	-0.138	0.228	-0.031	-0.024	0.394
If a student in my class is undisciplined, I know some techniques to direct him or her	0.397	0.071	0.510	0.027	-0.059	0.073	-0.127	0.064	0.153	0.077	0.035	0.517
Every teacher can continue to improve their practice throughout their career	0.600	0.100	0.135	0.082	-0.077	-0.025	-0.037	0.093	-0.179	0.224	0.348	0.386
I can get through to even the most difficult or unmotivated students	0.462	0.008	0.453	0.238	-0.153	0.234	-0.073	-0.030	-0.046	0.097	0.238	0.372
I can motivate students who show low interest in school.	0.450	0.081	0.375	0.179	0.174	-0.040	-0.281	0.079	0.160	-0.203	-0.168	0.407
I can influence some of the decisions that are made in the school.	-0.065	0.560	0.308	0.090	-0.269	-0.094	0.090	0.107	0.188	0.116	-0.140	0.410
I can get students to work in groups or pairs	0.697	0.089	-0.020	0.026	0.081	-0.058	-0.074	0.327	-0.003	0.055	0.014	0.381
I ask my supervisor for feedback	0.266	0.459	0.051	0.267	-0.250	0.139	0.017	-0.109	0.223	-0.065	0.010	0.497
I can help students overcome some	0.106	0.218	0.444	0.062	0.069	-0.067	-0.282	-0.067	0.202	0.242	-0.146	0.527

difficult home and community conditions												
Teachers in my schoolwork closely with the district SISOs (formerly circuit supervisors)	-0.029	0.102	0.044	0.098	-0.028	0.743	0.056	0.130	0.090	0.070	0.060	0.387
If I were offered another job outside the teaching profession at about the same or a slightly higher salary, I would accept that offer	0.069	-0.085	0.078	0.019	0.044	-0.013	0.732	0.062	0.095	-0.112	0.091	0.411
As a teacher, I am contributing positively to the lives of my students.	0.712	-0.056	-0.013	-0.012	0.108	-0.098	-0.085	-0.052	0.161	-0.044	-0.067	0.426
Eigenvalues	4.204	1.548	1.313									
Percentage of total variance	0.4888	0.18	0.1526									
Number of test measures	8	2	2									

*Factor loadings ≥ 0.5

Table 5.2 Multiple linear regression for teacher motivation

Characteristics	Coefficient	P-value	95% confidence interval
Sex			
<i>Male</i>	Reference		
<i>Female</i>	0.616	0.073	-0.154, 3.386
Category			
<i>A</i>	Reference		
<i>B</i>	1.794	0.289	-1.532, 5.119
<i>C</i>	2.192	0.132	-0.662, 5.046
Years of Teaching			
<i>Less than 5 years</i>	Reference		
<i>5 to 10 years</i>	-0.468	0.638	-2.426, 1.489
<i>More than 10 years</i>	0.527	0.597	-1.433, 2.488

Table 5.3 Teacher NTS lesson observation competencies disaggregated by SETP schools (%)

	Lambussi Communit y SHS	Nabango Communit y SHS	Gambaga Girls SHS	Walewale Vocational/Technica l	Zabzugu SHS	Tatale E.P. Agricultural SHS	Bolgatang a SHS	Ziavi Communit y SHTS	Ogyeedo m Communit y SHTS	Benso SHTS	Bosome SHTS	Mangoas e SHS
Teacher demonstrates effective, growing leadership qualities in the classroom	35.0	35.3	39.7	38.1	40.4	45.0	38.1	31.9	34.4	35.8	44.5	33.1
Teacher exhibits ethical teacher Codes of conduct during the lesson delivery NTS	74.2	64.2	65.0	76.3	72.6	75.8	72.1	65.8	76.3	66.7	72.7	65.8
Teacher use of age and grade(s) appropriate strategies to enact in the lesson	45.0	20.6	23.3	29.4	37.8	41.7	27.2	21.7	40.6	32.8	53.1	25.0
Understands how children develop and learn in diverse contexts and applies this in their teaching	46.7	24.4	33.3	38.3	46.8	47.2	24.4	23.9	38.9	35.0	59.4	38.9
Creates a safe, encouraging learning environment	63.1	58.9	70.0	73.1	59.9	66.9	69.2	50.8	70.8	57.5	66.4	50.3
Employs a variety of instructional strategies that encourage student participation and critical thinking	30.6	21.1	22.4	29.7	25.6	23.1	23.2	19.3	29.2	27.1	39.1	25.0

Pays attention to all students, especially girls and students with Special educational needs (SEN), ensuring their progress.	26.9	24.7	15.8	26.1	20.8	33.9	24.4	15.6	29.2	32.8	37.2	18.1
Explains concepts clearly using examples familiar to students	29.0	22.3	24.0	37.0	20.0	23.7	14.7	19.0	31.3	30.7	30.9	15.0
Produces and uses a variety of teaching and learning resources that enhance learning, including ICT.	17.3	13.3	15.5	18.3	14.5	13.3	11.1	14.2	12.9	14.2	18.5	14.2
Uses a variety of assessment modes during teaching to support learning.	33.7	16.9	20.9	20.9	24.8	22.6	18.7	13.0	23.7	23.7	36.6	18.7
Teacher listens to students and gives constructive feedback.	64.8	58.6	62.6	63.8	64.8	61.7	66.0	44.3	62.1	55.0	63.2	50.7

Table 5.4 Teachers' competencies on usage of ICT and digital technologies during their lesson by SETP schools (%)

	Lambusie Community Day SHS	Nabangon Community SHS	Gambaga Girls SHS	Walewale Vocational/Technical	Zabzugu SHS	Tatale E.P. Agricultural SHS	Bolgatanga SHS	Ziavi Community SHTS	Ogyeedom Community SHTS	Benso SHTS	Bosome SHTS	Mangoase SHS
Relevance of ICT to Curriculum and topic taught	24.2	6.7	0.0	5.8	5.8	0.0	0.8	5.0	10.8	16.7	18.8	10.0
Teacher uses digital technology to support learning in a multitude of ways, a hands-on approach for learners	9.2	1.5	0.0	1.3	3.3	2.2	0.0	0.0	1.2	2.3	5.8	1.5
Gives appropriate resources to students with special needs	21.7	3.3	6.7	0.0	0.0	0.0	3.3	3.3	25.0	25.0	32.8	20.0
Produces and uses a variety of teaching and learning resources that enhance learning, including ICT.	12.8	3.9	1.1	6.1	3.8	0.0	0.0	2.8	5.0	8.3	5.7	5.6

Table 5.5 Teachers' competency scores on GESI-responsive pedagogies by SETP schools (%)

	Lambusie Community Day SHS	Nabango Community SHS	Gambaga Girls SHS	Walewale Vocational/Technical	Zabzugu SHS	Tatale E.P. Agricultural SHS	Bolgatanga SHS	Ziavi Community SHTS	Ogyeedom Community SHTS	Benso SHTS	Bosome SHTS	Mangoase SHS
The teachers applies all teaching methods equally to female and male students.	55.0	47.5	18.9	48.6	47.1	60.6	58.6	39.7	45.8	45.0	58.3	43.3
The teachers uses gender responsive strategies to challenge gender roles and gender norms.	18.8	1.3	6.3	8.8	10.6	0.8	5.4	14.2	7.5	8.3	32.0	12.9
Creates a safe, encouraging learning environment	63.1	58.9	70.0	73.1	59.9	66.9	69.2	50.8	70.8	57.5	66.4	50.3
Pays attention to all students, especially girls and students with Special educational needs (SEN), ensuring their progress.	26.9	24.7	15.8	26.1	20.8	33.9	24.4	15.6	29.2	32.8	37.2	18.1
Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes.	22.4	17.1	13.3	14.0	24.5	24.5	14.5	12.9	26.4	27.4	39.5	15.2
Understands how children develop and learn in diverse contexts and applies this in their teaching	46.7	24.4	33.3	38.3	46.8	47.2	24.4	23.9	38.9	35.0	59.4	38.9

Identifies and remediates learners' difficulties or misconceptions, referring learners whose needs lie outside the competency of the teacher	24.4	15.6	19.4	17.2	28.2	28.3	21.1	7.2	23.3	30.0	29.7	21.1
Teacher use of age and grade(s) appropriate strategies to enact in the lesson	45.0	20.6	23.3	29.4	37.8	41.7	27.2	21.7	40.6	32.8	53.1	25.0

Table 5.6 Competency scores for inclusive, gender-sensitive environment for staff and students, head teacher results by SETP schools

	Benso SHTS	Bolgatan ga SHS	Bosome SHTS	Gambaga Girls SHS	Lambussie Community Day SHS	Mangoase SHS	Nabango Community SHS	Ogyeedom Community SHTS	Tatale E.P. Agricultural SHS	Walewale Vocational/Technical	Zabzugu SHS	Ziavi Community SHTS
Dedicated spaces/admission for students from disadvantaged backgrounds	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	No	No
Transparent reporting system for harassment	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	No	Yes	No
Recourse and reprimand for harassment	No	Yes	Yes	Yes	No	No	Yes	No	No	Yes	No	No
Procedure in place to provide an inclusive and gender-sensitive environment for staff and students	No	Yes	Yes	Yes	No	No	No	No	Yes	No	No	No
Health and safety procedures in place for staff and students?	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	No
Gender-responsive infrastructure like washrooms and changing rooms etc	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	No
Infrastructure in the school accessible to all students (including those with special education needs)	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No

Table 5.7 Competency scores for inclusive, gender-sensitive environment for staff and students, teacher triangulation results by SETP schools (%)

Competencies	Lambus ie Communi ty Day SHS	Nabango Communi ty SHS	Gambaga Girls SHS	Walewale Vocation al/Techni cal	Zabzugu SHS	Tatale E.P. Agriculu ral SHS	Bolgatan ga SHS	Ziavi Communi ty SHTS	Ogyeedo m Communi ty SHTS	Benso SHTS	Bosome SHTS	Mangoas e SHS
Creates a safe, encouraging learning environment	46.7	13.3	20.0	40.0	38.5	60.0	53.3	6.7	46.7	33.3	31.3	20.0
Understands how children develop and learn in diverse contexts and applies this in their teaching	20.0	0.0	26.7	6.7	30.8	20.0	0.0	6.7	13.3	13.3	31.3	13.3
The teachers apply all teaching methods equally to female and male students.	20.0	6.7	0.0	40.0	7.7	33.3	13.3	0.0	0.0	13.3	25.0	13.3
Teacher use of age and grade(s) appropriate strategies to enact in the lesson	20.0	0.0	0.0	13.3	15.4	13.3	6.7	0.0	20.0	6.7	25.0	0.0
Identifies and remediates learners' difficulties or misconceptions, referring learners whose needs lie outside the competency of the teacher	0.0	0.0	0.0	0.0	15.4	13.3	0.0	0.0	0.0	6.7	0.0	0.0

Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3	18.8	0.0
Pays attention to all students, especially girls and students with Special educational needs (SEN), ensuring their progress.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	18.8	0.0
The teacher uses gender responsive strategies to challenge gender roles and gender norms.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 5.8 Competency scores for inclusive, gender-sensitive environment for staff and students, student triangulation results by SETP schools (%)

Competencies	Lambusie Community Day SHS	Nabango Community SHS	Gambaga Girls SHS	Walewale Vocational/Technical	Zabzugu SHS	Tatale E.P. Agricultural SHS	Bolgatanga SHS	Ziavi Community SHTS	Ogyeedom Community SHTS	Benso SHTS	Bosome SHTS	Mangoase SHS
Heard of actions being taken against someone who abused a student in your school	31.1	25.6	31.1	30.0	19.2	5.6	63.3	26.7	18.9	27.8	46.9	37.8
Aware of any channels in place to report sexual harassment and gender-based violence in the school	40.0	30.0	26.7	25.6	26.9	21.1	44.4	27.8	21.1	25.6	38.5	34.4
Aware of the existence of dedicated officers assigned to oversee reports on sexual harassment and gender-based violence in the school	32.2	18.9	34.4	22.2	24.4	8.9	45.6	32.2	23.3	22.2	47.9	24.4
Course structures promote GESI	26.7	6.7	33.3	20.0	23.1	20.0	13.3	20.0	0.0	6.7	31.3	13.3
Classroom Practice are GESI responsive	33.3	6.7	46.7	33.3	15.4	26.7	6.7	0.0	0.0	6.7	25.0	13.3
Teaching and learning materials (TLMs e.g., blackboard writing and drawing Charts, Posters, Maps, Diagrams, Graphs, Photographs) are GESI responsive	0.0	0.0	33.3	13.3	7.7	0.0	0.0	0.0	0.0	0.0	0.0	6.7

Infrastructure in the school is accessible to all students (including those with special education needs)	0.0	0.0	20.0	0.0	23.1	6.7	0.0	6.7	0.0	0.0	0.0	0.0
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Table 5.9 Competencies on boards understanding and implementing strategy on gender and inclusion, by SETP schools (%)

	Benso SHTS	Bolga-tanga SHS	Bosome SHTS	Gambaga Girls SHS	Lambusie Community Day SHS	Mangoase SHS	Nabango Community SHS	Ogyeedom Community SHTS	Tatale E.P. Agricultural SHS	Walewale Vocational/Technical	Zabzugu SHS	Ziavi Community SHTS
SETP schools have GESI targets in SIP/SPPP	No	No	Yes	No	No	No	Yes	No	No	No	No	No
infrastructure in the school accessible to all students (including those with special education needs)	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No
TLMs are GESI responsive	No	No	No	Yes	No	No	No	Yes	No	No	No	No
School infrastructure is GESI responsive	No	No	No	Yes	Yes	Yes	No	No	Yes	No	Yes	No
Syllabi promote Gender Equality and Social Inclusion	No	No	Yes	No	No	Yes	Yes	Yes	No	No	Yes	No
Assessment methods/ approaches take GESI issues into consideration	No	Yes	No	Yes	No	No	No	Yes	No	No	Yes	No
Teachers are skilled in addressing GESI issues	No	No	No	Yes	No	No	No	Yes	No	No	Yes	No

Table 5.10 SETP schools demonstrating understanding and implementation of strategies on gender and inclusion (%)

	SETP schools demonstrated understanding and implementation of strategies on gender and inclusion.
Benso SHTS	35.7
Bolgatanga SHS	50.0
Bosome SHTS	50.0
Gambaga Girls SHS	71.4
Lambussie Community Day SHS	28.6
Mangoase SHS	28.6
Nabango Community SHS	28.6
Ogyeedom Community SHTS	64.3
Tatale E.P. Agricultural SHS	42.9
Walewale Vocational/Technical	50.0
Zabzugu SHS	71.4
Ziavi Community SHTS	14.3

Table 5.11 Boards and senior management teams of SETP schools that demonstrate understanding of their roles and responsibilities, results by SETP schools (%)

	SETP school demonstrating their roles and responsibilities
Benso SHTS	0.0
Bolgatanga SHS	8.3
Bosome SHTS	29.2
Gambaga Girls SHS	25.0
Lambussie Community Day SHS	54.2
Mangoase SHS	20.8
Nabango Community SHS	12.5
Ogyeedom Community SHTS	8.3
Tatale E.P. Agricultural SHS	0.0
Walewale Vocational/Technical	0.0
Zabzugu SHS	29.2
Ziavi Community SHTS	8.3