

Annual Evaluation Survey

of

TRANSFORMING SENIOR HIGH SCHOOL EDUCATION, TEACHING
AND LEARNING (T-SHEL) PROGRAMME, Dec 2022

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ACRONYMS AND ABBREVIATIONS

B.Ed.	Bachelor of Education
BECE	Basic Education Certificate Examination
CHPS	Community Health-Based Planning Services
CoE	Colleges of Education
FGDs	Focus Group Discussions
FoI	Fidelity of Implementation
FSHS	Free Senior High School
GES	Ghana Education Service
GESI	Gender, Equality and Social Inclusion
GNPC	Ghana National Petroleum Commission
GTEC	Ghana Tertiary Education Commission
ICT	Information And Communication Technology
IEF	Inspection Evaluation Framework
IQR	Inter-Quartile Range
JHS	Junior High School
KIIs	Key Informant Interviews
KMO	Kaiser-Mayer-Olkin
KNUST	Kwame Nkrumah University of Science and Technology
MEL	Monitoring, Evaluation, And Learning
MoE	Ministry of Education
NaCCA	National Council for Curriculum and Assessment
NaSIA	National Schools Inspectorate Authority
NPLAF	National Pre-tertiary Education Curriculum Framework
NTC	National Teaching Council
NTEAP	National Teacher Education Assessment Policy
NTECF	National Teacher Education Curriculum Framework
NTS	National Teachers' Standards
OECD	Organisation For Economic Co-Operation and Development
PISA	Programme For International Student Assessment
PLCs	Professional Learning Community Sessions
PTA	Parent And Teacher Association
PTEI	Pre-tertiary Educational Institution
SEaIP	School Establishment and Inspection Policy

SEI	Secondary Education Institution
SEIP	Secondary Education Improvement Project
SEN	Special Educational Needs
SHS	Senior High School
SIP	School Improvement Plan
SLiP	School Licensing Policy
STEM	Science, Technology, Engineering and Mathematics
STS	Supported Teaching in Schools
TLR	Teaching And Learning Resource
T-SHEL	Transforming Senior High School Education, Teaching and Learning
T-TEL	Transforming Teaching, Education & Learning
TVET	Technical And Vocational Education and Training
UCC	University of Cape Coast
UDS	University of Development Studies
UEW	University of Education Winneba
UG	University of Ghana, Legon
WASSCE	West Africa Secondary School Certificate Examination

EXECUTIVE SUMMARY

Background to the T-SHEL programme

Transforming Senior High School Education, Teaching and Learning (T-SHEL) is a government of Ghana programme supported by the Mastercard Foundation and implemented by Transforming Teaching, Education & Learning (T-TEL), working closely with Ghana Education Service (GES). The programme aims to achieve an extensive and sustainable transformation in the quality and relevance of Ghana's secondary education system. This transformation seeks to reinforce the positive changes in access brought about by introducing the Free Senior High School (SHS) programme in 2017. In addition, the T-SHEL programme seeks to ensure that every Secondary Education Institution (SEI) graduate in Ghana is equipped with the subject knowledge and analytical and critical thinking skills needed to progress to further studies or successfully enter the world of work.

T-SHEL supports the government of Ghana in achieving this transformation by providing a holistic package of support to benefit more than 1.6 million SEI students between 2021 and 2026, with sustained benefits to an additional 600,000 new SEI students each year after the programme has ended.

The programme intervenes in five main programmatic areas, these include:

- Teacher Education
- Curriculum Development, Teaching, and Learning
- Leadership for Learning
- Support to Quality Assurance and regulatory system:
- Cross-cutting themes of GESI, Information and Communication Technology (ICT), and research and learning

Survey Methodology

Sampling process for secondary education institutions

The sampling frame for the survey comprises all public SEIs in Ghana. A multistage stratified random sampling procedure was used to select SEIs and targeted respondents (teachers, headteachers, students,

school management, and board) for the survey. Under this method, all public SEIs in Ghana were stratified by type (technical, vocational, and SHS), categories (A, B, C, and D), and then by geographic location (Northern, Middle, and Southern zone), giving 36 strata. This stratification enabled subgroup analysis to support programme intervention, design, resource allocation, and general programme improvement. In the second stage of the sampling process, 100 SEIs were randomly selected from the 36 strata using probability proportional to size. To achieve this, a Stata syntax was generated to select the 100 schools for participation in the survey randomly.

Sampling of stakeholders

SEI students

Twenty-four students split between males and females (first and second years) were randomly sampled from each school to participate in the student assessment test. A Kish Grid was used to support the sampling process to ensure that every student was given an equal chance to participate in the assessment test. Overall, 4,796 students were assessed on subject knowledge (reading, mathematics, science) and 21st century skills. In addition, 2,394 students completed the student questionnaire as part of the teacher lesson observation subsample.

SEI teachers

In each sampled school, eight teachers were sampled from year 1 and year two classes to be observed as part of the lesson observation assessment. Overall, 399 teachers were observed across the sampled schools. Also, fifteen teachers were randomly sampled in each sampled SEI to participate in the teacher survey. This process yielded a sample size of 1,484 teachers from the 100 SEIs.

Heads and senior management of SEIs

In each sampled SEI, one member of a sampled school's senior management team (i.e., assistant head, bursar, etc.) and the head of school were interviewed to evaluate whether the leadership of SEIs understood their roles and responsibilities and could demonstrate with evidence the execution of these roles. In total, 200 stakeholders in this group were interviewed.

School board members

Two board members were interviewed in each sampled SEI to solicit their opinions on policy measures to promote effective teaching and learning to enhance secondary education in Ghana.

Government agencies and educational universities

Senior staff of six government agencies¹ and the five universities mentoring the 46 CoEs were interviewed to assess the development and implementation of new policies, regulations, and strategies that are targeted at improving teacher and secondary education. The interviews also covered changes in the practices of the institutions resulting from implementing their policies and programmes.

Preservice student teachers

A total of 1,376 student teachers were sampled from year 1 to year 4 in the five educational universities (KNUST, UEW, UG, UDS, and UCC). The sampling approach adopted a snowball approach in reaching the students because schools were on vacation at the time of data collection.

Parents, opinion leaders, and alumni

In each of the districts where a sampled SEI is located, parents, opinion leaders, alumni, and other stakeholders were interviewed to solicit their opinions on ways to improve secondary education. A total of 959 stakeholders were interviewed across the regions.

Summary of key findings

- Analysis of the 2022 assessment results showed that 41.2 percent of students are approaching proficiency level or higher in reading literacy compared to 33.2 percent in 2021. Also, the report showed a significant decline in mathematics literacy from 36.5 percent in 2021 to 21.9. There was no significant change in the results for science literacy assessment (31.2 percent in 2021 and 37.8 percent in 2022). There was also no significant change in the results for the 21st century skills from the 2021 results (17.1 percent) and the 2022 results (21.3 percent).
- The main reasons for the poor performance among the students were perceived student attitude, the impact of government policies on students' interest in learning, weak basic education foundation, the ineffectiveness of teachers, overloaded curriculum, the negative influence of social media, and inadequate teaching and learning materials.

¹ These include senior staff of GES, MoE, National Council for Curriculum and Assessment (NaCCA), National Teaching Council (NTC), National Schools Inspectorate Authority (NaSIA), GTEC

- The factors that contributed to the high performance among the students were the establishment of remedial programmes in schools, effective monitoring by school heads, and extension of contact hours through extra-curricular activities.
- About 45 percent of student teachers in the five universities were aware of the NTS, the majority (65.5 percent) of whom were in t year 4, followed by year 3 students (51.1 percent). Overall, about 14 percent of the students demonstrated knowledge of NTS, the majority of whom were from UDS, followed by UG. About 80 percent of the student teachers also confirmed that the teaching profession was not their first choice, while nearly 90 percent also said that they plan to pursue other interests or professions in the future outside of the teaching profession.
- Nearly one out of ten teachers are motivated in 2022 compared with a similar proportion (9.6 percent) in 2021. A similar proportion of teachers in 2021 (42.1 percent) want to remain in the teaching profession compared to the 2022 results (46.5 percent). The key drivers for the lack of teacher motivation are low remuneration and other conditions of service and inadequate teaching and learning resources.
- About 66 percent of the teachers confirmed that they are satisfied with their current ell-being, with significantly more female than male teachers. The well-being criteria with the highest satisfaction score were 'character and virtue (85.8 percent)' while the attribute with the least satisfaction score was 'financial and material stability (33.3 percent)' and 'happiness and life satisfaction (33.0 percent)'. The main reasons for teachers' unhappiness are their dissatisfaction with their financial security.
- Despite the various challenges teachers face, about 81.6 percent considered themselves to be resilient, with a similar proportion of male and female teachers.
- Nearly six out of ten teachers consider themselves to be in a dignified and fulfilling work. This is because the teaching profession gives them a sense of purpose (80.6 percent), and they feel respected at their workplaces (70.5 percent) and the people around them (69.4 percent).
- There was a significant increase in the number of teachers aware of the NTS, from 55.4 percent in 2021 to 60.7 percent in 2022. Significantly more male teachers (61.3 percent) were aware of the NTS than female teachers (59.0 percent). About a third of the teachers had copies of the NTS in 2022 compared to 27 percent in 2021. Exactly 3 percent of the teachers demonstrated understanding and application of NTS in both 2021 and 2022. The NTS competencies with the least scores were 'Employs a variety of instructional strategies that encourage student participation and

critical thinking’ and ‘Produces and uses a variety of teaching and learning resources that enhance learning, including ICT.’

- None of the teachers were observed demonstrating the use of digital technology and ICT.
- About one out of ten teachers demonstrated GESI-responsive pedagogies. The GESI competencies with the least score were ‘teacher pays attention to all students, especially girls, and students with SEN, ensuring their progress’ and ‘teacher employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes.’
- The 2022 results show a significant improvement in the proportion of school leaders demonstrating an understanding of their roles and responsibilities. Nearly 5 out of 10 (47.5 percent) of the school leaders satisfied the criteria compared with 36.4 percent in 2021.
- Forty percent of the SEIs are ensuring an inclusive, gender-sensitive environment for staff and students, compared to 36.2 percent in 2021.
- About 42 percent of schools were observed providing career guidance and counseling services in the schools, while 6 percent provided psychosocial and emotional counseling. About 38 percent of the schools also provide academic counseling. About 6 percent of the schools have links with industries, while 19 percent have links with tertiary institutions.
- Results show that the majority (56.3 percent) of stakeholders rated the quality of secondary education in Ghana as ‘excellent or good’, followed by 34.1 percent of stakeholders who rated the quality of secondary education as ‘fair’. The proportion of stakeholders who rated the quality of secondary education as ‘excellent or good’ was predominant among alumni (62.6 percent), followed closely by parents (62.5 percent) and agencies/unions/CSOs (61.9 percent). In contrast, almost 10 percent of stakeholders rated the quality of Ghana’s secondary education as poor or very poor.
- Nearly four out of ten stakeholders believe that secondary schools are preparing graduates for further studies or the world of work
- About 18.5 percent of the stakeholders ranked SEI teachers in their top five most respected professions. Majority of these stakeholders were SEI students (25.6 percent), opinion leaders (21.1 percent), and parents (20.6 percent). Interestingly, only 14.6 percent of board members rated SEI teachers among the top five most respected professions.

Recommendations for policy and practice on secondary education

Based on the findings of the study, the following recommendations are made for policy and practice.

Subject knowledge and 21st century skills

- Teaching and learning mathematics and reading need a critical review to improve the students' demonstration of subject knowledge. Subject associations and GES can spearhead the training of teachers in these two areas.
- 21st century skills are best demonstrated through practical activities. The education system needs to explore creative and innovative solutions that allow the harnessing of national and international resources to promote the acquisition of 21st century skills in SEIs.
- MoE and other educational stakeholders should revise the BECE requirements to enable students who fail to be retained for an additional year to re-sit or be enrolled in a remedial programme to improve their performance before enrolling at the Senior high level.

Teachers

- The NTS handbook should be supplied to SEI teachers (both hard and soft copies). Professional learning sessions should be organized in the schools to promote the discussion, understanding, and use of the NTS during lessons.
- SEI teachers should be trained in the use of GESI-responsive pedagogy in their lessons. This should be done through weekly professional learning sessions in the schools. GES and MoE should develop a National SEI GESI Strategy, which can form the basis for the development of individual SEI GESI action plans.
- Teachers should be trained with respect to the 21st century skills, ICT, and digital technology so that they will be able to incorporate them into their teaching.
- GES and MoE should make attempts to improve SEI teachers' conditions of service. In this regard, there should be a review of the salary and conditions of service of SEI teachers.

School management

- GES should resource the schools to set up guidance and counseling units. The schools should also be oriented on the importance of partnership and cooperation, particularly with industry and tertiary institutions.
- Schools should be encouraged to provide an inclusive, gender-sensitive environment for staff and students. Regional, Metro, municipal, and district directors of education should supervise the creation of this environment for the SEIs.
- Textbooks should be reviewed to ensure that they are GESI compliant.

The results presented should be understood within the context that the major interventions to improve the quality of SEIs are yet to be implemented as the development of the secondary education curriculum is still in the finalization phase. The recommendations provide critical issues which need to be addressed as part of the intervention programme to ensure the improvement and outcome of students' education.

Summary of Indicators:

Indicator		T-SHEL Survey (January 2021)	T-SHEL Survey (January 2022)
SEI Students	Percentage of secondary education students by grade who demonstrate subject knowledge and 21st century skills.	<p><i>Subject knowledge: reading literacy (33.2 percent of students are approaching proficiency and or above),</i></p> <p><i>Mathematics literacy (36.5 percent of students are approaching proficiency and or above),</i></p> <p><i>Science literacy (31.2 percent of students are approaching proficiency and or above),</i></p> <p><i>21st century skills (17.1 percent are proficient and or above)</i></p>	<p><i>Subject knowledge: reading literacy (41.2 percent of students are approaching proficiency and or above),</i></p> <p><i>Mathematics literacy (21.9 percent of students are approaching proficiency and or above),</i></p> <p><i>Science literacy (37.8 percent of students are approaching proficiency and or above)</i></p> <p><i>21st century skills (21.3 percent are proficient and or above)</i></p> <p><i>For detailed information, please see sections 3.3 through 3.8.</i></p>
Preservice university student teachers	Percentage of pre-service teachers in the 5 teacher education universities demonstrating knowledge of the NTS.	N/A	<p><i>Overall (14.2 percent)</i></p> <p><i>For detailed information, please see section 3.9.</i></p>

Teacher Indicator	Percentage of teachers in secondary education institutions who are motivated and want to remain in the profession.	<ul style="list-style-type: none"> Teachers who are motivated (9.6 percent) <p>Teachers who want to remain in the teaching profession (42.1 percent)</p>	<ul style="list-style-type: none"> Teachers who are motivated (10.3 percent) <p>Teachers who want to remain in the teaching profession (46.5 percent)</p> <p>For detailed information, please see section 3.10.1.</p>
	Share of secondary school teachers reporting improvements in their own well-being	N/A	<p>Overall (66.2 percent)</p> <p>For detailed information, please see section 3.10.2.</p>
	Secondary school teachers own assessment of their resilience	N/A	<p>Overall (81.6 percent)</p> <p>For detailed information, please see section 3.10.3.</p>
	Percentage of secondary school teachers in dignified and fulfilling work	N/A	<p>Overall (60.3 percent)</p> <p>For detailed information, please see section 3.10.4.</p>
	Percentage of teachers in secondary education institutions displaying core competencies in the National Teachers' Standards (NTS).	Overall (3.3 percent)	<p>Overall (3.3 percent)</p> <p>For detailed information, please see section 3.10.5.</p>
	Percentage of teachers in secondary education institutions using digital technology to enhance their teaching.	Overall (0.0)	<p>Overall (0.0)</p> <p>For detailed information, please see section 3.10.6.</p>
	Percentage of teachers in secondary education institutions demonstrating Gender, Equality and Social Inclusion (GESI) responsive pedagogy.	Overall (8.7 percent)	<p>Overall (11.3 percent)</p> <p>For detailed information, please see section 3.10.7.</p>

	Percentage of the general public who have respect for the teaching profession	N/A	<ul style="list-style-type: none"> • Parents (20.6 percent) • Alumni (15.2 percent) • Opinion leaders (21.1 percent) • Government agencies (14.3 percent) • Board members ((14.6 percent) • Students (25.6 percent) • Overall (18.5 percent) <p>For detailed information, please see section 3.12.5.</p>
Heads of schools and senior management	Percentage of schools providing i) career guidance ii) psycho-social and emotional counseling services iii) academic counseling iv) and have link with industry and tertiary institutions.	<ul style="list-style-type: none"> • Career guidance (53.2 percent) • Psycho-social and emotional counseling services (4.3 percent) • Academic counseling (36.2 percent) • Link with industry (8.3 percent) <p>Link with tertiary institutions (12.4 percent)</p>	<ul style="list-style-type: none"> • Career guidance (42.0 percent) • Psycho-social and emotional counseling services (6.0 percent) • Academic counseling (38.0 percent) • Link with industry (6.0 percent) <p>Link with tertiary institutions (19.0 percent)</p> <p>For detailed information, please see section 3.11.3</p>
	Percentage of secondary education institutions with an inclusive, gender-sensitive environment for staff and students.	Overall (36.2%)	Overall (40.0%) For detailed information, please see section 3.11.2
	Number of boards and senior management teams of secondary education institutions that demonstrate understanding of their roles and	Overall (36.4 percent)	Overall (47.5 percent) For detailed information, please see section 3.11.1

	responsibilities and can provide evidence of how they are discharging them.		
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1.0 INTRODUCTION

1.1 Background to the T-SHEL programme

Transforming Senior High School Education, Teaching and Learning (T-SHEL) is a government of Ghana programme supported by the Mastercard Foundation and implemented by Transforming Teaching, Education & Learning (T-TEL), working closely with Ghana Education Service (GES). The programme aims to achieve an extensive and sustainable transformation in the quality and relevance of Ghana's secondary school system. This transformation seeks to reinforce the positive changes in access brought about by introducing the Free Senior High School (SHS) programme in 2017. In addition, the T-SHEL programme seeks to ensure that every Secondary Education Institution (SEI) graduate in Ghana is equipped with the subject knowledge and analytical and critical thinking skills needed to progress to further studies or successfully enter the world of work.

T-SHEL supports the government of Ghana to achieve this transformation by providing a holistic package of support to benefit more than 1.6 million SEI students between 2021 and 2026 with sustained benefits to an additional 600,000 new SEI students each year after the programme has ended.

The programme intervenes in five main programmatic areas:

- **Teacher Education:** By ensuring that Ghana's five public teaching universities develop bachelor's degree and postgraduate certificate and new teacher education curricula aligned with the National Teachers' Standards (NTS) and National Teacher Education Curriculum Framework for all prospective SEI teachers. T-SHEL supported these five universities to ensure that they work effectively with Ghana's 46 public colleges of education to implement the new Bachelor of Education (B.Ed.) degree for prospective Junior High School (JHS) teachers so that the first batch of 10,000 B.Ed. student teachers with JHS specialisms graduate successfully in September 2022. T-SHEL also seeks to work with the Ghana Tertiary Education Commission (GTEC) to develop a new teacher education qualification for the tertiary sector so that all lecturers and tutors in tertiary institutions involved in teacher education have a solid understanding of pedagogy and content knowledge.
- **Curriculum Development, Teaching, and Learning:** In collaboration with GES and the National Council for Curriculum and Assessment (NaCCA), the programme seeks to develop and implement

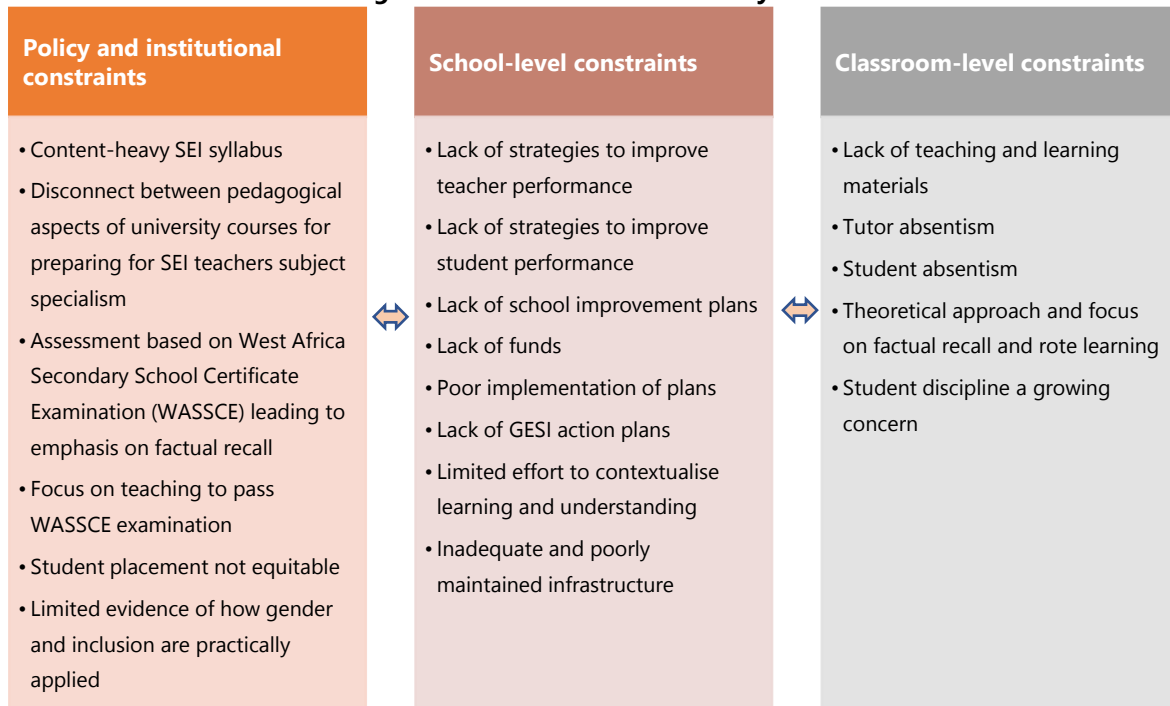
a new Key Phase 5 curriculum for all core and elective SEI subjects that is aligned with the National Pre-Tertiary Curriculum Framework in all public SEIs.

- **Leadership for Learning:** Working with GES and the National Teaching Council, T-SHEL seeks to roll out a nationwide training programme with school boards and senior management teams across all public SEIs to provide them with the tools and techniques to operate effectively and provide strong leadership for learning whilst also laying the foundations for an effective national performance monitoring system.
- **Support to Quality Assurance and regulatory system:** The programme seeks to ensure that Ghana's national quality assurance and regulatory agencies can fulfill their mandates and enforce compliance with government-approved policy documents and curricula, including the national Key Phase 5 Education Policy, new teacher education curricula within universities and the Key Phase 5 curriculum within SEIs.
- **Cross-cutting themes of GESI, Information and Communication Technology (ICT), and research and learning:** T-SHEL works to ensure that: (a) GESI is adequately incorporated within the three programmatic areas so that Ghana has a responsive teacher-education and SEI system that promotes equality and inclusion; (b) appropriate and affordable ICT options are available to support the delivery of teacher education and teaching and learning within SEIs; and, (c) agencies and institutions across the education system effectively communicate the nature and rationale for the programme's reforms.

1.2 T-TEL's theory of change and intervention strategies

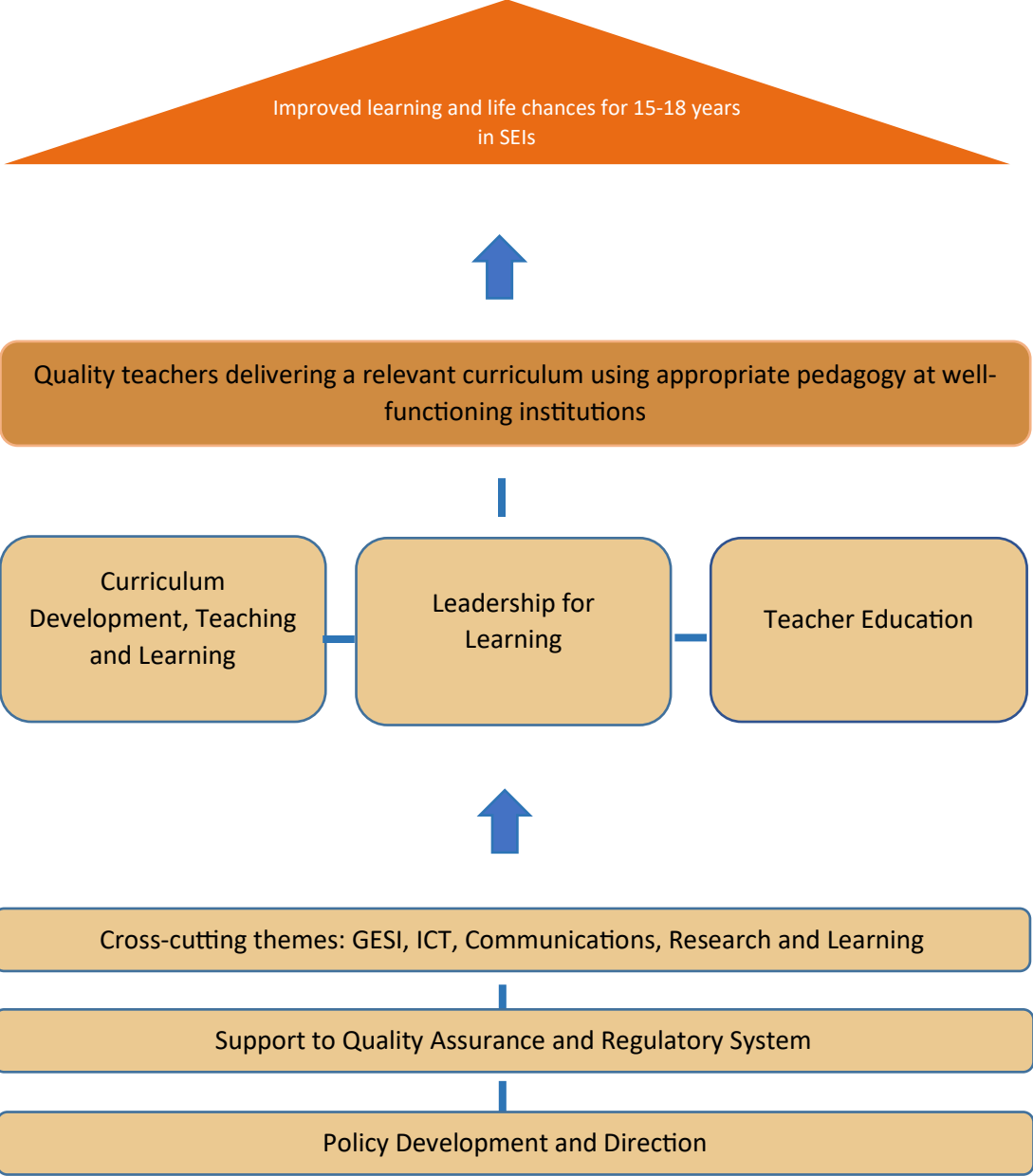
The programme theorizes that every SEI graduate in Ghana can be equipped with the subject knowledge, analytical and critical thinking skills needed to progress to further studies or successfully enter the world of work. However, there are constraints in the policy and institutional level, school-level, and classroom level that are impeding the achievement of these objectives (See figure 1.1).

Figure 1.1 Constraints in secondary education



In response to these assumptions, T-SHEL is designed as a complex, multicomponent programme with a wide range of intervention strategies. These interventions seek to develop quality teachers to deliver relevant curricula using appropriate pedagogy within well-functioning institutions to improve SEI students' learning and life chances (See figure 1.2 for details).

Figure 1.2: How T-SHEL’s interventions address constraints



1.3 Purpose of the annual survey

The annual survey provides data against which to measure progress in meeting T-SHEL's goals and objectives identified in its Monitoring, Evaluation, and Learning (MEL) framework and data to inform policy and practice and to drive improvements in Ghana's SEIs. T-SHEL's framework is aligned with the Mastercard Foundation's Young Africa Works Impact Framework.

2.0 SURVEY METHODOLOGY

2.1 Sampling Design and Process

2.1.1 Sampling process for secondary education institutions

The sampling frame for the survey comprises all public SEIs in Ghana. A multistage stratified random sampling procedure was used to select SEIs and targeted respondents (teachers, headteachers, students, school management, and board) for the survey. Under this method, all public SEIs in Ghana were stratified by type (technical, vocational, and SHS), categories (A, B, C, and D)², and then by geographic location (Northern, Middle, and Southern zone), giving 36 strata. This stratification enabled subgroup analysis to support programme intervention, design, resource allocation, and general programme improvement. In the second stage of the sampling process, 100 SEIs were randomly selected from the 36 strata using probability proportional to size. To achieve this, a Stata syntax was generated to select the 100 schools for participation in the survey randomly. Care was taken to ensure that as many of the SEIs selected in 2021 were sampled in 2022. It is important to mention that the double-track system³ schools sampled in 2021 who had some year groups of students at home at the time of the data collection were replaced.

2.1.2 Sampling process for SEI students

Students in SEIs were stratified by subject (science and agriculture/home economics, general and visual arts and business/engineering, business trade, hospitality, fashion, design and building trade, etc.) and year (first and second-year students). This was to ensure that students pursuing various disciplines at different levels of study were equally represented in the sample. By ensuring equal representation of students pursuing all disciplines, the results are representative of SEI students in Ghana. Twenty-four students split⁴ between

² The secondary schools have been classified by the GES into categories based on a pre-agreed definition by both Ministry of Education (MoE) and GES. Category 'A' schools are the best in the country, followed by the 'B', 'C' and 'D'. Categories are based on schools' academic performance and facilities. The list is updated every year. This report uses such classification to ensure proportional representation of each school category.

³ The Double-Track System of Education was introduced in the 2018/19 academic year in 400 senior high schools across the country. This was due to increase in enrolment as existing facilities in senior high schools could not accommodate the increase.

⁴ Females represented 49.5 percent of all SEI students in 2020.

males and females (first and second years⁵) were randomly sampled from each school to participate in the student assessment test. The Kish Grid⁶ was used to support the sampling process to ensure that every student was given an equal chance to participate in the assessment test. Overall, 4,796 students were assessed on subject knowledge (reading, mathematics, science) and 21st century skills. In addition, 2,394 students completed the student questionnaire as part of the teacher lesson observation subsample.

2.1.3 Sampling of SEI teachers for the teacher survey

Stratified random sampling was used to identify teachers in SEIs to be surveyed. Teachers in each sampled SEI were first categorized by subject (core and elective courses), level of study (first and the second year), 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. Fifteen teachers were randomly sampled in each sampled SEI to participate in the teacher survey. This process yielded a sample size of 1,484 teachers from the 100 SEIs.

2.1.4 Sampling of SEI teachers for lesson observation

In a subsample of 50 randomly selected SEIs, 399 core subject teachers were randomly sampled from first- and second-year classes. These teachers were observed in the classroom⁷. The sampling ensured a suitable representation of male and female core subject teachers. In addition to having their lessons observed, the teachers were interviewed to provide insight and triangulate the observed results. In addition, six students from an observed teachers' classroom were randomly selected to participate in the student survey and key informant interviews. The students' questionnaires were self-administered.

⁵ Year 3 students completed their WASSCE as of the time of data collection. Please note that SEI in Ghana comprise the equivalent of grades 10, 11 and 12 in other countries.

⁶ A Kish grid provides a method to randomly choose survey respondents. The method avoids selection bias, which is usually a result of not using the correct procedures to choose respondents. The 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 (Lewis, Beck et. al, 2003)

⁷ 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

2.1.5 Sampling process for heads and senior management of SEI

In each sampled SEI, one member of a sampled school's senior management team (i.e., assistant head, bursar, etc.) and the head of school were interviewed to evaluate whether the leadership of SEIs understood their roles and responsibilities and could demonstrate with evidence the execution of these roles. In total, 200 stakeholders in this group were interviewed.

2.1.6 Sampling process for school board

Two board members were interviewed in each sampled SEI to solicit their opinions on policy measures to promote effective teaching and learning to enhance secondary education in Ghana.

2.1.7 Sampling process for government agencies and educational universities

Senior staff of six government agencies⁸ and the five universities mentoring the 46 CoEs were interviewed to assess the development and implementation of new policies, regulations, and strategies that are targeted at improving teacher and secondary education. The interviews also covered changes in the practices of the institutions resulting from implementing their policies and programmes.

2.1.8 Sampling process for university students

Preservice student teachers from the five educational universities, namely Kwame Nkrumah University of Science and Technology (KNUST), University of Education Winneba (UEW), University of Ghana, Legon (UG), University of Development Studies (UDS), and the University of Cape Coast (UCC) were sampled to assess their knowledge on NTS. A total of 1,376 student teachers were sampled from year 1 to year 4. The sampling approach adopted a snowball approach in reaching the students because schools were on vacation at the time of data collection.

⁸ These include senior staff of GES, MoE, National Council for Curriculum and Assessment (NaCCA), National Teaching Council (NTC), National Schools Inspectorate Authority (NaSIA), GTEC

2.1.9 Sampling process for parents, opinion leaders and alumni

In each of the districts where a sampled SEI is located, parents, opinion leaders, alumni and other stakeholders were interviewed to solicit their opinions on ways to improve secondary education. A total of 959 stakeholders were interviewed across the regions. Table 2.1 summarises the sample sizes for each of the stakeholders sampled above.

Table 2.1 Summary of sample allocation for quantitative surveys

	Target	Actual	Response Rate
Teacher survey	1,500	1484	98.9%
Teacher lesson observation	400	399	99.8%
Teacher Follow-up interview	400	399	99.8%
Head of schools/Senior management interview	200	200	100.0%
Student assessment item	4800	4796	99.9%
SEI student questionnaire	2400	2394	99.8%
Parents, community leaders and alumni (in school community)	1,000	959	95.9%
Student teachers in the five teacher education universities	600	1,376	229.3%
Members of school boards	200	186	93.0%

2.1.10 Qualitative survey

To complement the quantitative data, JMK collected qualitative data to assess how and why expected changes are or are not occurring. JMK conducted qualitative interviews via focus group discussions (FGDs), Key Informant Interviews (KIIs), and case studies. These methods were used for all stakeholders. Table 2.2 presents the sample distribution for the qualitative survey conducted.

Table 2.2 Summary of sample allocation for qualitative data collection

Target stakeholder	Target	Actual	Response Rate
Teachers KII	30	30	100%
SHS students	100	100	100%
Parents and opinion leaders, alumni	30	30	100%
Head teacher KII	30	30	100%
Student teachers in the five teacher education universities	30	29	97%
Members of school boards	30	28	93%
Head of schools & senior management	30	30	100%
Government officials	11	11	100%

2.2 Development of 2022 survey instruments

Thirteen data collection tools were developed for the 2022 survey (See box 2.1). The survey adopted the same tools used for the 2021 survey with additional questions for new indicators. In developing the tools, the team was guided by the T-SHEL MEL Framework, which contains the programme indicators, definitions, methods of measurement, data collection, and analysis. An extensive literature review was also conducted to explore comparable instruments that had been deployed in similar education studies in Ghana and elsewhere. The team also worked closely with the T-SHEL M&E adviser and coordinator to develop, pilot, and refine the data collection tools that measured the indicators and triangulated data to provide a robust, composite measurement.

Box 2.1 Data collection tools

- Tool #1A: Reading Literacy Assessment
- Tool #1B: Mathematics Literacy Assessment
- Tool #1C: Science Literacy Assessment
- Tool #1D: 21st Century Skills Assessment
- Tool #2A: SEI Teacher Lesson Observation
- Tool #2B: SEI Teacher Follow-up Interview Guide
- Tool #2C: SEI Student Questionnaire
- Tool #2D : SEI Teacher Survey Questionnaire
- Tool #2E: Teacher Interview Guide
- Tool #3A: Boards/Senior Management Interview Guide

Scoring rubrics were also developed to determine and make explicit the ideal composite scores needed to be considered “demonstrating” the specific practices or competencies highlighted in the T-SHEL MEL framework. For example, the composite score for the output indicator (percentage of teachers in secondary education institutions displaying core competencies in the NTS.) is an average of the three scores that a teacher receives for the lesson observation, follow-up interview, and student questionnaire.

2.3 Pretesting of tools

The student assessment tools (namely, reading, mathematics, science literacy and 21st century skills) were the same tools used for the 2021 survey. The assessment tools were pre-tested in category A, B, and C schools in the Greater Accra region to examine the students' responses to individual test items (questions), and to assess the quality of those items and the test. Results of the pre-test (see annex 2) were used to revise the student assessment tools. In addition, other instruments were pre-tested with a cross-section of target respondents and revised before final deployment. The lesson observation and teacher interview guides had been used in several T-TEL studies and were therefore not subjected to additional pre-testing.

After the pre-test, the tools were revised to improve clarity and implementation, and the revised tools were again shared with T-TEL's key advisers for their technical comments and inputs. The final pre-test report, including the final survey tools, are in annex 2.

2.4 Data quality control

Five field supervisors randomly visited the data-collection teams in the 16 regions to observe the data-collection process to ensure that the enumerators adhered to the survey protocols. The supervisors verified that nonresponses were not deliberate omissions by enumerators. Also, spot checks and re-interviews, and classroom observations were conducted to ensure compliance. Open Data Kit software allows for cross-referencing observations and re-interviews with the original records by enumerators. The data management team at JMK cross-checked the observations and interviews conducted by the supervisor with the interview records to compute interrater reliability tests. A Kappa model generated 89.8 percent agreement for the tutor observation. The supervisors and quality assurance team provided technical support to the enumeration team when they found significant differences between the observation and interview records that the respective enumerator had collected.

2.5 Data management and analysis

The data collected was imported from the SurveyCTO platform and analyzed using Stata version 16 software. A Do File was computed to store the syntax of the analysis, which will also be applied in follow-up surveys using the same computational procedures for purposes of uniformity. Data were analysed using descriptive statistics to establish disaggregated scores based on the relevant variables. The analysis was

informed by the specific computational procedures provided in the approved data analysis plan. Beyond the descriptive statistics, JMK conducted a multivariate analysis using multiple linear regression models and exploratory factor analysis for relevant indicators. T-tests and analysis of variance tests were conducted to test for significant differences in results where applicable. The multiple regression models helped measure the effect of demographic characteristics on key output and outcome indicators. Qualitative data analysis was conducted using thematic and content analysis to explain why desired changes had or had not occurred.

3.0 RESULTS

3.1 Demographic profile of key stakeholders

3.1.1 Profile of SEI students

The survey evaluated 4,796 students in the areas of reading, mathematics, science, and 21st-century skills. A little more than half of the students assessed were female (51.8 percent), while males constituted 48.2 percent. To triangulate the results of the teacher lesson observation, 2,394 students completed a self-assessment questionnaire. Again, 51 percent of these students were female, and 49 percent were male.

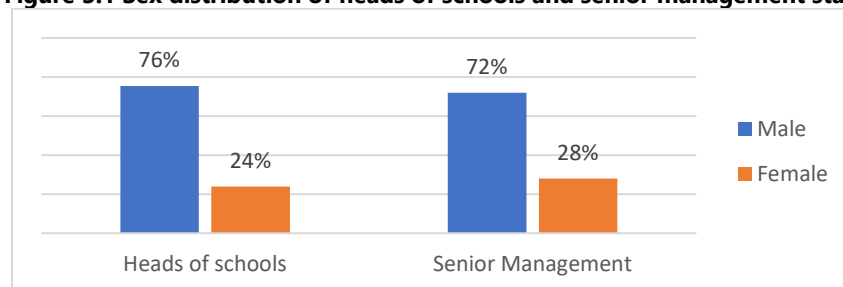
3.1.2 Profile of SEI teachers

A total of 399 teachers, of which 69 percent were male participated in the lesson observation. A teacher survey was also completed by 1,484 teachers, with male teachers comprising 75 percent. According to the data, 27 percent of teachers had taught for less than 5 years, 26 percent for 5 to 10 years, and 47 percent had taught for more than 10 years.

3.1.3 Profile of head of school and senior management staff

The sex distribution of heads of schools and senior management staff interviewed is shown in figure 3.1. The data revealed that most heads of schools are males (75.5 percent) compared with females (24.1 percent). Also, 72 percent of the senior management staff were males.

Figure 3.1 Sex distribution of heads of schools and senior management staff



3.1.4 Profile of school board members

The data also shows that out of 186 board members interviewed majority (89.7 percent) are males. The results further revealed that 72.9 percent have been working as board members for less than 4 years, 23.8 percent have been doing so for 5 to 10 years, whereas 3.2 percent have been board members for more than 10 years.

3.1.5 Profile of parents, opinion leaders and alumni

The survey also engaged 959 stakeholders to ascertain their perspectives on secondary education in Ghana. As provided in table 3.1, a higher proportion of the stakeholders were male (64.2 percent). Also, most of the stakeholders interviewed were parents (38.2 percent), followed by alumni (35.9 percent), while 10.3 percent of stakeholders constituted community leaders.

Table 3.1 Category of stakeholders interviewed (%)

Stakeholders	Male	Female	Total
Parent	31.0	51.1	38.2
Alumni	35.6	36.5	35.9
Community leader (District Chief Executive, Member of Parliament, MP, Chief, Assemblyman/woman, etc.)	13.6	4.4	10.3
Religious leaders	10.6	2.4	7.6
Agencies and development partners	1.5	0.6	1.2
Unions	3.1	1.5	2.5
Civil Society Organizations	1.5	0.9	1.3
Others	3.1	2.6	3.0
Total (N)	610	340	950

3.1.6 Profile of student teachers at education universities

Among the 1,376 student teachers interviewed, 46.4 percent were male. Also, 14.3 percent were from year 1, 31.3 percent were from year 2, 33.4 percent were from year 3, and 21 percent were from year 4. [Table A3.1](#) in annex 3 provides the breakdown of the student teachers based on their institutions and levels.

3.2 SEI student outcome

3.2.1 What does the student assessment measure?

NaCCA created a team of assessment experts to develop proficiency thresholds for SEI student assessments.

The experts defined each of the assessment areas:

- **Reading literacy:** addresses 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:** addresses 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:** addresses 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

For 2021, the study assessed 4,721 year one and year two students in 100 sampled schools across the country. Overall, a total of 4,796 students were assessed in 2022, like the number assessed in 2021.

Similar to the 2021 assessment, the 2022 assessments were paper-based and lasted an average of 90 minutes. The 2021 and 2022 test items (see annex 2) were identical and consisted 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, and their age.

3.3 Results of the student assessment

3.3.1 How the results of the student assessments are reported.

This section summarises the student assessment using proficiency levels and mean scores across the four areas. The NaCCA experts developed proficiency thresholds following an analysis of the assessment instruments (please see annex 2 for the full report)⁹:

- a. Highly proficient – Learners show a high level of proficiency in terms of knowledge and skills; can transfer them automatically and flexibly through authentic performance tasks.
- b. Proficient – Learners demonstrate a sufficient level of proficiency, fundamental knowledge, skills, and core understanding; they 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; they 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 a lack of essential gaps in 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 OECD’s Programme for International Student Assessment.

3.3.2 What students know and can do.

In Reading literacy

- Some 20.4 percent of students, on average, across the 100 sampled schools approach proficiency in reading literacy in 2022 ([figure 3.2](#) and [table 3.3](#)). Approaching proficiency is the benchmark

⁹ NaCCA’s experts developed the proficiency thresholds in the following way: ([See Annex 3](#))

agreed by NaCCA for the student assessment in reading literacy. At the minimum, these students 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.

- The proportion of students approaching proficiency in reading literacy in 2022 is 5.2 percent less than the 2021 figure. Half of the students in Kumasi Senior High/Technical School, W.B.M Zion Senior High, Old Tafo and Bueman Senior High were approaching proficiency in reading literacy ([table A3.2](#) in annex 3). Slightly more male students were approaching proficiency in reading literacy than females in 2022. While the variation between males and females in 2022 is slightly higher¹⁰ than in 2021, the difference is not significant. The apparent fall in students approaching proficiency in reading literacy is coupled with an increase of almost 13% in the “proficient” and “highly proficient” levels of proficiency in reading literacy. This implies that there is significant improvement in the literacy rate of students,

In Mathematics literacy

- On average, across the 100 sampled schools, 12.8 percent of the students were approaching proficiency in mathematics literacy in 2022 ([table 3.8](#)). 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.
- Across the 100 sampled schools, more than three-quarters of students scored below “approaching proficiency” in 2022. The share of students who were approaching proficiency in 2022 is significantly less than those of 2021 (31 percent).

In Science literacy

- On average, across the 100 sampled schools, 29.5 percent of the students were approaching proficiency in science literacy in 2022 ([table 3.13](#)). The 2022 result is similar to that of 2021 (28.1 percent). At the minimum, these students can draw on moderately complex content knowledge to identify or construct explanations of familiar phenomena. In less familiar or more complex situations, these students can construct explanations with relevant cueing or support.

¹⁰ Differences are noted only when they are statistically significant.

In 21st century skills

- On average, across the 100 sampled schools, the performance of students in 21st century skills did not change significantly in 2022. Overall, 21.3 percent of students demonstrated proficiency or higher (the “minimum level of proficiency”) in 21st century skills in 2022. At the minimum, these students can provide descriptions of situations that are less familiar or require deeper reasoning, such as ones that require causal reasoning.
- The share of students who demonstrated proficiency or higher (21.3 percent) in 2022 is 4.2 percent more than the 2021 figure (17.1 percent); the difference is not significant.

3.4 Evaluation of reading literacy assessment

3.4.1 Reading literacy assessment

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. 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 2) conceptualizes reading literacy as an activity in which readers interact with the text they read and the tasks they want to accomplish during or after reading it. 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 encyclopaedia)
- 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 a 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 all assessments was based on a psychometric analysis.

3.4.3 Proficiency levels for reading literacy

The results of the reading literacy assessment are reported using proficiency levels (based on work done by NaCCA, see annex 1) and mean scores. Table 3.2 illustrates the range of reading literacy proficiency levels covered by the T-SHEL evaluation 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. For all aspects of reading, tasks at the proficient level typically involve dealing with concepts that are abstract or</p>

Level of proficiency	Score	Characteristics of tasks
		counterintuitive and require several steps until the goal is reached.
Approaching proficiency	54 - 67%	<p>Readers at this level can identify the main idea in text of moderate length. They can understand relations 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. Readers at this level can, when explicitly cued, reflect on the overall purpose, or on the purpose of specific details, in</p>

		<p>texts of moderate length. They can reflect on simple visual or typographical features. They can compare claims and evaluate the reasons supporting the claims based on short, explicit statements.</p> <p>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 comparisons between the text and outside knowledge by drawing on personal experience and attitudes.</p>
Developing	40 - 53%	<p>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.</p> <p>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. These readers can access a relevant page from a small set based on simple prompts when explicit cues are present.</p>
Emerging	39% and below	<p>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.</p>

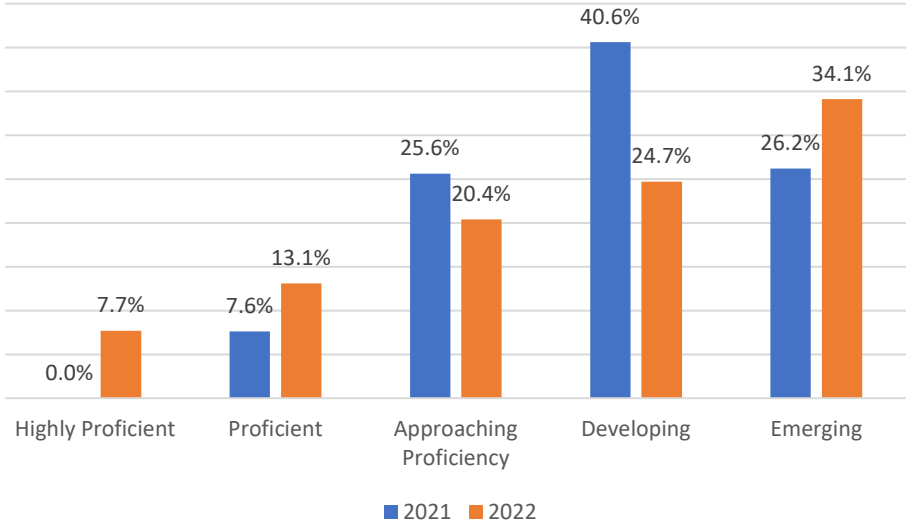
3.4.4 How students performed in reading literacy

Some 20.4 percent of students, on average, across the 100 sampled schools, were approaching proficiency in reading literacy in 2022 (figure 3.2 and table 3.3). At the minimum, these students can identify the main idea in a 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. The proportion of students approaching proficiency in reading literacy in 2022 is 5.2 percent less than the 2021 figure. Kumasi Senior High/Technical School (53.9 percent), W.B.M Zion Senior High school, Old Tafo (50 percent), and Bueman Senior High school (50 percent) recorded the highest proportions of students approaching proficiency in reading literacy (table A3.2 and A3.3 in annex 3). Slightly more male students were approaching proficiency in reading literacy than females in 2022. While the variation between males and females in 2022 is slightly higher than in 2021, the difference is not significant.

About 21 percent of students, on average, across the 100 sampled schools were top performers in reading literacy in 2022, meaning that they attained “proficient” and “highly proficient” in reading literacy. At these levels, students can comprehend lengthy texts, deal with concepts that are abstract or counterintuitive, and establish distinctions between facts and opinions based on implicit cues pertaining to the content or source of information. In seven schools, including those in Central region (where the majority of students are performing at this level), over 58 percent of students were top performers ([table A3.3](#) in annex 3).

Three of every ten students were emerging students in reading literacy in 2022 compared to 2021 (26.2 percent). Few of these students 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. For both 2021 and 2022, most emerging students are from the Upper West region (61.2 percent). In particular, Bimbila Senior High school (91.7 percent), Dagbon State Senior school (84.6 percent), and Tolon Senior High school (81.8 percent) recorded the highest percentages of emerging students in reading literacy ([table A3.3](#) in annex 3).

Figure 3.2 Percentage of students at different levels of reading proficiency



3.4.5 SEI students’ attainment of the different proficiency levels in reading literacy

[Table 3.3](#) presents the distribution of students across the five levels of reading proficiency.

Highly proficient

Highly proficient students 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.

Unlike in 2021, 7.7 percent of students were highly proficient in reading literacy in 2022. This proportion was much higher in category A schools (27.5 percent); specifically Wesley Girls SHS (83.3 percent), Mawuli SHS (76.9 percent,) and Fijai SHS (75 percent) than in category B and C schools ([table A3.3](#) in annex 3). The majority (22.9 percent) of the highly proficient students were from the Central region ([table A3.3](#) in annex 3). Only 2.7 percent of category C school students were highly proficient readers. St. Paul's SHS, Denu (category C) recorded the highest proportion (33.3 percent) of highly proficient readers in 2022. A follow-up interview with the head of school and English teacher of St. Paul's SHS, Denu, revealed an interesting insight into why the students were performing well in reading literacy. According to the head of the school, the English teacher currently teaching year 1 and 2 students is new. When he first came to the school, he assessed the students to ascertain their proficiency in reading. The assessment revealed low proficiencies in reading among the majority of the students. The teacher subsequently initiated a remedial lesson for all the students, especially those with lower proficiencies. The head of school further revealed that the students are currently in their eleventh week of remedial lessons as of the time of data collection.

Proficient

Proficient students are also referred to as top performers in reading literacy. At this level, students 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.

Some 13.1 percent of students were top performers in reading literacy on average across the 100 sampled schools in 2022 compared to 2021 (7.6 percent). Slightly more category B schools performed at this level than category A in 2022. Specifically, Kpando SHS (58.3 percent), Anglican SHS (58.3 percent), and Shama SHS (50 percent) attained this level ([table A3.3](#) in annex 3). By contrast, in five category C schools, including Kaneshie Senior High/Technical School and Swedru School of Business, more than 30 percent of students were top performers in reading literacy for both 2021 and 2022 ([table A3.3](#) in annex 3).

Approaching proficiency

Approaching proficiency is the minimum proficiency level for secondary school students as defined by NaCCA. At this level, readers 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. 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.

On average, across the 100 sampled schools, 20.4 percent of students were approaching proficiency in reading literacy in 2022 compared to 2021 (25.4 percent). The difference between the 2021 and 2022 results is not significant. Slightly more category B and C students performed at this level in 2022. Also, more male than female students performed at this level in 2022. [Tables A3.2](#) and [A3.3](#) in annex 3 disaggregate the result by region and school.

Developing

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.

On average, across the 100 sampled schools, 24.7 percent of the students were developing readers in 2022. This is significantly lower than the proportion of developing readers in 2021 (40.6 percent). The difference in the 2021 and 2022 figures can be attributed to the higher number of emerging students recorded in 2022, as seen in table 3.3. For 2021 and 2022, most developing students were from category C schools and from the Upper West region (33.3 percent). In particular, Boso Senior High Technical school (61.5 percent), Yilo Krobo Senior High/Community school (58.3 percent,) and Ameyaw Akumfi Senior High/Technical School (58.3 percent) recorded the highest percentage of developing students in 2022. This is similar to the 2021 result.

Emerging

On average, across the 100 sampled schools, 7.9 percent more students were emerging readers in 2022 (34.1 percent) than in 2021 (26.2 percent). Few of these students 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. Almost 40.2 percent of students from category C schools performed at this level compared with 26.4 percent in 2021. The share of emerging students from category A schools increased slightly from 12 percent in 2021 to 18.6 percent in 2022. The top three regions with the highest number of emerging students in 2022 were Ahafo (66.7 percent), Bono East (62.5 percent), and Northern region (56.9 percent). These regions also recorded the highest number of emerging students in 2021.

Follow-up interviews were conducted with the head of schools and English teachers at some selected schools in the Ahafo, Bono East and Northern Region to ascertain why a majority of their students performed at this level. The insight from these interviews is interesting. Generally, the headteacher and English teachers blamed the poor reading ability of the students on their educational background. They indicated that most of their students scored between aggregated 5 to 7 in English during their Basic Education Certificate Examination (BECE) and were posted to the school. They also mentioned that the students are not generally motivated to read novels or other materials outside of their core English textbooks. They further indicated that their schools lack libraries, and teaching and

learning resources are scarce and mostly unavailable. However, during the lesson observation, the researchers observed that the teachers, particularly most of the English teachers, were not paying attention to slow readers.

Table 3.3 Percentage of students at different levels of reading literacy

Assessments	Highly Proficient (80-100%)		Proficient (68-79%)		Approaching Proficiency (54-67%)		Developing (40-53%)		Emerging (0-39%)	
	Survey 2021	Survey 2022	Survey 2021	Survey 2022	Survey 2021	Survey 2022	Survey 2021	Survey 2022	Survey 2021	Survey 2022
Sex										
<i>Male</i>	0.0	6.0	5.8	10.5	25.7	23.3	40.6	26.0	27.9	34.1
<i>Female</i>	0.0	9.3	9.5	15.5	25.4	17.5	40.6	23.5	24.5	34.1
Level of student										
<i>Form 1</i>	0.0	6.9	7.8	12.3	26.7	18.6	39.0	24.2	26.5	33.1
<i>Form 2</i>	0.0	8.6	7.4	14.0	24.4	22.1	42.2	24.9	26.0	30.5
School category										
<i>Category A</i>	0.0	27.5*	24.1	12.6	37.0	18.0	26.9	23.4	12.0	18.6
<i>Category B</i>	0.0	7.3	9.3	18.1	23.0	21.5	37.3	22.0	30.5	31.2
<i>Category C</i>	0.0	2.7	4.4	10.1	25.1	20.2	44.1	26.9	26.4	40.2
School sex										
<i>Mixed-sex school</i>	0.0	5.9	6.3	13.3	24.7	19.6	41.5	24.9	27.5	36.3
<i>Single-sex school</i>	0.0	23.1*	23.8	11.4	36.9	26.2	28.6	23.1	10.7	16.2
Overall	0.0	7.7*	7.6	13.1	25.6	20.4	40.6	24.7*	26.2	34.1

*p≤0.05

Table 3.4 Students' mean assessment scores in reading literacy by demographic characteristics

	Survey 2021	Survey 2022
Sex		
<i>Male</i>	46.9	48.5
<i>Female</i>	48.2	49.7
Level of student		
<i>Form 1</i>	47.6	47.6
<i>Form 2</i>	47.4	50.7*
School sex		
<i>Mixed-sex</i>	46.8	47.9
<i>Single-sex</i>	56.1	58.9
School category		
<i>Category A</i>	55.9	59.2
<i>Category B</i>	46.9	50.9
<i>Category C</i>	46.5	45.3
Region		
<i>Northern belt</i>	41.7	42.0
<i>Middle belt</i>	47.5	46.4
<i>Southern belt</i>	50.2	55.1*
<i>Overall</i>	47.5	49.1

*p≤0.05

3.4.6 SEI students' performance in the different aspects of the reading literacy

As discussed in section 3.3.2, the reading literacy assessment questions were developed to cover three main subscales (text, cognitive process, and situation). The average scores for the reading literacy domains are provided in table 3.5 ([table A3.4](#) in annex 3 disaggregates the data by region). For both 2021 and 2022, students had a relatively low average score on "Argumentative" and "Narration" items within the text dimension. Similarly, for both 2021 and 2022, low average scores were recorded for "Personal" items within the "Situations" dimension. As expected, students obtained higher average scores for questions with lower difficulty levels.

Table 3.5 Students' performance in different aspects of science literacy (mean percent)

Domains	Survey 2021	Survey 2022
Text type		
<i>Description</i>	69.5	62.9
<i>Narration</i>	31.3	37.4
<i>Argumentative</i>	29.8	33.9
<i>Instruction</i>	44.2	47.3
Aspects/cognitive processes		
<i>Access and retrieve</i>	65.5	64.5
<i>Integrate and interpret</i>	57.5	47.5
<i>Reflect and evaluate</i>	50.20	40.5
Situations		
<i>Personal</i>	20.7	16.7
<i>Public</i>	60.3	57.7
Cognitive demand		
<i>Low</i>	64.8	64.2
<i>Medium</i>	58.4	42.6
<i>High</i>	55.7	42.7

Table 3.6 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 (12.5 percent) suggests that the independent or demographic variables are not efficiently explaining the variations in students' scores for reading literacy. Based on the output of the model, form 2 students obtained 3.2 percent higher scores than form 1 students. Also, schools in categories B and C obtained 9.4 and 13.2 percent lower scores than students in category A schools. The results further suggest that while students in the north (i.e., Northern, Upper East, Upper West, and Savannah Regions) obtained 4.8 percent lower scores, schools in the south (i.e., Volta, Greater Accra, Central, Western, Eastern Regions) obtained 8.5 percent higher scores than students in the middle belt (i.e., Ashanti, Bono, Ahafo, Bono East, Western North Regions).

Table 3.6 Output of multiple linear regression of 21st century skills assessment

Characteristics	Coefficient (Sig*)	95% confidence interval
Sex of student		
<i>Male</i>	-0.781	-2.931, 1.542
<i>Female</i>	Reference	
Level of student		
<i>Form 1</i>	Reference	
<i>Form 2</i>	3.216*	1.044, 5.390
Age	.0129	-.0141, .0399
School category		
<i>Category A</i>	Reference	
<i>Category B</i>	-9.379*	-13.985, -4.772
<i>Category C</i>	-13.218*	-17.62, -8.811
Region		
<i>Northern belt</i>	-4.870*	-8.095, -1.645
<i>Middle belt</i>	Reference	
<i>Southern belt</i>	8.512*	6.129, 10.896
School sex		
<i>Single-sex</i>	1.753	-3.032, 6.539
<i>Mixed-sex</i>	Reference	

3.4.7 Qualitative findings on reading literacy assessment

3.4.7.1 Factors contributing to low proficiency levels in reading literacy in some regions and schools

The assessment results for reading literacy reveal low proficiency scores for Ahafo region, Bono East region, Volta region, and Northern region for both 2021 and 2022. In particular, low scores were recorded for schools such as Three Town SHS (i.e., all the students are emerging readers), Wamanafo Senior High/Technical School, and Bimbila SHS (i.e., 9 out of every 10 students are emerging readers). Qualitative data was collected from teachers and heads of schools that did not perform well to ascertain why students are unable to read proficiently. The teachers and heads of schools associated the inability to read to a number of factors, these include:

Students' perceived attitude and language barrier

One of the reasons is what teachers perceive as laziness on the part of the students. According to the teachers, the students do not like reading even if advised and guided to do so regularly. They indicated that some of the students blamed the English language not being their mother tongue as a reason for their lack of interest. Another interesting finding was that most of the teachers affirmed that students perceive that English is not supposed to be learned, and so they learn other subjects ignoring the English language. According to the teachers, students refuse to speak English in school but rather their local language or 'pidgin-English'¹¹, when teachers are even in the classroom. A few teachers confirmed disconcertingly that, at this level of education, some students are unable to distinguish between uppercase letters and lowercase letters.

Perception that government policies have contributed to the low student performance

They further complained that due to the "Free Senior High School" policy, they were not permitted to repeat students for non-performance. This was also confirmed by some heads of schools in the Upper East, Upper West, and Ahafo regions. According to the heads of schools, the policy has enhanced students' belief that irrespective of their performance, they would be promoted to the next grade level. Some quotes from teachers on factors affecting students' ability to read are:

- *"The fundamental factor is that students cannot read and comprehend, which makes it difficult for them to perform well. Another reason is that some students have the misconception that we don't learn English"* –
Male teacher, Ahafo region

¹¹ A mixed language, or jargon, incorporating the vocabulary of one or more languages with a very simplified form of the grammatical system of one of these and not used as the main language of any of its speakers

- *“Looking at where my school is located, how can they do well in English Language? The students are used to their mother tongue. Some of them are not challenged enough to speak English. Their problems started at the basic level. I believe they were taught by non-qualified and non-professional teachers. So, garbage in, garbage out”. Female English teacher, Upper East region*
- *“Students have preconceived notions that for English we don’t study. So, they study the math, science, and other subjects. Most of them do not read English books. They don’t watch English programs and do not speak English at home. Most students cannot read. They were not forced to learn at the basic level. “Male English teacher, Ashanti region*

Weak foundational knowledge from the basic school level

Another important reason that featured prominently across the regions and backed by the heads of schools is the poor foundational knowledge of the English language carried on from the basic school level by students. According to the teachers, some of the students had poor results in the English language course from the BECE results. What has exacerbated the challenge is that some students expect the teachers to communicate in their local languages when teaching because that was the practice at the basic schools they attended. For example, a male teacher in the Ashanti region said that *“One of the reasons is that the students do not have reading skills to enable them to read. Also, teachers at the basic school use the local language in teaching, which is not helping the students to do well in the subject”*. Another female teacher in the Ashanti region mentioned that *“Students’ background has made it difficult to understand English when teaching. Sometimes when you are teaching, they expect you to use Twi to explain things to them because most of them were taught in the local language at the basic school. It takes a long time to adapt to the secondary system, and they are also below average, so it is difficult for them to understand the subject”*.

The negative influence of social media

Some heads of schools in the Upper East region also said that the influence of social media had worsened students’ ability to read and write properly. They elaborated that some students are used to short-hand scripts that are common on social media platforms such as Facebook and WhatsApp. Unfortunately, they write these short-hands in their assignments and exercises. For example, a head of school in the Upper East said that *“...I think though social media is good, it also has its bad sides. Some of the students here always speak pidgin. Even if you advise them, they don’t listen. They have brought their so-called words into their classrooms when writing. Last term, I went through an essay from one of the form 3 students and it was awful. He used short-hands in his essays, it is very bad...”*

Lack of adequate teaching and learning materials

Some headteachers in the Ashanti region, Ahafo region and Western region also blamed the poor performance of the students on inadequate teaching and learning resources (TLRs). Specifically, they talked about the lack of textbooks and storybooks contributing to the reasons students are performing poorly in reading literacy. For example, a head of school in the Western region mentioned that *"students' inability to read has been worsened by unavailable reading resources"*. A school leader in the Northern region also mentioned that *"... we don't have enough reading materials for the students to read, we have discussed it as a board to get more reading materials for our students..."*

Lack of parental support

Another factor contributing to the low proficiency is parental negligence and inadequate parental support for their children's education. This was mostly mentioned by headteachers and teachers in the Ashanti, Western North, and Northern regions. According to the heads and teachers, they strongly believe that when their students vacate and go home, they do not learn, and their parents do not encourage them to learn or speak English at home. The heads indicated that they always speak to the parents during PTA meetings to buy storybooks and other reading materials for their children; however, the situation remains unchanged.

Below are some qualitative verbatims from interviews with the headteachers and teachers:

- *"One is environmental factors where the students are coming from and are brought up. It is difficult for parents to buy reading books for their wards and those who afford to buy, do not see to it that they read. Another problem too is where the student had their basic education". – Male teacher*
- *"Interest from parents in education is not there. They do their farming, but because everyone is going to school, they let their children also come, but they don't even monitor the progress of the students. Some of them cannot even read or write" – Female teacher*
- *"Some parents don't mind about their children's ability to read. They think because it's Free SHS, the government is supposed to provide everything, and they are not to pay for anything. So, if you ask them to buy books for their children, they think you want to fraudulently take money from them" – Male head of school*

The qualitative findings show that some teachers and heads in poorly performing schools see many factors as leading to low reading proficiency but do not see their responsibility to rectify it, whereas in schools with higher levels of proficiency, rectifying the problem is seen as the teachers and schools' responsibility

3.4.7.2 Factors contributing to high proficiency levels in English literacy

Establishment of remedial lessons

The findings from the 2022 assessment revealed that at least half of the category A school students are approaching proficiency or higher in reading literacy. Interviews with the heads and teachers of some of the category A schools revealed that most of these schools organize remediation classes for learners in English. These remedial lessons are organized for all students, with a special focus on slow learners.

- *“Most students were not able to read and write, so we devoted extra class time for reading and now we’ve seen improvement. So, this method will carry on”. – Female head of school,*
- *“After the first few weeks when school was in session, we monitored the students to determine those who had challenges with the various subjects, and especially English since it forms the basis for all the other subjects. We had a meeting to have extra classes for them to improve their teaching, which we are still on”. – Female English teacher.*

Effective monitoring by school heads

The headteachers of Aburi Girls SHS and Ghana National College further indicated that they conduct regular monitoring of lessons, particularly English language lessons for year-one students. They explained that most of the students posted to their school in 2021/2022 came with poor results in English language. These students were unable to follow most of the lessons. The schools, therefore, organize remedial lessons for them. The headteachers further indicated that they supervised the assessment of these students after a few weeks of remedial lessons to ensure that the students were able to read before they were integrated into the bigger class. Some quotes from heads are presented below:

- *“I monitor the teachers and students in their classes, during preps and when there is time for extra classes. We have added an additional hour to encourage them to learn. Formerly, we closed at 2:30 pm, but now we close at 3:30 pm”. – Female head of school*
- *“I think what has helped us is that now we enforce the rules regarding teaching and learning. We make sure the teachers are teaching appropriately and monitor the students to see progress”. – Male head of school*

Effective extra-curricular activities

The heads of schools further indicated that they encourage students to visit the library and read, participate in debate clubs where they are made to read several books, and also organize inter-house English Language quizzes.

- *“.....we’re very lucky. We’ve had donations of books in our libraries, especially from the alumni, so we encourage our students to go there and read to improve on their English”. – Female head of school*

- *“We have been able to acquire some library books and we tell our students to go there often. Very soon, we want to give the students the ability to borrow from the libraries. We haven’t done so now because of how they might handle the books”. – Male head of school*

The head of school for Winneba SHS also said that the school had instituted early morning ‘pre-classes’¹² from 6:30 am to 7:30 am. The classes have been established purposely for early morning reading. Some schools, such as Asesewa SHS, have introduced a ‘functional literature’ programme to support students improve in their reading. The head of the school said that *“We have introduced a program called functional literature [local content on reading] for one hour per every class and have currently started with phonetics and then word syllabus because most of the students can’t read properly when they come. In those departments with a shortage of teachers, we get teachers who qualify within the district to be reposted to the school because those from other regions do not want to stay”*.

¹² Individual student reading time

3.5 Evaluation of mathematics literacy assessment

3.5.1 Mathematics literacy assessment

Competence in mathematics assists students in recognizing the role that mathematics plays in the world and in making well-founded judgments 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 the mathematics item framework attached as annex 1). 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/processes include:

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

Cognitive domain:

- Low
- Medium
- High.

For both 2021 and 2022, the assessment of mathematics literacy items was identical and 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 3.7 illustrates the range of mathematics achievements covered by the T-SHEL evaluation survey and describes the skills, knowledge, and understanding that are required at each level of the mathematics scale.

Table 3.7 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.

Level of proficiency	Scores	Characteristics of tasks
		<p>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.</p> <p>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.</p>
Proficient	68 - 79%	<p>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.</p> <p>Students at the proficient level can work strategically using</p>

Level of proficiency	Scores	Characteristics of tasks
		<p>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.</p>
Approaching proficiency	54 - 67%	<p>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.</p>
Developing	40-53%	Developing students can

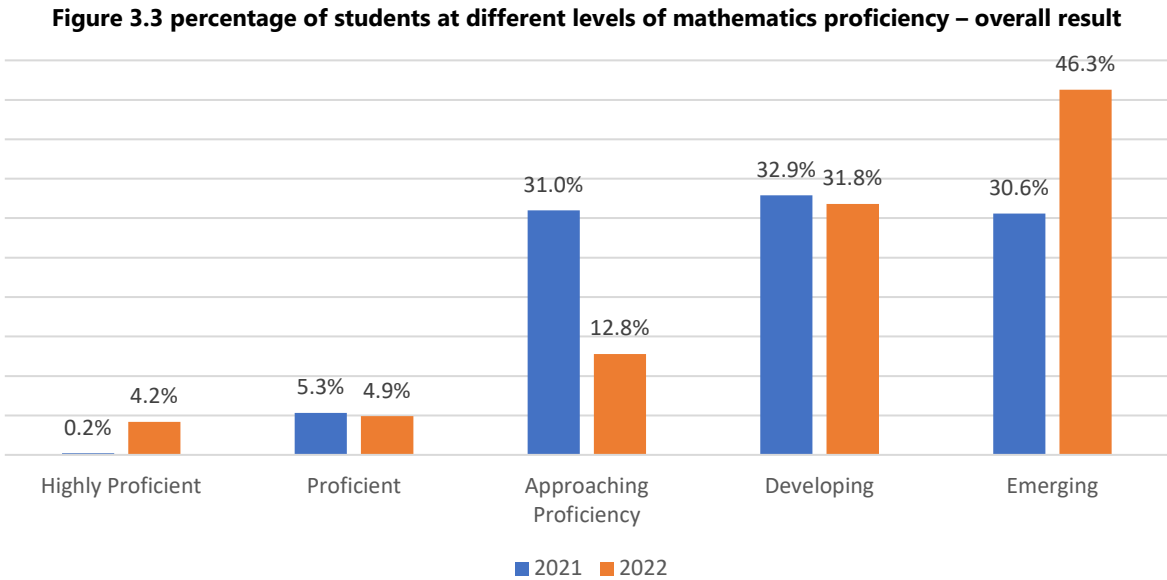
Level of proficiency	Scores	Characteristics of tasks
		<p>interpret and recognise situations in contexts that require no more than direct inference. They can extract relevant information from a single source and make use of a single representational mode. Students at this level can employ basic algorithms, formulae, procedures, or conventions to solve problems involving whole numbers. They are capable of making literal interpretations of results.</p>
Emerging	39% and below	<p>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.</p>

3.5.4 How students performed in mathematics literacy

On average, across the 100 sampled schools, 12.8 percent of the students were approaching proficiency in mathematics literacy in 2022 ([table 3.8](#)). Approaching proficiency is the benchmark agreed upon by NaCCA for the student assessment in mathematic literacy. 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. Across the 100 sampled schools, more than three-quarters of students scored below this level of proficiency in 2022. The share of students who were approaching proficiency in 2022 is significantly less than those in 2021 (31 percent).

Seven schools had the largest shares of top-performing students (i.e., students who were proficient or higher) in mathematics literacy. Accra Academy (75 percent), Assin Manso SHS (75 percent), and Kumasi Senior High/Technical (75 percent) were the top three performing schools in mathematics literacy (table A3.7 in annex 3). The top-performing students from these schools can model complex situations mathematically and select, compare, and evaluate appropriate problem-solving strategies for dealing with them. No significant variations exist between the top-performing schools in 2021 and 2022 (see table A3.7 in annex 3). The majority of the top-performing schools were category A and B schools for both 2021 and 2022.

About four in ten students were emerging students in mathematics literacy. Few of these students can demonstrate the ability and initiative to use mathematics in simple-life situations. This is particularly true for 52.8 percent of category C school students (table 3.8).



3.5.5 SEI students’ attainment of the different proficiency levels in mathematics literacy

Table 3.8 shows the distribution of students across the five proficiency levels. The disaggregated data for schools and regions can be found in tables A3.6 and A3.7 in annex 3.

Highly proficient

Highly proficient students can conceptualize, generalize, and utilize 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.

On average, across the 100 sampled schools, 4.2 percent of students were highly proficient in mathematics literacy in 2022 compared to 0.2 percent in 2021 ([table 3.8](#)). About one in every ten category A student scored at this level in 2022, while in 2021, no category A student scored at this level. The difference is significant. It also reflects, to a lesser degree, the change in reading at the higher end. In particular, students from Kumasi Senior High/Technical School (58.3 percent) and Accra Academy (41.7 percent) attained this level ([table A3.7](#) in annex 3). Also, slightly more males than females attained this level of proficiency in mathematics.

Proficient

Proficient 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 characterizations, and insight pertaining to these situations.

Across the 100 sampled schools, fewer students (4.9 percent) were proficient in mathematics literacy in 2022 than in 2021 (5.3 percent). The difference between 2021 and 2022 is not significant. A majority of the proficient mathematics students were from category A schools. The Central region (12.9 percent) recorded the highest number of proficient students in mathematics in 2022, while the Volta region also recorded the highest (11.7 percent) in 2021.

Approaching proficiency

Students approaching proficiency 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.

Across the 100 sampled schools, fewer students (12.8 percent) were approaching proficiency in mathematics literacy in 2022 than in 2021 (31 percent). This is even more so for female students, where only 9.5 percent were approaching proficiency in mathematics literacy in 2022 compared with 30.3 percent in 2021. The differences are statistically significant. The dip in performance could be attributed to the high number of emerging mathematics literacy students recorded in 2022 compared to 2021, especially for female students.

[Tables A3.6](#) and [A3.7](#) in annex 3 disaggregate the data by region and school. The Western and Central regions recorded the highest number of students approaching proficiency in mathematics literacy; about 6 of 20 schools in the regions had a majority of their assessed students attaining this level. In particular, schools such as Shama SHS (50 percent), Mando Senior High/Technical School (41.7 percent), and Wesley Girls SHS (33.3 percent) had the

highest percentage of students approaching proficiency in mathematics.

Developing

Developing students can interpret and recognize 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.

Three of ten students were developing students in mathematics literacy in 2022; this is similar to the 2021 results. At least 6 of 10 assessed students in the Oti region and 4 of 10 assessed students in the Western North region attained this level.

Emerging

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.

Forty-six percent of students across the 100 sampled schools were emerging students in mathematics literacy. This is 15.7 percent more than the 2021 result (table 3.8). The difference is statistically significant. Meanwhile, more than 50 percent of category C students were emerging students in mathematics literacy compared with 30.7 percent in 2021 (table 3.8). The difference is significant. Only 2 of 10 category A students were Emerging in mathematics literacy in 2022, consistent with the 2021 result. More female than male students were attaining this level of proficiency in 2022, similar to 2021.

Table 3.8 Percentage of students at different levels of mathematics literacy

Assessments	Highly Proficient (80-100%)		Proficient (68-79%)		Approaching Proficiency (54-67%)		Developing (40-53%)		Emerging (0-39%)	
	Survey 2021	Survey 2022	Survey 2021	Survey 2022	Survey 2021	Survey 2022	Survey 2021	Survey 2022	Survey 2021	Survey 2022
Sex										
<i>Male</i>	0.2	5.8*	5.7	6.0	31.8	16.11*	34.9	31.6	27.5	40.5*
<i>Female</i>	0.2	2.5	4.8	3.9	30.3	9.5*	30.8	31.9	34.0	52.2*
Level of student										
<i>Form 1</i>	0.2	2.5	4.3	3.5	31.4	9.6*	31.8	32.6	32.3	51.8*
<i>Form 2</i>	0.2	5.8	6.1	6.3	30.7	16.0*	33.9	31.0	29.1	41.0*
School category										
<i>Category A</i>	0.0	11.8*	9.0	10.1	35.3	19.5*	28.7	30.2	27.1	28.4
<i>Category B</i>	0.6	2.7	5.2	5.1	30.8	12.4*	31.7	35.8	31.7	44.1
<i>Category C</i>	0.0	3.1	4.6	3.4	30.5	11.3*	34.2	29.5	30.7	52.8*
School sex										
<i>Mixed-sex school</i>	0.2	5.4	5.0	9.3	31.4	18.6*	33.1	25.6	30.4	41.1*
<i>Single-sex school</i>	0.0	11.6*	8.4	10.9	27.7	22.5	30.1	26.4	33.7	28.7
Overall	0.2	4.2	5.3	4.9	31.0	12.8*	32.9	31.8	30.6	46.3*

*p≤0.05

Table 3.9 Students' mean assessment scores by demographic characteristics

	Survey 2021	Survey 2022
Sex		
<i>Male</i>	47.9	46.3
<i>Female</i>	46.2	41.3*
Level of student		
<i>Form 1</i>	46.8	41.3*
<i>Form 2</i>	47.4	46.3
School sex		
<i>Mixed-sex</i>	47.1	42.7
<i>Single-sex</i>	46.9	52.8*
School category		
<i>Category A</i>	48.9	52.2
<i>Category B</i>	47.1	43.7*
<i>Category C</i>	46.8	41.6
Region		
<i>Northern belt</i>	45.5	39.5*
<i>Middle belt</i>	46.1	42.1*
<i>Southern belt</i>	49.0	47.4
<i>overall</i>	47.1	43.8*

*p≤0.05

3.5.6 SEI students' performance in the different aspects of the mathematics literacy

Table 3.10 presents the results from the item analysis within the domains of the mathematics literacy assessment. As seen from the table for both 2021 and 2022, students scored low on questions related to "Quantity" within the content area. Also, students obtained lower scores as the "cognitive" demand increased compared with items with low "cognitive" demand. Only 32 percent of the students were able to employ mathematical concepts, facts, procedures, and reasoning in 2021 and 2022. These are key areas that teachers need to focus on when teaching mathematics to SEI students (see table 3.10). The same is noted when the data was disaggregated by region and school in tables A3.8 and A3.9 in annex 3. About 66 percent of students in Kumasi SHS and Assin Manso SHS were able to employ mathematical concepts, facts, procedures, and reasoning, followed by Accra Academy (64 percent).

Table 3.10 Students' performance in different aspects of mathematics literacy (mean percent)

	Overall	
	Survey 2021	Survey 2022
Content area		
<i>Quantity</i>	37.4	35.4
<i>Space and shape</i>	49.0	45.7
<i>Change and relationship</i>	48.5	51.7
<i>Uncertainty and data</i>	49.6	44.6
Competencies/processes		
<i>Formulating situations mathematically</i>	49.4	37.3
<i>Employing mathematical concepts, facts, procedures, and reasoning</i>	39.3	32.0
<i>Interpreting, applying, and evaluating mathematical outcomes</i>	66.1	54.1
Cognitive domain		
<i>Low</i>	53.5	55.7
<i>Medium</i>	32.4	31.2
<i>High</i>	25.1	28.0

Table 3.11 presents the output of a multiple linear regression model in which students' scores were used as the dependent variable. Student and school demographic characteristics are the regressors. The coefficient of determination (16 percent) suggests that the independent or demographic variables do not efficiently explain the variations in students' scores for mathematics literacy. Based on the output of the model, female students obtained 5.7 percent lower scores compared with male students. Form 2 students also obtained 6.5 percent higher scores compared to form 1 students. Also, schools in categories A obtained 7.3 and 8.3 percent higher scores than students in categories B and C schools. The results further suggest that students in the middle and southern belts obtained 2.7 and 7.7 percent higher scores than students in the northern belt. Students in mixed-sex schools also obtained 4.1 percent lower scores than students in single-sex schools.

Table 3.11 Output of multiple linear regression of mathematics literacy assessment

Characteristics	Coefficient (Sig*)	95% confidence interval
Sex of student		
<i>Male</i>	Reference	
<i>Female</i>	-5.691*	-7.365, -4.015
Level of student		
<i>Form 1</i>	Reference	
<i>Form 2</i>	6.541*	4.812, 8.270
Age	-1.061*	-1.568, -.554
School category		
<i>Category A</i>	Reference	
<i>Category B</i>	-7.317*	-10.879, -3.755
<i>Category C</i>	-8.323*	-11.743, -4.904
Region		
<i>Northern belt</i>	Reference	
<i>Middle belt</i>	2.691*	.209, 5.173
<i>Southern belt</i>	7.728*	5.225, 10.232
School sex		
<i>Single-sex</i>	Reference	
<i>Mixed-sex</i>	-4.121*	-7.859, -.383

*p≤0.05

3.5.7 Qualitative insights from headteachers and teachers on why students are underperforming in mathematics literacy

3.5.7.1 Factors contributing to low proficiency levels in mathematics literacy among schools

As seen from section 3.4.4 above, performance in mathematics literacy is low, particularly among female students and students from category C schools in the Ahafo region (66.7 percent) region, Bono East (70.8 percent), and the Upper West region (66.7 percent). During the qualitative interviews, school heads and teachers were asked to explain why their students were performing poorly in mathematics.

Weak foundational knowledge from the basic school level

Most of the teachers and heads indicated that some of the students did not have a strong foundational background in mathematics from the basic school level. Teachers from schools such as Yamfo Anglican SHS, Navrongo SHS, and Berekum SHS also maintained that they do not have mathematics-related teaching and learning materials to aid the students in their studies. For example, a teacher from Yamfo Anglican SHS said that *"One of the reasons is lack of teaching and learning materials. The government hasn't provided adequate teaching and learning materials, and for that matter, teachers teach in abstract, and it makes it difficult for the students to do well in mathematics"*.

Inadequate teaching and learning resources

They further explained that their students are performing poorly in mathematics because the students do not have the necessary resources, specifically calculators, mathematical sets, and graph books, which are to be provided by parents. Some headteachers in the Bono East and Upper West confirmed this information and stated that on numerous occasions, parents had been encouraged to buy the materials for the students with no positive feedback. Some quotes from the interviews are shown below:

- *"The reason is that most of the students have a poor background in mathematics, and so they consider it to be difficult. They don't pay the necessary attention to it, and that is why students are not doing well in mathematics"* – Male teacher, Ahafo region
- *"It is like they don't get the basic concepts before they get to SHS. This makes it difficult for them. Due to that, they develop a fear of mathematics. You come to class and teach, and they will understand, but to practice is a problem. They do not have time to practice. These are some of the problems I have found."* – Male teacher, Upper East region
- *"In SHS, we use calculators, so you have to introduce it to them. But most of them don't have it. So, if only one person brings it, the rest don't participate in the teaching. And in SHS, without the calculator, it will be difficult to solve objective questions."* – Male teacher, Western region

Some students disinterest in mathematics, particularly females

Of interest is the poor performance of female students in mathematics. Some of their mathematics teachers explained that most of their female students are not performing because of their fear of the subject and the perception that mathematics is a male-specific subject. For example, a female teacher said that *"With that one, I teach girls and they generally fear mathematics. They think mathematics is meant for boys. The boys can pass math better than they do. They think math is so complex, especially topics like trigonometry, word problem etc. They see math to be boring. They had a weak background at the basic level. Some of their parents and other relatives too do not encourage them to be serious with maths"*.

Another teacher also explained that because some female students perceive math to be a male-specific subject, they have no interest in studying it, leading to their low performance; a male teacher from Bodwesango SHS in the Ashanti region said that *"One of the reasons is that students have the perception that mathematics is difficult and abstract which is not helping them learn. Also, the female students think that mathematics is for only boys and for that matter, do not see the need to study mathematics"*.

Ineffectiveness of teachers

A few teachers also associated the non-performance of students in mathematics with the ineffectiveness of some teachers. They explained that some of the teachers who teach mathematics did not specialize in mathematics or only minored in mathematics. They are usually asked to teach because of a shortage of teachers. Due to this, they are unable to apply the required pedagogy and teaching techniques required for the mathematics subject leading to the poor performance of students. A teacher from Navrongo SHS said that *"we can talk about the teacher competence or otherwise. We have some teachers who are forced to teach mathematics, meanwhile that is not their area. Some minored in mathematics and they are teaching mathematics. When the teachers themselves are handicapped, how do they help students to understand? Also, we can also talk about the methodologies and lesson deliveries"*.

Inability to complete the mathematics syllabus

Interestingly, some of the teachers mentioned that one key challenge they have with mathematics is the duration of the lesson. They explained that the broad nature of the subject and the required practical exercises could not be completed in the allotted one-hour duration for a lesson. A teacher said explicitly that the school had never been able to cover the syllabi for mathematics before the West Africa Secondary School Certificate Examination (WASSCE) was due. The teachers encouraged an extension of the duration for the subject to better prepare students. Here is a quote from a teacher: A quote from a teacher is shared below:

- *"The contact hours for the SHS are too short. Mathematics is too broad, and the syllabi cannot be covered within that limited period. This puts a lot of pressure on both teachers and students. We have*

never been able to cover all the syllabi before students write their WASSCE. The efforts of the students to practice what has been taught is not always there". Male teacher, Upper East region

The least-performing schools in mathematics literacy in 2022 were in the Bono East and the Upper West Regions. The schools are Ameyaw Akumfi SHS (mean score of 29.5 percent) and Wa Senior High/Tech (mean score of 29.2 percent). The heads of these schools confirmed the insight from the teachers that the key challenges they face are the poor foundational background of students and the unavailability of learning resources for the students. The heads of these schools indicated that remedial lessons had been set up to assist students with weak performances from the junior high level. Below are some qualitative quotes:

- *"Some of the students usually have a poor background from the JHS they come from. So, the teachers sometimes have to reteach them what they did not learn. I'm sure that is one reason they did not do well. Also, we have challenges with some materials. We have some but it is not enough, so it will help if we can get some more textbooks for the students " – male head of school, Bono East region*
- *"We have encouraged parents to buy things the students need for their learning, but we still get excuses from parents. The school cannot buy calculators for all the students to use for themselves..." – Male head of school, Upper East region*

3.5.7.2 Factors contributing to high proficiency levels in Mathematics Literacy by some schools

Results from [section 3.5.4](#) reveal that 4 of 10 category A students are approaching proficiency or higher in mathematics literacy.

Availability of textbooks in high performing schools

Qualitative interviews with school heads and teachers from these schools revealed that most students from these schools are performing well in mathematics literacy because the schools have most of the required textbooks and other teaching materials. Some of the schools have also instituted mathematics clubs to encourage the students to take the lessons seriously. *"Fortunately for us, we have textbooks for the students to use. The PTA and alumni also provide learning materials for us if we need them. And most of the form 1 students posted to this school are good from JHS, so it helps". – Female teacher, Central region*

Extension of contact hours

The heads further revealed that the duration of lessons (including mathematics) had been extended for an additional hour to increase the contact hours for students across the subjects. Some schools have also instituted remedial classes for students who are weak. A few of the heads of schools also said that they had intensified their monitoring of teachers and students to help improve their performance.

- *"We have intensified strict supervision of teachers and students to keep them focused on academic work. We have also introduced extra classes for the students from one to two hours for all the core subjects " – male head of school, Central region*
- *"I think the extra classes we are doing for the students is helping a lot. Also, the parent-teacher association (PTA) has been very helpful in providing motivation for our teachers to encourage them to do well. I believe all these have helped us. Also, By God's grace we have some learning materials for the teachers and students" – female head of school, Eastern region*

3.6 Evaluation of science literacy assessment

3.6.1 Science literacy assessment

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 1). 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

- Identify scientifically oriented issues

- Explain phenomena scientifically
- 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 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, organize and display data, and 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, synthesize or evaluate evidence, justify reasons based on various sources, and develop a plan or sequence of steps to approach a problem.

The science literacy assessment contains 40 questions items developed by NaCCA. Thirty-four of the items were multiple choice, and six 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 1) that indicate the kinds of tasks that students at those levels are capable of completing successfully. Table 3.12 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 3.12 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

Level of proficiency	Lower score limit	Characteristics of tasks
		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.

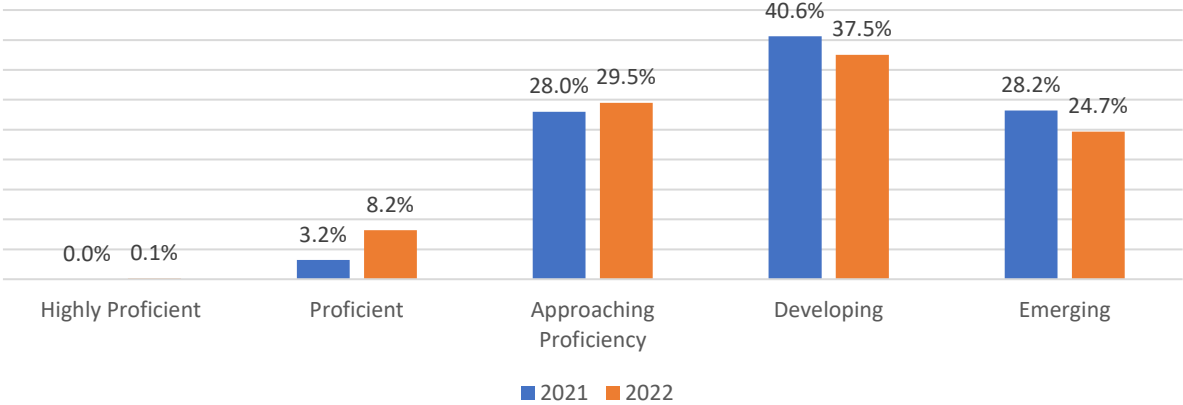
3.6.4 How students performed in science literacy

On average across the 100 sampled schools, 29.5 percent of the students were approaching proficiency in science literacy in 2022 ([table 3.13](#)). The 2022 result is similar to that of 2021 (28.1 percent). Approaching proficiency is the benchmark agreed upon by NaCCA for the student assessment in science literacy. At the minimum, these students can draw on moderately complex content knowledge to identify or construct explanations of familiar phenomena. In less familiar or more complex situations, these students can construct explanations with relevant cueing or support. More than 45 percent of students from Ahafo and Greater Accra Regions were approaching proficiency in science literacy. Eighty-three percent of students from Kukuom Agriculture SHS and Aburi Girls SHS are approaching proficiency in science literacy in 2022, the same as in 2021.

Only 8.3 percent of students were top performers (proficient and above) in science literacy in 2022, compared with an even smaller 3.2 percent in 2021. These small number of top-performing science students, at the minimum, can use abstract scientific ideas or concepts to explain unfamiliar and more complex phenomena, events, and processes involving multiple causal links. Most top-performing students are from category A schools and the Central region. The schools include Wesley Girls SHS (75 percent) and Aggrey Mem. A.M.E. Zion (41.7 percent). This is true for both 2021 and 2022 ([table A3.10](#) and [A3.11](#) in annex 3).

Almost four of ten students (37.5 percent) were developing science literacy students in 2022, compared with 40.4 percent in 2021. The difference is not significant.

Figure 3.4 Percentage of students at different levels of science proficiency – overall result



3.6.5 SEI students’ attainment of the different proficiency levels in science literacy

Table 3.13 shows the distribution of students across the five proficiency levels. The school-level and regional-level data can be found in [tables A3.10](#) and [A3.11](#) in annex 3.

Highly proficient

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.

On average, across the 100 sampled schools, only 0.1 percent of students attained this level in 2022. No student attained this level in 2021. The proportion of students that performed at this level were from category B schools, notably Kpando SHS (8.3 percent).

Proficient

Proficient students, also known as top performers in science literacy, 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.

Less than 10 percent of the students from the 100 sampled schools were top performers in 2022 ([table 3.13](#)). The majority of the top performers are from category A schools. The school with the highest share of top performers in science literacy is Wesley Girls SHS. This is followed by Aburi Girls SHS and Mawuli SHS ([table A3.11](#) in annex 3). The gap between the regions with the top-performing students (Central and Volta regions) is about 15 percent higher than the region with the smallest share of top performers (Western North and Bono regions). A similar case was noted for the 2021 science literacy result.

Approaching proficiency

Students approaching proficiency in science literacy 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.

Three of every ten students in the 100 sampled schools were approaching proficiency in 2021 and 2022 ([table 3.13](#)). The majority of the students attaining this level are from the Ahafo region; particularly Kukuom Agriculture SHS (83.3 percent).

Developing

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.

The largest share of students from the 100 sampled schools performed at this level in 2021 and 2022 ([table 3.13](#)). However, the 2022 result is less than 3.1 percent than in 2021. Of key interest is the Northern Business SHS, which recorded the highest proportion of developing science students ([table A3.11](#) in annex 3). Meanwhile, only about two of every ten category A students were developing science students. This is particularly true for students in

Tamale Girls SHS (66.7 percent); the only category A school with the highest number of students attaining this level ([table A3.11](#) in annex 3)

Emerging

Approximately 25 percent of the students from the 100 sampled schools were emerging science literacy students in 2022, similar to the 2021 result (table 3.13). These students are unlikely to use basic or everyday scientific knowledge to recognize aspects of familiar or simple phenomena. They might not be able to identify simple patterns in scientific terms and follow explicit instructions to conduct a scientific procedure. Wamanafo Senior High/Technical School recorded the highest proportion of emerging science literacy students in 2022 ([table A3.11](#) in annex 3).

Table 3.13 Percentage of students at different levels of science literacy

Assessments	Highly Proficient (80-100%)		Proficient (68-79%)		Approaching Proficiency (54-67%)		Developing (40-53%)		Emerging (0-39%)	
	Survey 2021	Survey 2022	Survey 2021	Survey 2022	Survey 2021	Survey 2022	Survey 2021	Survey 2022	Survey 2021	Survey 2022
Sex										
<i>Male</i>	0.0	0.2	3.7	8.2	31.4	33.6	41.0	36.9	24.0	21.1
<i>Female</i>	0.0	0.0	2.6	8.2	24.5	25.9	40.1	38.2	32.8	27.8
Level of student										
<i>Form 1</i>	0.0	0.2	2.5	6.2	26.6	24.6	41.4	39.5	29.5	29.5
<i>Form 2</i>	0.0	0.0	3.8	10.3	29.4	34.7	39.8	35.5	27.0	19.6
School category										
<i>Category A</i>	0.0	0.0	10.0	24.4	53.6	34.5	23.6	25.6	12.9	15.5
<i>Category B</i>	0.0	0.3	3.7	8.1	27.1	29.0	39.4	35.6	29.7	27.0
<i>Category C</i>	0.0	0.0	1.6	3.9	23.5	28.5	44.5	42.0	30.4	25.6
School sex										
<i>Mixed-sex school</i>	0.0	0.1	2.3	6.3	24.7	28.8	42.8	38.6	30.2	26.2
<i>Single-sex school</i>	0.0	0.0	10.0	23.5	53.6	35.6	23.6	28.8	30.2	12.1
Overall	0.0	0.1	3.2	8.2	28.0	29.5	40.6	37.5	28.2	24.7

Table 3.14 Students' mean assessment scores in science literacy by demographic characteristics

	Survey 2021	Survey 2022
Sex		
<i>Male</i>	47.3	49.9
<i>Female</i>	45.0	47.5
Level of student		
<i>Form 1</i>	45.6	47.0
<i>Form 2</i>	46.8	50.4*
School sex		
<i>Mixed sex</i>	45.3	47.7*
<i>Single sex</i>	53.5	56.0
School category		
<i>Category A</i>	53.5	55.7
<i>Category B</i>	45.9	48.0
<i>Category C</i>	45.0	47.2*
<i>Overall</i>	46.2	48.6

*p≤0.05

3.6.6 SEI students' performance in the different aspects of the science literacy

As discussed in section 3.6.2, the science literacy assessment covers three domains (i.e., context, competencies, and knowledge). Table 3.15 provides the domain analysis of the science literacy of students. As shown in the table, few students were able to “explain phenomena scientifically” and “use scientific evidence” in 2021 and 2022. Again, low mean scores were also recorded for “to make a scientific inquiry and explanations, i.e., “knowledge of science”. The implication is that SEI students are unable to think scientifically or learn and solve problems to make informed decisions. The disaggregated school and regional results in [tables A3.12](#) and [A3.13](#) in annex 3 show that schools in the Central region, particularly Wesley Girls SHS, performed well across the aspects of science literacy.

Table 3.15 Students' performance in different aspects of science literacy (mean percent)

	Overall	
	Survey 2021	Survey 2022
Contexts		
<i>Local/National/Social</i>	78.1	70.6
<i>Global (Life across the world)</i>	67.6	67.2
Competencies		
<i>Identify scientifically oriented issues</i>	57.3	57.5
<i>Explain phenomena scientifically</i>	54.8	52.6
<i>Use scientific evidence</i>	49.3	54.6
Knowledge domains		
<i>Knowledge of science (physical, living and technology systems, etc.)</i>	59.3	59.0
<i>Knowledge about science (scientific inquiry and explanations)</i>	46.1	43.6
Cognitive demand		
<i>Low</i>	70.4	72.1
<i>Medium</i>	54.4	51.2

Table 3.16 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 (12 percent) suggests that the independent or demographic variables are not efficiently explaining the variations in students' scores for science literacy. Based on the model's output, female students obtained 3 percent lower scores than male students. Form 2 students also obtained 4.2 percent higher scores compared to form one students. Also, students in categories B and C schools scored 9 percent lower than students in category A schools. The results further suggest that students in the middle and southern belts obtained 6 and 11 percent higher scores than students in the northern belt.

Table 3.16 Output of multiple linear regression of science literacy assessment

Characteristics	Coefficient (Sig*)	95% confidence interval
Sex of student		
<i>Male</i>	Reference	
<i>Female</i>	-2.988*	-4.759, -1.217
Level of student		
<i>Form 1</i>	Reference	
<i>Form 2</i>	4.189*	2.419, 5.959
Age	.0136	-.0081, .03542
School category		
<i>Category A</i>	Reference	
<i>Category B</i>	-9.701*	-13.477, -5.925
<i>Category C</i>	-9.083*	-12.699, -5.467
Region		
<i>Northern belt</i>	Reference	
<i>Middle belt</i>	6.0907*	3.460, 8.721
<i>Southern belt</i>	10.991*	8.344, 13.638
School sex		
<i>Single-sex</i>	Reference	
<i>Mixed-sex</i>	-2.7145	-6.621, 1.192

3.6.7 Qualitative findings on science Literacy

3.6.7.1 Factors contributing to low proficiency levels in science literacy in some SEIs

The majority of students that performed poorly in science literacy are from category B and C schools. Qualitative data were collected from heads and teachers at these schools to ascertain why their students are not proficient in science literacy.

Weak foundational knowledge from the basic school level

Similar to the explanations provided for reading and mathematics literacy, the heads and teachers cited the poor academic background of the students as a factor. They explained that the students were weak in the fundamental concepts of science literacy, and so are required to start teaching the fundamentals, which is not conducive due to the scheduled lessons for the academic year. Some teachers said that:

- *"From basic school, JHS, the subject is not well understood. Here, we are only supposed to build on what has already been done. So, there is not much time to start afresh". Science teacher- Ashanti region*
- *"Initially students are coming from different backgrounds, so it takes a lot of time to prepare them for the next level and we were getting most of the students from the North, around Drobo, Kebeke areas. These days what we are getting most of them are a little bit weak, so before you can get the best out of them [students], it takes time. So basically, for form ones and twos, you have to move a little bit slow to get them into the next level, so it is not easy preparing them". Science teacher- Eastern region*
- *" The students that we admit from the basic school to the senior high come with weak grades. They are not screened, and so some are not supposed to be admitted. Those weak students, most of them struggle and fail at the end". Science teacher- Central region*

Perceived notion that science is a difficult subject

According to some teachers, one of the reasons for the low proficiency of students is because of the perception that science is a difficult subject. Teachers explained that because of this perception, students seem uninterested in the subject. This, coupled with the fact that because it is not their elective subject, they show less interest in it. For example, a male science teacher in the Ashanti region said that *"It starts from the basics because some of the students have a perception that science is a difficult subject. It is also based on how teachers in the basic schools presented the subject to the students. Some students do not have a basic knowledge about the common things around them when it comes to science"*

Inability to complete the science syllabus

Another key complaint of the science teachers is that the lesson duration for science is not sufficient to cover both the theory and the practical aspects of the subject. The science teachers maintained that, like mathematics, they are usually unable to cover the syllabus before the WASSCE. Some quotes from the science teacher are presented below:

- *"I also realized that time for practical [lessons] is short. And I'm speaking not based on here alone because I have taught in other schools before here. There is no time even for labs, so when the practical aspect comes in, the students struggle". – Female science teacher, Western region*
- *"We are unable to cover the syllabus because of the 3 years. We use all the time to copy notes which could have been used to complete the syllabus". – Female teacher, Western North region*
- *"Also, the time factor, not being able to cover the broad syllabus is a problem for us". – Male science teacher, Greater Accra region*

Perception that government policies have contributed to the low student performance

Teachers and heads in the Bono, Upper East, and Upper West regions were particular about the Free SHS policy. According to them, the non-performance of the students may be attributed to the policy. They explained that the policy had led students not to take their lessons seriously, knowing that they would not be made to repeat a class. Another teacher also mentioned that because of the policy, students who do not qualify for the SEI level are admitted. Some quotes from teachers and heads are provided below:

- *"The Free SHS programme has its own challenges too. When something is free, people don't value it. Parents have relaxed on their responsibilities. The students are not getting enough food to eat. How can they learn on an empty stomach? School authority can no longer sack or demote a student. students feel reluctant to learn because we can't do anything to them. These are the reasons that are confronting us even though we try to manage". – Male science teacher, Upper East region*
- *"They bring in students who do not pass exams in the name of free education" – Male science teacher, Bono region*
- *"I think that ever since they opened the floodgates for us to absorb almost every student, I've realised that since that time till now, not only integrated science but almost all the subjects, their performance has come down. Then the free SHS also came and worsened things. And now, as you are teaching, they don't pay attention. Their attitude towards teaching and learning is very bad" -head of school, Bono region*

Inadequate teaching and learning materials

The final reason, as provided by the teachers and heads, was the lack of teaching and learning materials. They indicated that students do not have access to textbooks which leads to teachers writing notes on the boards instead of students referencing from their notes. This leads to a reduction of effective contact hours. Some heads also complained that the schools do not have laboratories for their practical lessons, which also hinders students' performance. Here are some relevant quotes:

- *"Lack of materials. Students don't have materials because we rely on government for textbooks. We don't have enough facilities for practical" – Male head of school, Ashanti region*
- *"We are unable to cover the syllabus because of the 3 years. We use all the time to copy notes which could have been used to complete the syllabus if they had textbooks" – Male science teacher, Ashanti region*
- *"Inability of us to cover the syllabus at the various levels. Also is the inadequacy of textbooks for students to complement the notes given by teachers" – Male teacher, Northern region*

3.4.6.2 Factors contributing to high proficiency levels in science literacy in some SEIs

A little over half of the category A school students are approaching proficiency or above in science literacy. Insight from the heads and teachers at these schools revealed that the schools had provided remedial classes for students identified as low performers. The schools, through support from the communities, alumni, and other organizations, have been able to acquire some textbooks and learning resources for their students. Also, the school heads indicated that there had been an increase in the monitoring and supervision of instructional hours, extra classes, and evening classes to ensure that students and teachers take the academic work seriously.

3.7 Evaluation of 21st century skills assessment

3.7.1 21st century skills assessment

3.7.2 The framework for assessing 21st century skills

Twenty-first century skills as defined by the MoE's secondary education strategy, cover:

- Foundational knowledge, which includes literacy, numeracy, scientific literacy, ICT and digital literacy, financial literacy and entrepreneurship, cultural identity, civic literacy, and global citizenship.
- Competencies include critical thinking and problem-solving, innovation and creativity, collaboration, and communication.
- Character qualities, which 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 1 The framework provides a broader explanation of the elements entailed in the three areas under 21st century skills.

Overall, the 2021 and 2022 21st century assessments were conducted in much the same way:

1. The assessment of 21st century skills included 50 multiple-choice items. Students were allowed 80 minutes to complete the assessment.
2. The assessments were paper-based.
3. There was no variation between the assessment tools, as the same assessment tool used in 2021 was repeated in 2022. No new items were added to the 21st century skills assessment instrument in 2022.

3.7.3 Proficiency levels for 21st century skills

Table 3.17 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.

3.7.4 How students performed on 21st century skills

Table 3.18 shows the changes between 2021 and 2022 in the performance of SEI students in 21st century skills. On average, across the 100 sampled schools, the performance of students in 21st century skills did not change significantly during the period. This is due to the fact that the secondary school curriculum is limited in its scope in covering the competency areas in the 21st century skills. This also suggests that there is a higher likelihood that a similar performance will be witnessed in subsequent surveys without any change in the curriculum with a focus on financial literacy, problem-solving skills, and other curricula covered by the 21st century skills syllabus used for the assessments.

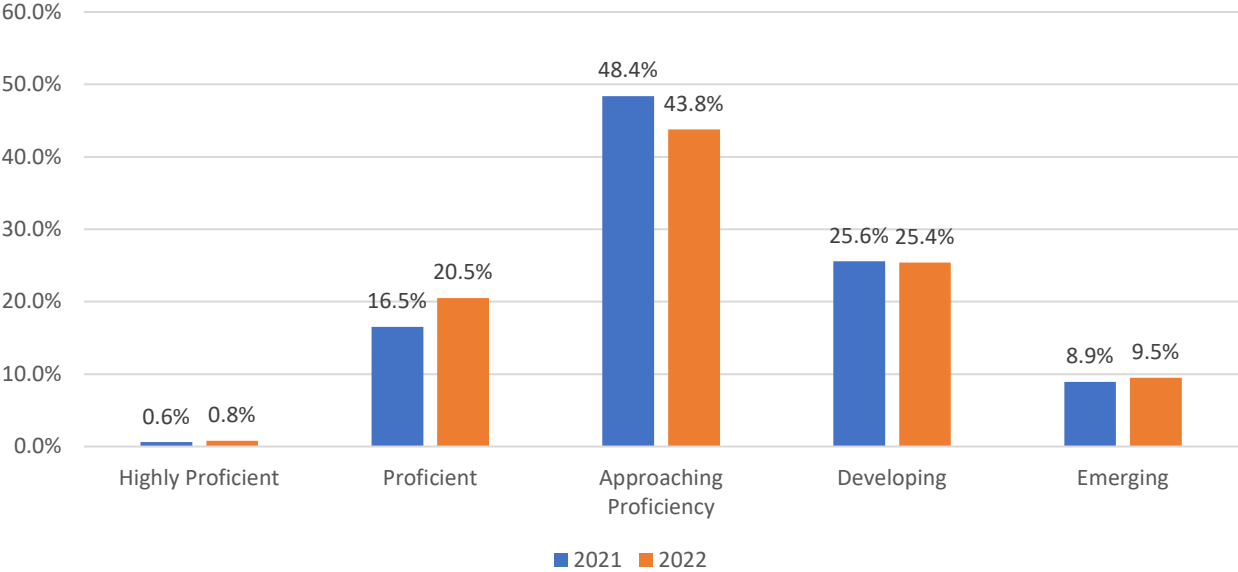
Overall, 21.3 percent of students demonstrated proficiency or higher (the “minimum level of proficiency”) in 21st century skills in 2022, similar to the 2021 result (figure 3.5). At the minimum, these students can also provide explanations of situations and aspects of situations. They demonstrate consistency in their ability to assess, describe and/or explain situations across multiple activities within a problem.

The performance of students in 21st century skills was most pronounced in single-sex schools such as Wesley Girls SHS and Accra Academy (table A3.14 and A3.15 in annex 3). In mixed-sex schools, over 70 percent of students in Anglican SHS and Aggrey Mem. A.M.E. Zion were proficient in 21st century skills.

There was not much difference between the share of students performing at (Developing and Emerging) proficiency in 2021 and 2022, the lowest proficiency levels. Overall, 9.5 percent of the students assessed in 2022 were developing students. These students can identify and analyse basic problems and resolve them. A significant number of students in the Upper West region and the Bono East region were developing students both in 2021 and 2022 (table A3.14 and A3.15 in annex 3). In 2021, 25 percent and 31.3 percent of students in these two regions were developing students, respectively. This has increased significantly to 50 percent and 45.8 percent (table A3.15 in annex 3).

A majority of the SEI students were currently “approaching proficiency” in 21st century skills (figure 3.5). At the minimum, these students can identify and analyse moderate problems and resolve them. They demonstrate consistency in being able to assess, describe and/or explain situations across multiple activities within a given problem. The share of students who performed at this level declined from 48.4 percent in 2021 to 43.8 percent in 2022.

Figure 3.5 Percentage of students at different levels of 21st century skills – overall result

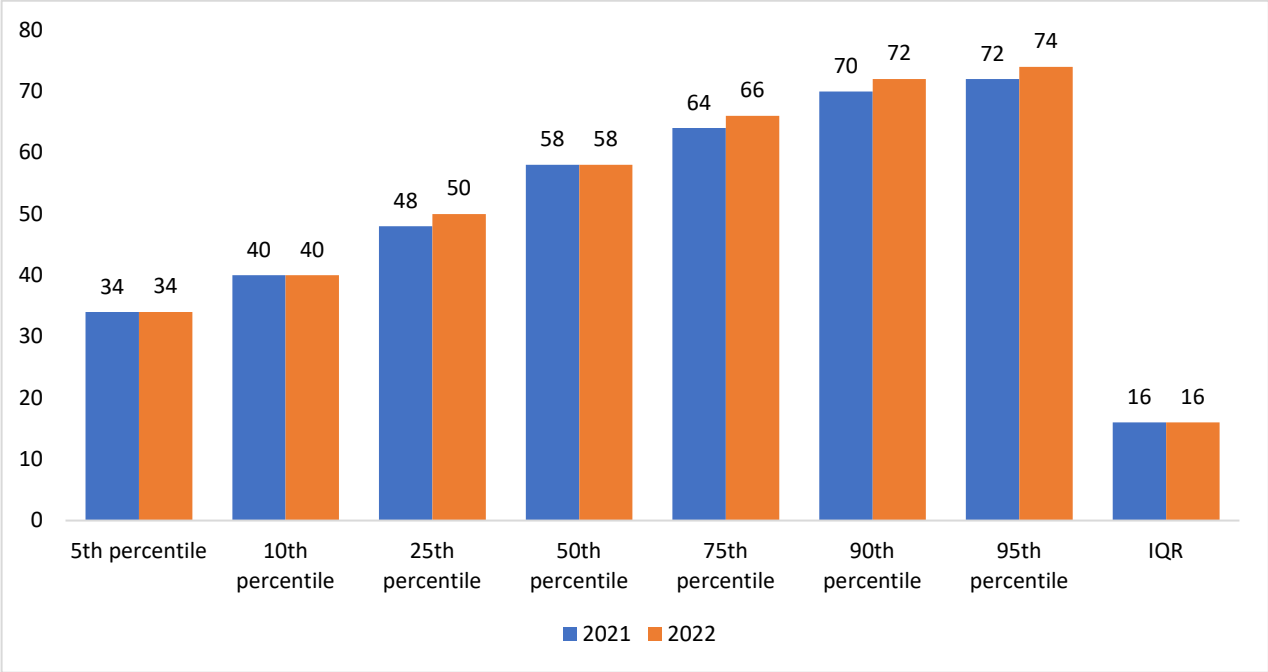


The stability in mean performance in the 21st century skills (table 3.17) across the 100 sampled schools’ marks changes in the distribution of student performance. We, therefore, computed the percentiles and inter-quartile range of students’ performance (figure 3.6). The 10th percentile is the point on the scale below which 10 percent of students score. In other words, if all students were ranked from lowest to highest scoring, the 10th percentile would

be the highest score of the lowest-performing 10 percent of students. Likewise, the 90th percentile is the point on the scale below which 90 percent of students score (or above which only 10 percent of students score). The median or 50th percentile divides the performance distribution into two equal halves, one above and one below that position on the scale. The inter-quartile range (IQR) measures the spread or dispersion of the middle half of the data. It is computed by subtracting the value of the 75th percentile from the 25th percentile.

As seen in figure 3.6, no significant change was observed in any of the percentiles of the performance distribution between the 5th and 95th on average, across the sampled SEIs, indicating that there were no variations in the performance of students in 2021 and 2022.

Figure 3.6 Percentiles and inter-quartile range of 21st century skills results (%)



3.7.5 SEI students' attainment of the different proficiency levels in 21st century skills

[Tables A3.14](#) and [A3.15](#) in annex 3 show the distribution of students across the five proficiency levels in each of the sampled schools and regions.

Highly proficient

Highly proficient is the highest level of proficiency on the student assessment scale developed by NaCCA. Highly proficient students can identify and analyse multiple perspectives. They can reason about ideas and make predictions well beyond the information given in a problem while effectively evaluating large amounts of information. Students at this level can reason with a large amount of information without additional support provided, meaning they can make connections across elements of various problems on their own.

On average, across the sampled schools, about 1 in 120 students attained this level of proficiency in 2022, similar to the 2021 result. The Greater Accra Region had the highest proportion of students (2.4 percent) who scored at this level in 21st century skills, followed by Eastern region (1.8 percent) and Western Region (1.7 percent). The proportion of students who performed at this level are from category A schools. In particular, 8.3 percent of students in Fijai SHS and Accra Academy had the majority of their students performing at this level. Overall, 1 percent more category A school students performed at this level in 2022 than in 2021. There was no variation in the percentage of category C school students (0.3 percent) who performed at this level in 2021 and 2022.

Proficient

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. Proficient students can be said to be top performers in 21st century skills in that they are able to 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.

On average, across the sampled schools, 20.5 percent of the students were top performers in 21st century skills in 2022, similar to the 2021 result. Interestingly, the proportion of category A school students performing at this level dipped in 2022 (from 40.9 percent in 2021 to 34.5 percent in 2022), while the share of category B and C students increased slightly by 4.7 percent. For the two years under review, more male students are proficient in 21st century skills than females. The variation in male-to-female performance in 2022 is (1.8 percent).

Central Region recorded the highest number of proficient students in 21st century skills. About 21 percent of students were performing at this level in 2022 (4 percent higher than in 2021). Ahafo Region (4.2 percent) and Western North Region (0.0 percent) recorded the lowest proportion of proficient students in 21st century skills. The smaller share of top-performing students in the Central Region reflects the general result recorded across all the student assessments, including reading, mathematics, and science literacy.

Approaching proficiency

Students approaching proficiency 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. These 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.

On average, across the sampled schools, 43.7 percent of students were approaching proficiency in 21st century skills in 2022, similar to the 2021 result (table 3.18). Schools such as Wenchi Methodist SHS (83.3 percent), Nungua SHS (83.3 percent) and Business SHS (83.3 percent) had the highest number of students performing at this level both in 2021 and 2022.

Developing

There was not much variation between the share of developing students in 2021 and 2022. Generally, a quarter of the SEI students sampled were developing students in 21st century skills. These students can identify and analyse basic problems and resolve them. For both 2021 and 2022, the majority of developing students were from category C schools and from Upper West region (50.0 percent) and Bono East region (45.8 percent). Again, for 2022, Bimbila SHS (58.3 percent), Yeji SHS (58.3 percent), and Asawinso SHS (58.3 percent) recorded the highest number of developing students.

Emerging

Emerging students are low achievers in 21st century skills. Few of these students can think critically and solve problems. This is true for almost 1 in every 10 SEI students across the sampled SEIs in 2022 (table 3.18). Majority of the emerging 21st century skills students were from Western North Region (36.1 percent) and Ahafo Region (33.3 percent). In particular, Yamfo Anglican SHS (58.3 percent) and Bodwesango SHS (50.0 percent) recorded the highest share of emerging 21st century skills students in 2022.

Table 3.18 Percentage of students at different levels of 21st century skills

Assessments	Highly Proficient (80-100%)		Proficient (68-79%)		Approaching Proficiency (54-67%)		Developing (40-53%)		Emerging (0-39%)	
	Survey 2021	Survey 2022	Survey 2021	Survey 2022	Survey 2021	Survey 2022	Survey 2021	Survey 2022	Survey 2021	Survey 2022
Sex										
<i>Male</i>	0.7	0.9	17.0	21.5	51.4	45.3	23.1	23.6	7.8	8.7
<i>Female</i>	0.5	0.8	16.0	19.7	45.4	42.3	28.1	27.0	10.0	10.2
Level of student										
<i>Form 1</i>	0.4	0.2	12.8	18.6	47.2	42.2	28.9	28.9	10.7	10.2
<i>Form 2</i>	0.8	1.5	19.8	22.4	49.4	45.2	22.6	22.0	7.3	8.9
School category										
<i>Category A</i>	0.8	1.8	40.9	34.5	43.2	42.9	11.4	17.3	3.8	3.6
<i>Category B</i>	1.2	1.2	14.9	19.6	53.0	46.2	21.2	24.0	9.7	9.1
<i>Category C</i>	0.3	0.3	12.7	17.4	47.1	42.4	30.5	28.5	9.5	11.4
School sex										
<i>Mixed-sex school</i>	0.6	1.5	14.8	40.2	48.4	42.4	26.9	12.9	9.4	3.0
<i>Single-sex school</i>	1.2	0.8	38.8	18.1	48.2	43.9	9.4	26.9	2.4	10.3
Overall	0.6	0.8	16.5	20.5	48.4	43.8	25.6	25.4	8.9	9.5

Table 3.19 Students' mean assessment scores by demographic characteristics

	Survey 2021	Survey 2022
Sex		
<i>Male</i>	56.6	57.5
<i>Female</i>	55.3	55.9
Level of student		
<i>Form 1</i>	54.4	55.5
<i>Form 2</i>	57.4	57.7
School sex		
<i>Mixed sex</i>	55.4	62.8*
<i>Single sex</i>	62.5	55.9*
School category		
<i>Category A</i>	62.1	61.2
<i>Category B</i>	56.3	57.2
<i>Category C</i>	54.6	55.1
<i>Overall</i>	56.0	56.7

*p≤0.05

3.7.6 SEI students' performance in the different aspects of 21st century skills

Each item in the 21st century skills assessment was classified under three broad areas: foundational knowledge, core competencies, and character qualities.

Table 3.20 provides an analysis of the domain for 21st century skills. Consistently for 2021 and 2022, students performed best on "discipline and integrity," followed by items on "responsible citizenship". This is notable when the data was disaggregated by region (see [table A3.16](#) in annex 3) and schools ([table A3.17](#) in annex 3).

Of note in the results are the low average scores for critical thinking and problem-solving; 32.8 percent in 2022 compared to 32.0 percent in 2021. Students in Accra Academy (48.1 percent), Wesley Girls Senior High (42.6 percent) and Anglican Senior High (41.7 percent) were relatively stronger in "critical thinking and problem-solving skills". The mean score of these students was 11.4 percent more than the overall mean score recorded on "critical thinking and problem-solving skills". Low mean scores were also recorded across region with only students in the Western Region performing slightly better on "critical thinking and problem-solving skills".

Low mean scores were also recorded on "financial literacy and entrepreneurship" for both 2021 and 2022.

Table 3.20 Students' performance in different aspects of 21st century skills assessment (mean percent)

	Survey 2021	Survey 2022
Discipline and Integrity	78.3	79.8
Responsible citizenship	66.8	68.2
Cultural identity, civic literacy, and global citizenship	64.0	61.9
ICT and digital literacy	62.0	62.7
Self-discipline	61.8	63.2
Adaptability and resourcefulness	59.1	60.6
Leadership	55.4	58.04
Financial literacy and entrepreneurship	45.6	47.8
Critical thinking and problem-solving	32.0	32.8

Table 3.21 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 (9 percent) suggests that the independent or demographic variables do not efficiently explain the variations in students' scores for science literacy. Based on the output of the model, Form 2 students also obtained 2.3 percent higher scores compared to form 1 students. Also, students in category B and C schools obtained about 3 and 4 percent scores lower than students in category A schools. The results further suggest that students in the middle and southern belts obtained 4 and 11 percent higher scores than students in the northern belt. Also, Mixed sex schools obtained 4 percent lower scores than students in single-sex schools.

Table 3.21 Output of multiple linear regression of science literacy assessment

Characteristics	Coefficient (Sig*)	95% confidence interval
Sex of student		
<i>Male</i>	Reference	
<i>Female</i>	-1.332	-2.672, .0094
Level of student		
<i>Form 1</i>	Reference	
<i>Form 2</i>	2.285*	.948, 3.622
Age	-.0181	-.041, .0053
School category		
<i>Category A</i>	Reference	
<i>Category B</i>	-3.016*	-5.873, -.1585
<i>Category C</i>	-4.070*	-6.804, -1.335
Region		
<i>Northern belt</i>	Reference	
<i>Middle belt</i>	4.208*	2.211, 6.205
<i>Southern belt</i>	7.615*	5.604, 9.625
School sex		
<i>Single-sex</i>	Reference	
<i>Mixed-sex</i>	-4.051*	-7.006, -1.097

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

Qualitative data were collected from SEI teachers and heads of schools to ascertain why their students are not demonstrating 21st century skills, particularly critical thinking and problem-solving skills. Generally, the teachers provided various reasons they perceive as causes for the lack of critical thinking among students.

Students' perceived attitude and language barrier

A few of the teachers attributed the low scores to laziness on the part of the students. They explained that students do not like to do any work that challenges them or work that requires them to explain a concept beyond what has been taught in the classroom. According to the teachers, they either refuse to partake or hide when challenging questions are posed during lessons. For example, a teacher mentioned that *"Critical thinking is a challenge. If you teach them A for A, that's all. So, even if you twist or turn the question small, they will not be able to answer, they will be lost..."*. Another teacher mentioned that *"In my opinion, students are lazy, and once a student is lazy, he or she cannot think not to talk of solving problems. However, if they avoid laziness, they can perform well in problem-solving. They always want the easy and shortcut ways of doing things"*.

Students' disinterest in challenging subjects

Some teachers also believe that students generally do not have an interest in any subjects and topics that are challenging. Of note is the frequent mention of 'word problems' in mathematics. Most of the teachers, especially those who teach mathematics, cited numerous instances where students had told them they do not like the topic because they perceive it as difficult. Others also mentioned that students usually obtain very low scores on the topic because it requires them to think. For example, some mathematics teachers mentioned that:

- *"To me, I realized that their ability to do critical thinking is very poor. Let's say you give them a case study in mathematics; for example, equations involving two variables. They will find it difficult to read and relate and be able to convert it into a mathematical equation for them to work. But if a teacher gives them the equations, some of them will be able to solve it. That tells you that the ability to analyse some of the issues is not there". – Mathematics teacher, Kusanaba SHS*
- *"With critical thinking, to be frank most of our student's critical thinking are very low. The reason is that the basics were not all that strong. You know we have some areas in Mathematics like the word problem, which is used to test their critical thinking skills. You will be surprised when you ask them a question. They will tell you they were not taught in basic schools". -Mathematics teacher, Wenchi Meth. Senior High*

- *“In my opinion, their knowledge in these subjects is very low because they don't like analysing issues. When they are solving questions which involve word problems, they are not able to translate it to mathematical equations”. – Teacher, Bodwesango SHS*

Some teachers also attributed the lack of critical thinking to poor performance at the basic school level. They explained that the ability of a student to think critically and solve problems begins early in their education. A lack of proper training and teaching that requires them to think critically means that they carry on with the challenges along the levels of their education. Some teachers stated that:

- *“..... their knowledge on those areas is below 20%. It is appalling. Because one has to build the foundation lost in JHS before even adding the SHS materials. So, understanding becomes difficult”. - Male teacher, Northern School of Business*
- *“....And maybe too it is because of where they are coming from; their JSS to secondary school. The thing has already been created so they see it difficult picking it all over from scratch. I think if it has been inculcated in them from primary school, they would have had it smooth at the SHS level. So, at SHS level we face a lot of problems with students on critical thinking”. Male teacher, Fijai Senior High School*

Inability of students to read and comprehend

Other teachers also attributed the low levels of critical thinking to students' inability to read and understand. A few teachers were of the view that because some students are unable to read, as a consequence of their performance at the basic school level, they are unable to understand questions that require them to think critically. For example, a teacher from Effiduasi Senior High/Com said, *“In my opinion, the students cannot read well, so they can't think critically to solve problems. In terms of financial literacy, they have fair knowledge because most of the students work at home ”*. Another teacher from Anglican SHS, also said that the students *“...simply don't understand the questions we give them and cannot think well because they do not have control over the English language”*.

Ineffectiveness of teachers

Some blamed teachers' general approach to teaching for the low levels of problem-solving skills of students. They explained that some teachers do not use the appropriate teaching and learning methods to explain concepts clearly to students leading to their inability to understand what has been taught. For example, a teacher from Pong Tamale Senior High School said that *“Students' knowledge on these [critical thinking] is high but some teachers are not skilful enough to build these skills in students. They are mostly self-centred instead of student-centred. So, most teachers teach just to recall. So, I think we need training. Some teachers also don't know that subjects have*

philosophies, and a teacher must teach based on these philosophies". Another teacher also attributed the low performance of students on the syllabi that is used to teach them. He clarified that he perceives that the educational structure is designed to ensure students pass their exams by merely memorizing and writing to pass the exams but does not focus on applicable knowledge. He said that"the nature of the syllabus and WAEC exams have made everything to be chewed and pour basis. So, the syllabus WAEC exams may have to be revised to include some of these skills. Also, the lack of workshops to train teachers to inculcate these skills into students. Also, the lack of materials on the subjects makes students chew and poor. All these don't encourage critical thinking and problem-solving skills in students".

3.8 SEI students' outcome indicators

3.8.1 Percentage of SEI students by grade who demonstrate subject knowledge and 21st century skills.

Table 3.22 presents a summary of students' performance on subject knowledge and 21st century skills. As required by the indicator, the subject knowledge figures are the average scores in Reading, mathematics, and science.

Table 3.22 Students subject knowledge and 21st century proficiency levels by grade (%)

Assessments	Highly Proficient (80-100%)		Proficient (68-79%)		Approaching Proficiency (54-67%)		Developing (40-53%)		Emerging (0-39%)	
	Survey 2021	Survey 2022	Survey 2021	Survey 2022	Survey 2021	Survey 2022	Survey 2021	Survey 2022	Survey 2021	Survey 2022
Subject Knowledge	0.1	4.0	5.4	8.7	28.2	20.9	38.0	31.3	28.3	35.0
<i>Form 1</i>	0.1	3.2	4.9	7.3	28.2	17.6	37.4	32.1	29.4	38.1
<i>Form 2</i>	0.1	4.8	5.8	10.2	28.2	24.3	38.6	30.5	27.4	30.4
<i>2st century skills</i>	0.6	0.8	16.5	20.5	48.4	43.8	25.6	25.4	8.9	9.5
<i>Form 1</i>	0.4	0.2	12.8	18.6	47.2	42.2	28.9	28.9	10.7	10.2
<i>Form 2</i>	0.8	1.5	19.8	22.4	49.4	45.2	22.6	22.0	7.3	8.9
Overall	0.4	2.4	11.0	14.6	38.3	32.4	31.8	28.4	18.6	22.3

Main issues relating to reasons for students high and poor performances, and implications

The findings reveal that school-level stakeholders (i.e. teachers and heads of schools) attribute students' low performances in mathematics to perceived weaknesses in knowledge from basic school. Students' (especially females) disinterest in mathematics, overload of the mathematics syllabus leading to an inability to cover entire topics, inadequate teaching and learning resources, teachers being inexperienced in teaching mathematics due to their specialization at the B.Ed. or diploma level, and parental neglect. High performances, especially in category A schools are also attributed to remediation policies in schools, the availability of learning resources, and infrastructure for students and teachers.

The two-year data on student learning outcomes provided in this report are worrying. With the exception of some

category A schools, the educational system is currently not meeting 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 proficiency in core subjects. In several areas as well, year 2 students performed at the same level as year 1 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 implication for the poor performances is that the higher-order thinking skills required for the new SEI curriculum will be beyond many students who are 'approaching proficiency' as defined for each of the four assessed areas.

The responsibility for this situation is widely shared. When students begin their secondary education, many are ill-prepared, so teachers attempt to focus on the 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 mathematics literacy, where performance dipped in 2022 compared to 2021.

Despite the fact that generally, high-performing students at the basic school level are admitted to category A and B than C schools, the same trained teachers teach these students at the secondary level. The results portray an excuse by some school stakeholders to justify the poor performances of students instead of taking significant steps to reintegrate the students. It is evident from the results that some schools (category A) that have taken steps to improve students' performances through the introduction of remedial programmes and effective monitoring have seen improvements in students' performances. To help improve students' performance, it is important that teachers do not develop a mindset of rationalizing and blaming students for their low performances but rather conduct an introspection to identify gaps in their teaching practices. It is also important that school authorities provide the necessary teaching and learning resources as well as set up Professional Learning Community Sessions (PLCs) at the school level to share knowledge to improve student outcomes.

3.9 Students in the five teacher education universities demonstrating knowledge of the NTS.

This section provides an analysis of student teachers' knowledge of the NTS. Data were collected from student teachers studying for a Bachelor of Education in the five teacher education universities¹³ and who intend to become secondary school teachers. These student teachers were not observed teaching a lesson. They were asked to explain the sub-domains of the NTS and cite examples to demonstrate their knowledge. A student teacher is deemed to have knowledge of the NTS if she/he is able to cite at least 70 percent of strategies for a particular competency related to the NTS.

Key findings

The key findings from this sub-section is that awareness and knowledge of NTS is low across tertiary institutions. However, knowledge of NTS increases as the grade level of students also increases. About 8 out of 10 student teachers have passion for the teaching profession, while the remaining would leave given other opportunities. This emphasizes the need to consider improving teacher remuneration and conditions of service to ensure low attrition. Lecturers teaching at the tertiary level must demonstrate the NTS and other professional teaching practices to serve as examples for student teachers.

Proportion of students in the five teacher education universities demonstrating knowledge of the NTS

First, the student teachers were asked questions to ascertain their awareness of the NTS. Table 3.23 shows the proportion of student teachers who are aware of NTS. The results show that about a third (33.2 percent) are aware of the NTS. The results further show that more student teachers from KNUST are aware of NTS compared to UDS, UG, and UCC. The result also shows that awareness of NTS increases with increasing levels of education. An interesting finding was that some of the student teachers who indicated that they are aware of the NTS were teachers who completed the Colleges of Education (CoE) and are now studying for a B.Ed. in secondary education at the university. A student teacher said that *"I knew about the NTS when I was a student at the college of education. We were given copies at the time" – Year two student, UCC.* Some student teachers indicated that the NTS were part of the list of materials in their course outline. Others also mentioned that they knew about the NTS from their colleague teachers, through workshops they had attended, and from their various WhatsApp groups. Some of the

¹³ These include Kwame Nkrumah University of Science and Technology, University of Cape Coast, University of Education, Winneba, University of Ghana, and University for Development Studies.

student teachers also mentioned that their lecturers introduced them to the NTS, while a few mentioned that they had read it online through research and their schools' website.

The qualitative interview also explored whether the student teachers who were aware of the NTS had electronic or hard copies. Based on the feedback, about half of the student teachers who were aware also had electronic or hard copies of the guidelines. Some of these student teachers explained that they received copies of the NTS during their orientation at the university. For example, a level 200 female student teacher from UEW said, *"Yes, I have a soft copy of the NTS from an orientation meeting. We were given copies"*. A few of the student teachers also said they had copies of the NTS from Supported Teaching in Schools (STS) programmes they participated in and at the CoE they had previously attended. Other student teachers also cited various sources, including friends, social media groups, and online platforms. Please see some quotes from student teachers below:

- *"Yes, it was part of our course materials given to us by our lecturers. "- Female, level 200, KNUST*
- *"Yes, I have it. A lecturer told us to download during lectures. "- Female, level 200, UDS*
- *"I have the soft copy of the NTS but not the book I googled for the soft copy when I was searching for some items for teachers on the internet. "- Male, level 200, UCC*
- *"Yes, I have a soft copy now. I got it through online studies. It was recommended, and I downloaded it. "- Male, level 100, UDS*
- *"Yes, I have it. A friend recommended it to me, and I downloaded it from the internet - Female, level 200, UDS*

The findings from the qualitative interviews imply that the universities and lecturers need to put in more effort to introduce and educate the student teachers to utilize the NTS. This can be done through orientations and as part of the course outlines. Also, some lectures have engaged student teachers and have encouraged them to have copies for their use. The results also suggest that while some student teachers have made individual efforts to obtain copies of the NTS, others have not made any efforts though the information is accessible online for free.

Table 3.23 Preservice student teachers' awareness of the NTS (%)

	Year 1	Year 2	Year 3	Year 4	Overall
Kwame Nkrumah University of Science and Technology (KNUST)	25.0	29.7	51.1	65.5	45.3*
University of Education Winneba (UEW)	34.8	38.5	42.2	43.9	40.1
University for Development Studies (UDS)	8.7	20.2	35.2	40.3	27.7
University of Ghana (UG)	3.3	25.0	51.4	21.7	26.8
University of Cape Coast (UCC)	29.2	18.0	19.8	42.6	24.1
Total	21.8	26.0	37.3	45.3	33.2

*p≤0.05

Figure 3.6 presents the proportion of student teachers who demonstrate knowledge of the NTS. As seen from the figure, 14 percent of the student teachers demonstrated knowledge of the NTS. Significantly more student teachers in UDS have knowledge of the NTS compared with student teachers from other universities. [Figure A3.1](#) in annex 3 disaggregates the data by sex and grade level. Slightly more female students (14.4 percent) demonstrated an understanding of the NTS compared to their male counterparts (13.9 percent), although not significant. Across the five teacher training universities, student teachers in their final year appear to demonstrate knowledge of the NTS compared to their counterparts. The results are, however, not significant.

Figure 3.6 Percentage of preservice student teachers demonstrating knowledge of NTS

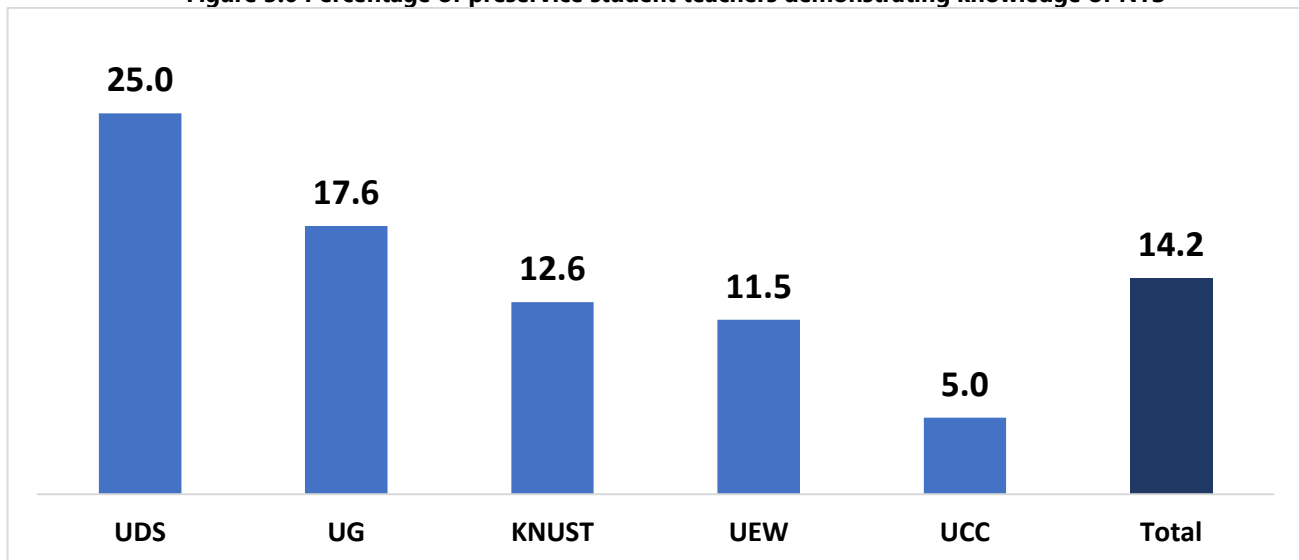


Table 3.24 also presents the performance of the student teachers at each competency level. The result suggests that overall, less than half of the student teachers were able to satisfactorily demonstrate knowledge of the NTS competency areas. Student teachers' knowledge of how teachers should explain concepts using familiar examples was the highest (49.1 percent), followed by student teachers' knowledge of the qualities of a good teacher (47.2 percent). The findings also suggest that student teachers had the least knowledge on how to address GESI issues in the classroom and how to identify and address the needs of students with special needs. This knowledge gap was also noted among the final-year student teachers. Efforts should be made to enhance student teachers' knowledge of inclusion as a critical aspect of the NTS. [Tables A3.18](#) and [A3.19](#) provide the results by institution and grade levels of student teachers. The results showed that student teachers in year 4 performed relatively better on the specific competencies compared to other grade levels.

Table 3.24 Student teachers' who satisfied the criteria at each competency level (%)

NTS competency areas	Male student teachers	Female student teachers	Overall
Knowledge of how teachers should explain concepts using familiar examples to students	47.1	50.9	49.1
Knowledge of qualities of a good teacher	47.4	47.1	47.2
Knowledge of what teachers should do to improve their personal and professional development	44.8	46.3	45.6
Knowledge of strategies teachers should use to encourage learner collaboration that leads to purposeful learning in a class	42.9	44.8	43.9
Knowledge of strategies teachers should use to deliver lessons to pupils at different age and ability groups	34.1	32.4	33.2
Knowledge of how teachers should portray themselves as role models	29.4	28.9	29.1
Knowledge of how teachers should use a variety of teaching and learning materials to enhance learning, including ICT	27.5	28.6	28.1
Knowledge of how teachers should portray themselves as agents of change in the school, community, or country as a whole	27.2	25.4	26.2
Knowledge of teachers' code of conduct	23.5	24.6	24.1
Knowledge of how teachers should conduct research to improve teaching	24.7	22.8	23.7
Knowledge of how teachers should engage with their student's parents and the community	18.9	18.5	18.7
Knowledge of how teachers should encourage student teachers' participation and critical thinking?	16.1	15.7	15.9
Knowledge of how teachers should take into consideration learners' backgrounds in their planning and teaching.	10.5	11.4	11.0
Awareness of NTS	11.7	10.0	10.8
Knowledge of how teachers should give constructive feedback to students	9.2	10.5	9.9
Knowledge on how teachers should pay attention to all learners, especially girls and learners with special educational needs and make sure their progress is assured?	5.3	6.7	6.0
Knowledge on how teachers should identify students who have learning difficulties and address their needs	4.5	5.8	5.2

Qualitative insights were obtained from the student teachers about their perception of the usefulness of the NTS, particularly from students who have copies of the NTS. Overall, the opinions were highly positive. Some of the student teachers indicated that their interest in teaching had been enhanced after reading the NTS. For example, a level 200 male student from the KNUST said that *"... Yes, after going through the NTS, especially during my STS. I like the teaching field more"*. Another level 400 student from UEW also mentioned that *"To be honest with you, the guidelines in the NTS are really good, and if teachers are to follow it strictly, every student in Ghana will become intelligent. You know I told you earlier that I enjoy teaching, but anytime I read through the NTS, I become more excited to be a teacher"*.

Other student teachers expressed their opinions about the NTS as a useful document for teachers to help improve student performance if followed. Some opinions of the student teachers are cited below:

- *"The national teacher's standards is setting standards in the classroom and the learning environment. The professionalism, that is, the way we need to behave as teachers, the way we should interact with our learning environment, the way we dress and behave in the classroom; the standard is talking about what we should do as teachers"*Female, level 200, UCC
- *"My opinion about the national teacher's standards is about how teachers conducted themselves. The way they behave towards each other, the way they behave towards the student, the way they dress, the way they talk to students, the way they accept questions from student and react to the general public"*– Female, level 200, UEW
- *"It guides us on how to manage our resources or know the rules and regulations of the teaching work"*. - Female, level 200, KNUST

Despite the positive opinions with regard to the NTS, a few of the student teachers were skeptical about its applicability in the classroom. This is because some perceive erroneously that the guidelines were developed by foreigners, and so certain components are not suitable in the Ghanaian context. For example, a level 200 female student from the UDS stated:

- *"Yes, I read it for exams. It is very confusing, but we cannot do anything about it. It is not cool because the things in the NTS are foreign, and in Ghana here, we are short of it. We don't have the materials and the tools, and even if you are asked to do something, you have to do the same thing or replace it with another thing. One example is if you are teaching ICT, they said we should make it practical, but how many computers or laptops are in basic schools? Even in SHS, if you go to some school's ICT lab, you will only*

see three laptops there, and the children are many. A period is about 45 minutes to 1 hour and how can all the children have the practice with the computer. Before you are able to do that, you have to take the parts of the computer and show it to them and maybe touch it, but if you go outside Ghana, they have those things, that is why they are following it. Though it is good, the materials are not available". - Female, level 200, UDS

A few student teachers were also skeptical about whether teachers practice what is in the guidelines. This concern was also reported by other student teachers who mentioned that, from their personal experiences, some of their colleagues do not adhere to the guidelines as provided in the NTS. For example, a level 200 female student teacher mentioned that *"NTS has beautiful policies for teachers, but I doubt if what I read is really happening in the classrooms. It talks about the ethics teachers should emulate and teacher professionalism. I don't believe what I read about the national teacher's standards is what is happening in the classrooms"*. Another level 200 male student teacher stated that *"...the truth is that, though the guidelines are good, I know some of my colleague teachers do not apply them in the classroom when they are teaching"*. - Female, level 200, UG

The qualitative interviews also asked student teachers to indicate whether their lectures adhere to the NTS guidelines when they are teaching them in the classroom. Based on the findings, some of the student teachers confirmed that their lecturers adhere to the NTS during lessons. According to these students, they observed their lecturers' using ICT and digital technologies, interactive approaches to learning, and dressing appropriately as directed in the NTS guidelines. Some of the student teachers expressed their views as shown below:

- *"Yes, they are doing their best. They make sure that the classroom is managed well, they teach practically, and they also help us to participate in learning. "Female, level 200, UEW*
- *"Our lecturers are really implementing the national teacher's standards. My lecturer uses a projector in the teaching process. The projector lessons make the lessons lively and more practical. "Female, level 200, UEW*
- *"Yes, my teachers are implementing the national teacher's standards. This can be seen through their dressing, their way of teaching, their punctuality, and regularity to work, and their readiness to mould the student they are teaching "- Male, 400, UEW*

A majority of the student teachers were also of the opinion that their lecturers do not adhere to certain components of the NTS, mainly due to unavailable learning resources such as projectors and equipment for practical lessons. Some quotes from student teachers are cited below:

- *"No, they are not implementing it. Even projectors for them to project it for us to get practical skills for us to get it, they don't do it. Unless maybe they send the slides to you on our platform, and if your phone*

supports WhatsApp, then you download them. Besides that, you can't get it. Sometimes they ask you to go to the library to read some books, but you cannot get them unless you use your phone to download them online. So, I can say they are not implementing it, but they tell us that we should implement it "– Female, level 200, UDS

- *"Somehow, I will say. In terms of punctuality, at times, they don't get it, and with the instructional hours, most times, they get the TAs to replace them during the time for lectures. And also with our opinions, asking them questions the way they will answer back, and sometimes they think we are adult we can learn through research. "*– Male, level 100 UDS
- *".... not all the national teacher's standards are being implemented. Due to a lack of equipment, there are not enough practical for science "*Male, level 100, UEW

Table 3.25 provides results of students' interest and aspirations to be teachers. As presented, over 80 percent of the student teachers agree strongly or somewhat that they had long wanted to be teachers. It is also instructive to note that less than a fifth of the student teachers were very sure that teaching was their first choice. Additionally, over half of the student teachers would like to pursue other interests apart from teaching. The results emphasize the need to improve the conditions of service and motivation for teachers. The results also highlight the need for effective supervision and monitoring by school leaders, as some teachers appear to have no passion for the teaching field but are pursued for employment and financial benefits.

Table 3.25 Student teachers' interest in the teaching field (%)

Attributes	Do Not Agree	Somewhat Agree	Strongly Agree
I have long wanted to be a teacher	19.4	33.4	47.2
Teaching was not my first choice – I wasn't able to pursue my preferred career/qualification	18.2	40.1	41.6
After graduating from this university, I plan to go for further studies and get my masters	4.9	26.7	68.4
I plan to pursue other interests or professions in the future outside the teaching profession	8.1	33.6	58.4

3.9.1 What the data tells us

The results demonstrate a lower-than-expected awareness level of NTS and a worrying trend in student teachers' demonstration of NTS, even among final-year students. This suggests that even before stepping into the classroom, these teachers will not effectively implement the NTS guidelines to improve their teaching practice and student outcome. The results also suggest that a significant number of student teachers are not interested in the teaching profession as a first career choice and will consider other fields later in life. This emphasizes the need to make the teaching profession more attractive by improving teacher remuneration and conditions of service.

The student teacher findings are quite revealing and reflect the general assertion that SEI teachers are trained at universities where they are often taught in large classes with a focus on content knowledge rather than pedagogy. It is therefore important for education agencies, particularly the National Teaching Council and Ghana Tertiary Education Commission to consider reviewing the National Teacher Education Curriculum Framework for SEI teacher education, updating this to reflect the latest SEI curriculum. It is also important for the SEI teacher training universities to revise their curricula to enable young people who are interested in teaching in SEIs to be better equipped with the NTS to enable them to deliver the new SEI curriculum.

3.10 Teacher-related results

This section of the report highlights the key findings in relation to teachers in SEIs. The section documents information on teacher performance from baseline evaluation in 2021 and the assessment for 2021. The section covers issues on teacher motivation and retention, teacher well-being, teachers' resilience and coping strategies, teachers' demonstration of NTS and the use of digital technologies as well as a demonstration of GESI pedagogies during lesson delivery.

Key findings

The key findings from this sub-section is that teacher motivation is very low while only 2 out of 5 teachers would like to remain in the teaching profession. The main reasons for the lack of motivation among many teachers leading to aspirations to leave the teaching profession are dissatisfaction with their salaries and allowances, lack of respect for the teaching profession, unavailable teaching and learning resources in some schools, and teacher work-overloads due to remedial, extra classes and also the double track system. Ignoring teacher concerns will result in high attrition or lower productivity among teachers.

Efforts should be made to improve the salaries of teachers. In addition, GES, in collaboration with school boards, should make efforts to procure TLRs for the use of teachers and students. Also, SEIs should recognise teachers who go above and beyond expectations to encourage continuous efforts. GES should enhance the teacher reward scheme to award teachers for excelling amidst challenges in especially low-performing schools. School leaders

3.10.1 Teachers who are motivated and want to remain in the profession

Teachers' dedication and competence are two important factors that influence students' learning outcomes (Bennell and Akyeampong 2007)¹⁴. Teachers who are committed to the teaching profession have a higher likelihood of going beyond the skills they have acquired to be innovative and resourceful in using innovative means of imparting knowledge to their students. Another key factor that drives teachers' willingness to commit to their work is motivation. Such motivation refers to the psychological process that influences individual behaviour with respect

¹⁴ Bennell, Paul and Kwame Akyeampong. "Teacher Motivation in Sub-Saharan Africa and South Asia." (2007).

to the attainment of workplace goals and tasks. Motivation has also been viewed as energy or drive that moves an individual to do a task naturally (Han and Yin 2016)¹⁵.

The T-SHEL 2022 annual evaluation survey also measured teachers' motivation and their desire to remain in the teaching profession till they reach their retirement age. The survey asked SEI teachers to self-rate whether they agree or disagree (5-point Likert scale) with questions relating to teacher motivation. These question items were adopted from a World Bank study on teacher motivation and retention¹⁶. The score for this indicator was computed by dividing the average score obtained by 5 (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. The results are presented in [table 3.26](#).

On teacher motivation, the results show no significant difference between the 2021 and the 2022 survey. As seen in table 3.26, 10.3 percent of the SEI teachers were motivated to teach in SEIs in 2022. This is 0.7 percent less than the 2021 figure. We noticed that the teachers who indicated that they are motivated are mainly from category A schools. Qualitative insight from these teachers revealed that they are motivated because the schools have the requisite teaching and learning materials needed for teaching. For example, a teacher in a category A school said that *"On my part, I am able to get the requisite teaching and learning materials to support my lesson deliveries. I think that is why I get motivated. In trying to explain a concept [to students], if you have the requisite TLMs, it makes the lesson more lively, and you feel like you are really making an impact"*. Also, some teachers in these schools are motivated because the students in the schools do well in the WASSCE exams. A female teacher said, *"You know, I feel really proud when I talk about my students. Anytime they write the WASSCE and pass, it makes me so happy and motivated. In fact, I don't want to leave this school"*.

Interestingly, the proportion of teachers who wish to remain in the teaching profession increased from 42.1 percent in 2021 to 46.5 percent in 2022. The finding is interesting because the level of teacher motivation did not increase significantly. The increments were observed for both male and female teachers and also among teachers in category A schools. A significant increase was also recorded among teachers who have been teaching for more than ten years. The qualitative results found that some teachers are engaging in other businesses apart from the teaching

¹⁵ Jiyang Han & Hongbiao Yin | Mark Boylan (Reviewing Editor) (2016) Teacher motivation: Definition, research development and implications for teachers, Cogent Education, 3:1, DOI: [10.1080/2331186X.2016.1217819](https://doi.org/10.1080/2331186X.2016.1217819)

¹⁶ 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

profession to support themselves financially despite the fact that their motivation level has remained unchanged. For example, a teacher mentioned that *“Though I am not motivated to be in the teaching profession, I’ll still remain because at least I get something at the end of the month. My business also fetches me some money, so I use that too to supplement myself”*. Another reason provided by a teacher was that he does not have an option for employment in another field, which is why he wants to remain. The teacher said that *“The truth is that the way my morale is low, I’m not sure I will hesitate to leave when there is another option. Things are hard now, but our salaries have not changed”*.

[Tables A3.20](#) and [A3.21](#) in annex 3 disaggregate the data by region and school. About 16 percent of teachers in the Bono and Bono East Regions are motivated, while the Oti and Upper East Regions had the least motivated teachers. Upper West Region also had the highest proportion of teachers (73.3 percent) who would like to remain in the teaching profession, followed by teachers in the Greater Accra Region. The regional variations in teacher motivation can be attributed to intrinsic motivation and secondary income sources from farming.

Further analysis also showed that about 65.8 percent of the teachers who reported being motivated want to remain in the teaching profession, while the remainder want to leave. In contrast, over half of the teachers who are not motivated have considered leaving the teaching profession. These teachers are mostly in category B and C schools. These teachers who have considered leaving have cited low remuneration as a reason for wanting to leave. They also suggested that other sectors would be more promising in terms of remuneration than the teaching field. For example, a teacher mentioned that *“There’s no money or motivation in the teaching field. In other fields like the ministries, at least you get something apart from your salary”*. Among all teachers who have considered leaving the teaching profession, about half suggested that an improvement in their salaries would change their minds about leaving, while about 43.3 percent also indicated that an improvement in their conditions of service would convince them to stay. The teachers categorised the conditions of service into two main parts. The first part deals with services that will enable them to teach more effectively, like the provision of teaching and learning materials such as textbooks, notebooks, and other resources. The second part relates to allowances such as rent allowance, transport allowance for teachers transferred to other locations and vehicle maintenance. They further mentioned that some of these allowances are enjoyed by other government services, such as the military and police service. For example, a teacher mentioned that *“We all know that when teachers are transferred, we are to be given some allowances, but these never come, and you never hear about it anywhere. When you request for the money, it won’t even come”*. Another teacher mentioned that *“See the police service; they are given a rent allowance. I am sure other people in the government sector also get some other allowances. Aren’t we also government workers who help to*

build Ghana? If they receive them, I think we should also get some to motivate us also". Few teachers also suggested that they would remain if "*politicians stop interfering in the education sector*" and if teachers are "*accorded the respect and dignity they deserve*".

Table 3.26 Teachers who are motivated and want to remain in the profession (%)

Category	Motivated teachers		Teachers who want to remain in the profession	
	Survey 2021	Survey 2022	Survey 2021	Survey 2022
Sex				
<i>Male</i>	8.7	9.6	39.5	43.3*
<i>Female</i>	11.9	12.1	49.1	56.0*
School category				
<i>Category A</i>	11.8	12.5	44.7	54.9*
<i>Category B</i>	9.9	12.2*	41.3	44.6
<i>Category C</i>	8.9	8.4	42.0	45.5
Years of teaching				
<i>Less than 5 years</i>	11.3	11.0	43.5	47.1
<i>5 to 10 years</i>	8.9	9.0	40.8	40.6
<i>More than 10 years</i>	8.7	10.6	41.8	49.5*
School sex				
<i>Mixed-sex</i>	12.5	10.2	41.9	45.5*
<i>Single-sex</i>	9.3	10.7	44.2	54.4*
Age category				
<i>Youth (35 and below)</i>	10.1	10.1	41.2	42.5
<i>Non-youth (36+ years)</i>	8.9	10.6	44.3	50.3*
Overall	9.6	10.3	42.1	46.5*

*P ≤ 0.05

Table 3.27 presents the proportion of teachers who agree or strongly agree with statements about teacher motivation. The results show that about 9 of 10 teachers agreed that their remuneration is not sufficient for their needs. This result is similar to the 2021 survey. Also, about a fifth of the teachers indicated that they do not get paid on time, which is significantly higher than the results from the 2021 survey.

Table 3.27 Teachers who strongly agree/agree to questions on motivation (%)

Items assessed for teacher motivation	Overall	
	Survey 2021	Survey 2022
As a teacher, I am contributing positively to the lives of my students.	97.3	96.1
I feel confident about my abilities as a teacher.	95.2	93.7
I can get students to work in groups or pairs.	94.8	93.6
If a student does not remember information in a previous lesson, I would know how to help them remember.	94.7	92.0
Every teacher can continue to improve their practice throughout their career.	92.0	91.2
I can make my classroom a safe space for students, both emotionally and physically	91.2	91.2
I can motivate students who show low interest in school.	90.8	91.7
If a student in my class is undisciplined, I know some techniques to direct him or her.	90.6	89.1
With the help of my colleagues, we can solve student issues.	90.2	90.8
My pay as a teacher is insufficient to support my needs	90.0	92.2
With the help of my colleagues, we can identify innovative practices.	89.4	90.3
When a student gets a better grade than he or she usually gets, it is because I found a better way.	83.6	78.5
I can get through to even the most difficult or unmotivated students.	83.1	83.0
My headteacher treats me with respect.	81.4	82.7
I feel exhausted at the end of the school day	80.9	81.1
I feel energized when my class greets me each day	77.4	77.5
My colleagues at school make it a fun place to be.	76.2	73.8
I can help students overcome some difficulties at home and in the community	75.0	73.5
I ask my colleagues for feedback.	73.0	73.3
I ask my supervisor for feedback.	72.2	70.6
I would accept that offer if I were offered another job outside the teaching profession at about the same or a slightly higher salary. ***	69.9	62.4
I have the ability to get parents involved in their children's education.	67.8	70.4
My headteacher praises me for my efforts in the school.	62.2	63.5
Some teachers at my school want to transfer to schools***	57.2	56.8
Parents value my work as a teacher***	53.8	57.2
Teaching is mentally draining. ***	53.1	52.8

Items assessed for teacher motivation	Overall	
	Survey 2021	Survey 2022
I feel fatigued when I get up in the morning and have to face another day at school [^]	52.8	57.8
I plan lessons with a colleague	52.7	52.8
I can influence some of the decisions that are made in the school.	49.1	51.6
As a teacher, I am given more responsibilities than I can manage. ***	38.7	36.7
If I had to choose again, I would still want to be a teacher.	36.8	46.2
Teachers in my schoolwork closely with the district SISOs (formerly circuit supervisors)	34.1	34.1
I do not get paid on time.	18.8	21.9

NOTE: *** Respondents who agreed or strongly agreed with 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 to measuring teacher motivation based on the Likert scale used for the assessment¹⁷. 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-Meyer-Olkin (KMO) value of 0.8485¹⁸. This value indicates that the test is adequate for factoring. The result in [table A3.22](#) in annex 3 shows that nine factors are adequate in explaining the motivation of teachers in the SEI schools¹⁹. The varimax²⁰ transformation matrix (please see [table A3.22](#) in annex 3) lists the factors in the order of importance. As seen from the table, the factor by their level of importance is listed below:

¹⁷ 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.

¹⁸ KMO is used to examine the appropriateness of factor analysis. High values (between 0.5 and 1) indicate factor analysis is appropriate.

¹⁹ 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.

²⁰ 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

- I can motivate students who show low interest in school.
- I feel fatigued when I get up in the morning and have to face another day at school
- As a teacher, I am contributing positively to the lives of my students.
- My headteacher treats me with respect.
- I can influence some of the decisions that are made in the school.
- With the help of my colleagues, we can identify innovative practices.
- If I had to choose again, I would still want to be a teacher.
- Some teachers at my school want to transfer to other schools.
- If a student does not remember information in a previous lesson, I would know how to help them remember.

Qualitative insights on teacher motivation and willingness to remain in the teaching profession

Across the SEIs, teachers have a good understanding of the concept of motivation and the types of incentives that will motivate them in their teaching profession. Generally, teachers explained their understanding of ‘motivation’ to be an appreciation of efforts and the provision of incentives to encourage dedication to work.

Teachers who are motivated and would like to remain in the teaching profession

As established earlier, about 6 of 10 teachers who are motivated indicated that they would like to remain in the teaching profession. These teachers explained that their motivation for teaching is intrinsic. Thus, they derive joy in impacting positively in the lives of their students. For example, a teacher said that *“Teaching has been something that’s lovely. Helping to teach kids to understand has become something that I’ve developed love for”*.

Other teachers also shared that they perceive teaching as their God-given talent and calling. A few also intimated that the regular salary they receive is their main motivation. Despite the confirmation that they would still like to remain in the teaching profession, these teachers also advocated for improvement in teachers’ welfare (Such as TLRs and allowances) to make their work easier. Some quotes from teachers are provided below:

- *“If I am able to get the requisite teaching and learning materials to support my lesson deliveries, I think that is where I get motivated. In trying to explain a concept, if you have the requisite TLMs or TLRs that will make the lesson livelier, more for the students to acquire the necessary skills you intend to impact, then your achievement drive is, gives you motivation. Forever, till retirement, because the joy of imparting*

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.

knowledge is of much importance to me. I think that is my main source of happiness and the feel". - Awe Senior High Technical, Upper East region

- *"This work is developing human beings and talents of young people. Ever since I joined the profession, I've seen the progress of my students, those that I have taken along the line, and some of them today when I meet them. I feel happy that these are my products. In that regard, I am always motivated to do more. Yes, I want to remain, but there are certain factors that must be put right. But at least I am satisfied teaching. You see, the problem is that the policies that we are implementing are making the profession so tiresome". - Male teacher, Central region*
- *"Mine is intrinsic. Basically, I do my job based on the fact that I know that it is what puts food on my table. Also, it is the work of the Lord, so I do it with all my heart. Little motivation from others helps me to do my work. Getting my regular salary is a big motivation, and I would wish that it continues like that. Other motivation that comes from the government monthly, yearly, or termly also works for me. I would still like to be in the teaching profession because I see it as a calling of God". - Male teacher, Eastern region*
- *"My motivation comes from a passion for teaching, and sometimes I get my motivation from students. The way they respond and the results that I get sometimes gives me the motivation to go on. I will say yes and no. Yes, I want to remain because it is a fulfilling experience to see my students always progressing, or in the future, you will always see them calling you outside, even when they have completed school, that this is what is happening with them, greeting you, I am always happy with their success or progression through the educational system. The other side, the no aspect, the finances are not easy, sometimes our personal responsibilities are sometimes a little heavy, so looking at the financial aspect if another option comes and it is appealing financially, you will want to leave". -Female teacher, Bono region*

Teachers who are motivated but would like to leave the teaching profession

The survey showed that about 34.2 percent of the teachers are motivated but would like to leave the teaching profession. Insight from the qualitative interviews revealed that these teachers claim that they are motivated because the teaching profession is their passion. For some other teachers, the joy of seeing their students pass their exams and graduate is what motivates them to teach. Some teachers also claim to be motivated because they have the resources and materials they need to teach. On the contrary, these same teachers claim that despite their motivation to teach, they will leave the profession if another opportunity opens up. They elaborated further that they are totally dependent on their salaries which is not enough to meet their expenses and is the main reason for

wanting to leave the teaching profession. They further claimed that an improvement in their salaries, including allowances, would convince them to change their minds. Some quotes from teachers are presented below:

- *“Teachers do not receive rewards or any incentives to motivate us, due to the passion I have for the job, it pushes me to work more even without being rewarded. And that is what motivates me. On the bottom end, teachers require some incentives as a means of encouragement and their allowances as well, but we do not receive these things. Additionally, the lack of resources and facilities at the school makes our work challenging”. Teacher, Upper West region*
- *“Well, my motivation is intrinsic. Currently, we all know the financial situation in the country and the financial situation of teachers. So, for that side, I would say it is low. And I remember there was once this assistant headmaster here. He is currently the headmaster of Osei Tutu. When I was newly recruited as a teacher, he told me, “Nancy, in teaching, you are not really going to get money, but there are a lot of blessings in it”. - Teacher, Ashanti region*
- *“... for that one, it is quite difficult. I don’t know what lies ahead of me. If I get a higher opportunity, definitely I’ll grab it. But if not, I would like to stay in this one work and get to the top”. – Teacher, Ashanti region*

Teachers who are not motivated and would like to leave the teaching profession

As presented earlier, over half of the teachers who indicated that they are not motivated would leave the teaching profession given the opportunity. Further insight from the qualitative interviews showed that most of these teachers complained that their salaries are not enough to meet their monthly expenditures. They complained further that they report to school very early in the morning, before 7:00 am, and leave late because of remedial and extra classes; however, no allowances are given to them for the extra work they do. For example, a teacher mentioned that *“I am the head of my department and a house mistress in the school. I work extra hours, and I haven’t received my allowance for the past 10 years. I only depend on my salary, which is also not enough. When a better offer comes along, I will not hesitate to leave because I have worked as a professional teacher for 22 years, and I have nothing to show for it. Teachers do not gain anything from their labours, we put in a lot of time and effort training and instructing students, and we get nothing in return”*. Some teachers followed up by saying that erstwhile, they used to gain some money from extra classes in the schools, but due to the free SHS policy, they gain no income from the extra classes currently. A few of the teachers also alluded to the lack of performance awards for teachers in secondary schools as a reason for their lack of motivation. A teacher mentioned that *“Teachers do not receive any*

award in schools in terms of motivation. I have been working for over twenty years, and I haven't benefited anything from the government". Some more quotes from teachers are presented below:

- *"Motivation in my teaching profession is quite appalling compared to other sectors because, in other sectors like security, they have garden allowance, shoes, rent, etc. So, for me to be motivated, there should be a provision of adequate resources and free in-service training for teachers. I would not like to remain in the teaching profession because colleagues in other sectors are better off than us. We teachers here support each other through content sharing at a departmental level and subject areas and also through counseling. The last time I received in-service training, I can't tell, but it was very useful because it was for unit heads, and we were taken through managerial skills. The most challenging part of my job is I feel the knowledge we impart to students in this 21st century is archaic because I wonder where they will practice some of the things they learn in school. I am not completely satisfied with my job" – Male teacher, Jirapa SHS*
- *".....Formally, when the schools were left in the hands of teachers, we felt motivated because we organized extra classes for students, especially the weak ones. And out of that, did something which made every teacher to come to school very early and even pray that his colleague is absent so that his class will be empty so that he will go and do that and take something".*
- *"Very, very abysmal, let me put it that way. Because if I compare it to other sectors, then when I take my pay slip, for instance, in GES, apart from my basic salary, there's no other allowance, no other allowance that is found on my pay slip, and aside that, what others, some institutions are enjoying some motivations like health care free or subsidize, you know as far as their wards are concerned, they subsidize some things for them when they are in that particular form. In our case, it's not like that. Even though we are now enjoying the free SHS, there are some things that we in the profession- our wards should have enjoyed, but our wards don't enjoy. So, our motivation is not good enough..... Well, it is my wish I had wanted to remain in the profession, but you know, like I said earlier on, it's not motivating enough, so that is making me change my mind that any time I get any other offer in any other institution, I may leave". Teacher Nana Brentu senior high technical, Ashanti region*

Recommendations from teachers on ways to motivate them

The teachers provided varying recommendations on what stakeholders should do to motivate them to be more devoted and remain in the teaching profession. The most common recommendation was a review of teacher salaries. Almost all the teachers recommended a review of their salaries to ease their financial burdens. Some

teachers also recommended a review of the academic calendar related to the double-track system. They explained that due to the policy, teachers in schools that are currently implementing the policy work year-round, leaving them no time to rest. Some teachers also called for a better welfare system (Such as allowances for remediation, extra classes, transportation, and rent allowances) for teachers. A teacher cited an incident where the families of two teachers from his school who had died were facing hardship and neglect due to an unavailable welfare support system for the wives and children. Some quotes from teachers are cited below:

- *“The government should formulate a welfare policy. And the other stakeholders in education should see to the welfare of teachers. This year, I lost two teachers, but nothing has been heard from them [stakeholders]. The children are there. No follow-up because there is no one to see how they are doing. That’s the kind of life we are living”. – Teacher, Greater Accra*
- *“What should be done is, the stakeholders or employers must make sure that the teachers are satisfied. You know the economic hardship will force you to make decisions that you didn’t intend to make. At our level, unmarried currently, I may see it to be comfortable, but when I’m married, the pressure of responsibility may force me to go and do another thing. So, I think teachers must be stabilized financially. Bringing allowances so that we can remain comfortable in the profession”. Male Teacher, Mount Sinai SHS*
- *“We are going for Christmas break. I’m just coming from the market, a big truck came, and they are buying rice to go and give to their workers for Christmas. GES, there is nothing like that. In private schools, you will see them buying rice to give to their workers. There is a school here, Fountain Gate School. They give them rice; they give them oil for Christmas. No matter how little it is, at least, even if it is one litre or one bowl of rice, or one bowl of sugar, it is a source of motivation. Even though we can buy but to say that, oh, it is the end of the year, take this and go and enjoy it with your family, it is good enough”. – Teacher, Upper East region.*

3.10.2 Share of secondary school teachers reporting improvements in their own well-being (access to high quality key services, life satisfaction, food, security, and safety)

Key findings

The key findings from this sub-section is that generally, majority of teachers are satisfied with the status of their current well-being. However, about two thirds are dissatisfied with their financial situation. This is because they're unable to meet their financial obligations with their current level of income. Unresolved issues of financial dissatisfaction might either incite teachers to leave the teaching profession or engage in other secondary financial ventures which might lead them to be inefficient if effective monitoring is not carried out by school leaders. An allowance scheme could be established to compensate teachers engaged in extra duties and assignments.

This section provides an analysis of SEI teachers' self-report of improvement in their own well-being. Data on teachers' well-being was collected for the first time in 2022. The Mastercard Foundation defines well-being as a combination of objective access to services and subjective perspectives that capture the extent to which an individual is leading a healthy, happy, and fulfilling life connected to one's family, friends, and community. Studies²¹ have shown that teachers' well-being exudes a positive emotional state, which strongly influences their teaching and student performance. In computing the share of teachers reporting an improvement in their well-being, the study adopted the Office of National Statistics (ONS4) questionnaire with additional questions related to Ghana-specific requirements agreed upon by stakeholders. The questions for measuring the indicator were self-administered by teachers in SEIs. The self-administered items measure different aspects of a teacher's life, including *happiness and life satisfaction, mental and physical health, meaning and purpose in life, character and virtue, close social relationships, and financial and material stability*. The self-administered items were scored on an eleven-point scale from 0 to 10, where 10 was a *total agreement* with the statements while 0 was a total disagreement with the statements.

²¹ <https://www.schooleducationgateway.eu/en/pub/resources/toolkitsforschools/subarea.cfm?sa=601>

The scoring criteria adopted the personal well-being score (PWS)²², which categorised the eleven-point scale into four categories, namely, 0-4=Low, 5-6=Medium, 7-8=High, and 9-10= Very high. For the purposes of the indicator, teachers who obtained a score of 7 to 10 (High/Very High) were reported as satisfying the criteria of the indicator. Results on teachers' well-being show that two-thirds of the teachers are satisfied with the status of their well-being. A point-biserial correlation showed a weak relationship between teacher motivation to teach and their well-being (corr. Coef. of 0.15). The results also show that significantly more female teachers are satisfied with their well-being compared to male teachers. Teachers in category A and B schools are also more satisfied with their well-being compared with teachers in category C schools. See table 3.28.

Table 3.28 Teachers satisfied with their well-being (%)

Demographics	Survey 2022
Sex	
<i>Male</i>	65.1
<i>Female</i>	69.2*
School category	
<i>Category A</i>	68.4*
<i>Category B</i>	68.6*
<i>Category C</i>	64.0
Years of teaching	
<i>Less than 5 years</i>	67.9
<i>5 to 10 years</i>	64.3
<i>More than 10 years</i>	66.2
School sex	
<i>Mixed-sex</i>	66.3
<i>Single-sex</i>	65.3
Overall	66.2

Table 3.29 shows that *financial and material stability* as well as *happiness and life satisfaction* had the least proportion of teachers agreeing with such a statement. The main reason teachers gave for the low scores was that the status of their finances had been impacted, which had also affected their happiness.

²² <https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/methodologies/personalwellbeingsurveyuserguide>

Table 3.29 Extent to which teachers report well-being improvement (%)

<i>Teacher well-being criteria</i>	<i>Survey 2022</i>
Character and Virtue	85.8
<i>Teachers who act to promote good in all circumstances, even in difficult and challenging situations</i>	88.2
<i>Teachers who are always able to give up some happiness now for greater happiness later.</i>	83.5
Meaning and Purpose	84.9
<i>Teachers who feel things they do in life is worthwhile</i>	78.7
<i>Teachers who understand their purpose in life</i>	91.6
Mental and Physical Health	82.5
<i>Teachers who describe their mental health as excellent</i>	86.9
<i>Teachers who describe their physical health as excellent</i>	77.9
Close Social Relationships	77.8
<i>Teachers who are content with their friendship and relationships</i>	80.3
<i>Teachers whose relationships are as satisfying as they would want them to be.</i>	75.3
Happiness and Life Satisfaction	33.0
<i>Teachers satisfied with life as a whole</i>	27.9
<i>Teachers who describe themselves as happy</i>	38.1
Financial and Material Stability	33.3
<i>Teachers who do not ever worry about safety, food, or housing</i>	35.1
<i>Teachers who do not ever worry about being able to meet normal monthly living expenses</i>	31.4
Overall	66.2

Reasons for teachers' dissatisfaction

According to the teachers, the main reason for their dissatisfaction is that their financial security is untenable. They are unable to meet their financial needs with their current salary. Additionally, the third quarter inflation in Ghana had reduced or eliminated their savings and increased their expenditures significantly without a corresponding increase in their incomes, resulting in their unhappiness. Some quotes from teachers are cited below:

- *"I am not satisfied because my salary is very low. I completed university and I was supposed to be upgraded from senior sup. I to principal sup. But I am more than a year and yet to be upgraded to my normal level.*

So, the salary is nothing to write about. I also come from a far distance and came here to teach. I come from Bolga, and I stay here till Friday before I go home. It makes things difficult for me, so I am not satisfied with where I am and what I earn. ”– Teacher, Upper East region

- *“.....if things are not moving on well with you, you will not be happy. When you are doing things thinking that they will bring a better life for you and you always get negative results, you cannot be happy. For example, when I completed my degree programme, I told myself I would now get a piece of land and build my house and move my family there. Where I am staying belongs to the family, and there are issues there staying together as a family. But before I realized, my father fell sick, and the drugs were not even in Ghana but in South Africa, so I had to go for loans to treat my father. Anyway, I thank God that I was able to save him. He is still alive, so when things like that happen to you, you will definitely not be happy. ”– Teacher, Ashanti region*
- *“By the end of the month, teachers do not have any money to meet their expenses. There is no allowance for teachers. No facilities for teachers and I learned that teachers that stay on campus are being asked to pay for the facilities. Teachers do not have any better security for their parents, food, health and alike ”– Teacher, Western region*

3.10.3 Teachers' assessment of their own resilience

Key findings

Overall, about 88 percent of the teachers interviewed indicated that they had experienced at least one type of shock over the past 12 months. The two most significant shocks experienced were an increase in food prices and an increase in transportation costs. These two shocks were experienced by over 70 percent of teachers. Not surprisingly, the shocks were exacerbated by Ghana's inflation, which increased by about 40 percent between January to December 2022. Overall, about 81.6 percent of the teachers perceive themselves as resilient, with no significant differences between male and female teachers.

The Mastercard Foundation defines resilience as the capacity of individuals, communities, institutions, and systems to survive, cope and thrive in the face of shocks and stresses. Therefore, this section aims to capture how SEI teachers assess their own resilience as well as how they have responded and coped. Please note that these data were collected for the first time in 2022.

The 2022 survey assessed resilience regarding shocks related to the economic, social, health, and professional life of the SEI teachers. The survey sought to determine the impact of the shocks, the coping mechanisms adopted by the teachers to limit the impact of the shocks, and measures teachers put in place to protect themselves and their families from future occurrences. The research tool attached as annex 2 listed seventeen common types of shocks based on reports from various studies conducted in Ghana.

Overall, about 88 percent of the teachers interviewed indicated that they had experienced at least one type of shock over the past 12 months. Table 3.30 presents the types of shocks teachers and their households experienced from January to December 2022. As shown in the results, the two most significant shocks were increased food prices and transportation costs. These two shocks were experienced by over 70 percent of teachers. Not surprisingly, the shocks were exacerbated by Ghana's inflation, which increased by about 40 percent between January to December 2022²³. These shocks encountered by most teachers also explain the low level of teacher well-being examined in the previous section.

See some quotes from teachers in relation to the cost of living below:

- *"Hmmm! My brother, are you not experiencing the surge in the cost of living in Ghana? The highest inflation ever in my life. High fuel prices. The previous year, I didn't get anything on my farm. Our salary too is low*

²³ <https://tradingeconomics.com/ghana/inflation-cpi>

too. How can somebody be happy unless you are a politician? It is difficult to save money now. What is motivating in my school? Hmm, only God can save Ghana. ”– Teacher, Ashanti region

- *“..... you know, the teaching field, some of us, we don’t have any other business apart from teaching. We only depend on the monthly salary. Things have increased, and the salary is not increasing. Some of us went in for loans too. We have our wives and children to cater for. Before the moon die, the problems are even more than the salary. I was a teacher at Bawku before I took a transfer here (Navrongo). when I came too, my salary went off. When my salary went off, it was easy. Three kids plus my wife, it wasn’t easy”– Teacher, Northern region*

Over one-third of the teachers also pointed to indebtedness as a shock they have experienced over the past 12 months. Only a few of the teachers indicated that they had experienced shocks related to their professional field, namely salary not reflecting promotion grade (15.4 percent), unvalidated²⁴ salaries (7.0 percent), unexpected teacher transfers (6.5 percent), and blocking of salaries without prior notice (4.8 percent).

Table 3.30 Types of shocks experienced by teachers and their households (%)

<i>Types of shock</i>	<i>Survey 2022</i>
Increase in food prices or unstable food prices	82.3
Increase in transportation cost/fuel price increases	74.8
Purchasing power decreased	55.0
Indebtedness (from loans)	35.5
Other large, unexpected expenses	23.0
Excessive medical bills	19.3
Illness or accident of household member (e.g., income earners, others)	18.7
Decrease in prices of own crops, livestock, or other farm produce	18.3
Salary does not reflect promotion grade	15.4
Epidemics (e.g., COVID-19, Monkey Pox, HIV/AIDS etc.)	13.5
Death of income-earning household member(s)	12.7
Loss of a regular job of a household member	11.7
Unvalidated salaries	7.0
Disasters (e.g., floods and fires)	6.7
Teacher transfers	6.5
Halt/block of salary inflow without prior notice	4.8

²⁴ Every month, the heads of schools are required to validate that teachers have worked for the month and so are entitled to receive their salaries. Unvalidated salaries can occur if the head of school forgets to validate or deliberately refuse to validate for various reasons.

The study also examined the impact of the shocks experienced by teachers and their families during the reference period. As shown in table 3.31, the shocks led most teachers to reduce their household food consumption and their expenditures on household (HH) necessities. These indirectly have an impact on the quality of life of teachers and an indirect impact on their effectiveness in their teaching profession. This is one of the reasons why a few teachers cited their lack of motivation with the discontinuation of paid extra classes regime in their schools as a means of extra sources of income.

Table 3.31 Impact of shocks teachers experienced

<i>Impact of shocks</i>	<i>Reduced HH food consumption</i>	<i>Reduced purchases of necessities</i>	<i>HH became more indebted</i>
Purchasing power decreased	78.3	86.5	39.1
Increase in food prices or unstable food prices	83.6	87.1	41.5
Increase in transportation cost/fuel price increases	77.5	85.8	39.6
Decrease in prices of own crops, livestock, or other farm produce	71.5	81.4	33.8
Death of income earning household (HH) member(s)	69.2	75.3	29.1
Illness or accident of household member (e.g., income earners, others)	70.0	74.8	35.6
Loss of a regular job of a household member	76.2	73.8	31.0
Epidemics (e.g., COVID-19, Monkey Pox, HIV/AIDS etc.)	66.2	75.0	30.7
Indebtedness (from loans)	80.3	85.2	47.9
Excessive medical bills	69.8	74.5	44.6
Disasters (e.g., floods and fires)	62.9	68.0	25.8
Other large, unexpected expenses	76.4	82.2	41.4
Unvalidated salaries	72.3	76.2	26.7
Transfers	67.7	77.4	26.9
Salary does not reflect promotion grade	75.5	85.5	39.1
Halt/block of salary inflow without prior notice	67.6	80.9	29.4

To help teachers and their households reduce the impact of the shocks, most teachers used their savings to cover their expenditures or borrowed from friends, families, and banks to cover their expenses. Some teachers and their families also worked overtime or sought second jobs to support their expenses. Furthermore, some teachers changed their modes of transportation to cope with the increased transportation cost. Please see some quotes from teachers below:

- *“Sometimes you are bound to cut costs for instance if at first you were eating luxuriously you are bound to cut certain things or you eat wisely. So first of all, the food stuff that you have, you have to manage that one. Secondly, you will have to forgo some wants. You are not buying new clothes and shoes. you are making use of the ones that you have until things improve for the better”. – Male, Bono region*
- *“I cut off some of the non-necessities. I cut my wants and concentrated on my needs. I own a provision shop. So, I have to work extra hard. After class, instead of relaxing or wasting time, I sacrifice that on my business” – Female, Upper East region*
- *“I was just managing within my means. I usually come to school with a motorbike but sometimes I used to park the motor and I used a bicycle instead. Where I stay and the school campus is not far. – Male, Northern region*
-

Table 3.32 Coping strategies of teachers in dealing with shocks (Top three strategies) (%)

<i>Types of shocks</i>	<i>Use savings to cover routine expenses</i>	<i>Borrow from friends or family</i>	<i>Work overtime/ second job to make ends meet</i>
Purchasing power decreased	64.5	64.3	51.8
Increase in food prices or unstable food prices	66.8	64.0	53.8
Increase in transportation cost/fuel price increases	64.6	65.2	53.2
Decrease in prices of own crops, livestock, or another farm produce	59.9	66.3	52.3
Death of income earning household (HH) member(s)	59.7	74.6	56.9
Illness or accident of household member (e.g., income earners, others)	60.0	74.8	44.8
Loss of a regular job of a household member	60.7	69.1	48.2

<i>Types of shocks</i>	<i>Use savings to cover routine expenses</i>	<i>Borrow from friends or family</i>	<i>Work overtime/ second job to make ends meet</i>
Epidemics (e.g., COVID-19, Monkey Pox, HIV/AIDS etc.)	68.8	69.3	53.4
Indebtedness (from loans)	58.2	70.8	53.5
Excessive medical bills	62.5	74.4	50.5
Disasters (e.g., floods and fires)	59.8	72.2	43.3
Other large, unexpected expenses	61.8	71.5	50.9
Unvalidated salaries	56.0	74.0	48.0
Transfers	60.9	66.3	58.7
Salary does not reflect promotion grade	58.5	67.1	51.1
Halt/block of salary inflow without prior notice	55.2	76.1	50.8

NOTE: The proportion of teachers using coping strategies is based on those who experienced the specific shocks.

As part of the evaluation, the study asked teachers to indicate their financial and economic state following the shocks and their impact. Over half the teachers reported that they were worse off than before the shocks. The negative status was more prominent among teachers who experienced an increase in the cost of transportation (61 percent), loss of a regular job of a household member, those who experienced an increase in medical bills (63.2 percent), and those facing indebtedness (61.5 percent).

Table 3.33 Current condition of teachers after the shocks (%)

<i>Types of shocks</i>	<i>Worse than before</i>	<i>Better than before</i>	<i>Same as before</i>
Purchasing power decreased	53.4	18.4	28.2
Increase in food prices or unstable food prices	57.5	14.1	28.4
Increase in transportation cost/fuel price increases	61.0	12.8	26.2
Decrease in prices of own crops, livestock, or another farm produce	58.8	16.4	24.8
Death of income earning household (HH) member(s)	59.3	11.5	29.1
Illness or accident of household member (e.g., income earners, others)	57.8	14.4	27.8
Loss of a regular job of a household member	64.1	12.6	23.4
Epidemics (e.g., COVID-19, Monkey Pox, HIV/AIDS etc.)	51.3	18.9	29.8
Indebtedness (from loans)	61.5	12.0	26.4
Excessive medical bills	63.2	13.7	23.1
Other large, unexpected expenses	60.0	11.8	28.2
Unvalidated salaries	55.0	17.0	28.0
Transfers	42.4	19.6	38.0
Salary does not reflect promotion grade	58.9	14.2	26.9
Halt/block of salary inflow without prior notice	55.2	16.4	28.4

To protect themselves and their families from exposure to future shocks, the teachers indicated that they had put some measures in place to ensure their security. Most of these teachers are diversifying by finding or engaging in other nonteaching-related income-generating activities²⁵. The income-generating activities include agriculture, livestock rearing, provision shops, cold stores, and other small businesses. Some teachers also claim they are reducing their expenditures and saving more to respond to future shocks, while others are also looking for part-time teaching jobs.

²⁵ These future diversification strategy does not apply to natural disasters and disease outbreaks

- *“Currently, I have two shops. One for provision and the other one for bookshop. I have also been doing some savings from my salary. I also have a farm which someone is taking care on my behalf so anytime there is a shock then I resort to the income from my business ”. – Male, Bono region*
- *“Well, I had a small store running but it did not do as I had wanted it to do so I entered into farming. I have farmed on a piece of land so that in the near future, I can sell the produce and use the proceeds to support my expenditure”. - Male, Ashanti region*
- *“I have created other businesses. The reason is that when government is laying off workers, you have your business running for you and you can personally rely on your business. And that future shock will not be a shock to you. - Male, Ahafo region*

Despite the benefits of these alternative income sources, there is also a risk of teachers not devoting all their attention and time to the teaching profession. This could negatively impact student learning outcomes if school leaders do not supervise and monitor the teachers. Despite the risks, some teachers indicated that they have put in place measures to ensure their personal businesses do not interfere with their teaching. The measures they have put in place include employing someone to take care of their businesses and only attending to those businesses outside school hours. Please see below:

- *“No, because we are able to open the provision shop, we will employ someone to take care of it. ”– Male, Upper West region*
- *“, it doesn’t conflict with my work as a teacher. I do not actually engage in the farming physically. I just find time to go once in a while to check. I have people who work there. ”– Male, Upper East region*
- *“I employ someone who takes care of the shop. I only go during the weekend to check what is happening there. ”– Male, Central region*
- *“I have two people who support me, and I pay them. I only go to supervise when I am free. So, it does not affect my work as a teacher. ”– Male, Upper East region*

Table 3.34 Measures teachers use to mitigate the consequences of future shocks (%)

<i>Types of shocks</i>	<i>Diversified income- generating activities</i>	<i>Invested in savings</i>	<i>Looked for part-time jobs</i>
Purchasing power decreased	37.8	24.8	41.0
Increase in food prices or unstable food prices	35.8	24.2	39.7
Increase in transportation cost/fuel price increases	36.7	23.3	39.3
Decrease in prices of own crops, livestock, or another farm produce	36.5	25.5	26.6
Death of income earning household (HH) member(s)	34.6	23.6	37.4
Illness or accident of household member (e.g., income earners, others)	30.2	26.1	34.3
Loss of a regular job of a household member	27.4	29.2	39.9
Epidemics (e.g., COVID-19, Monkey Pox, HIV/AIDS etc.)	37.8	26.6	35.1
Indebtedness (from loans)	35.5	21.1	41.8
Excessive medical bills	31.0	21.9	32.1
Disasters (e.g., floods and fires)	28.1	21.9	33.3
Other large, unexpected expenses	35.3	21.2	34.7
Unvalidated salaries	40.6	23.8	27.7
Transfers	38.7	21.5	35.5
Salary does not reflect promotion grade	35.2	19.2	37.0
Halt/block of salary inflow without prior notice	38.2	26.5	29.4

Table 3.35 presents the proportion of teachers who self-report as resilient²⁶. This indicator was measured by asking teachers to rate themselves on an agreement scale from 1 to 5 where (5= strongly agree, 4= agree, 3= neither, 2= disagree, 1= strongly disagree). The results presented in the table show teachers who strongly agree or agree to the statements on teacher resilience. Overall, just over 80 percent of the teachers self-reported as being resilient with no significant differences between male and female teachers or school categories.

Table 3.35 The proportion of teachers who self-report as resilient (%)

Demographic	Teachers who strongly agree/agree to questions on resilience
Sex	
<i>Male</i>	81.8
<i>Female</i>	80.8
School category	
<i>Category A</i>	81.9
<i>Category B</i>	82.3
<i>Category C</i>	81.0
Years of teaching	
<i>Less than 5 years</i>	80.1
<i>5 to 10 years</i>	80.6
<i>More than 10 years</i>	83.0
School sex	
<i>Mixed-sex</i>	81.1
<i>Single-sex</i>	84.8
Age	
<i>Youth (18-35 years)</i>	80.5
<i>Non-youth (36+ years)</i>	82.4
Overall	81.6

Table 3.36 presents the proportion of teachers who strongly agree or agree with statements on teacher resilience. As presented, the statement with the highest proportion of teachers in agreement is *teachers' ability to adapt when*

²⁶ Resilient in the context of this report is the ability of teachers to

changes occur (90 percent). The statement with the least agreement is the belief that *teachers' ability to cope with stress can make them stronger.*

Table 3.36 Proportion of teachers who agree/strongly agree to resilient attributes (%)

	Teachers who agree/strongly agree to resilience attributes
I am able to adapt when changes occur.	90.0
I am not easily discouraged by failure.	89.3
I believe I can achieve my goals, even if there are obstacles.	89.0
I think of myself as a strong person when dealing with life's challenges and difficulties.	88.8
I am able to handle unpleasant or painful feelings like sadness, fear, and anger.	83.0
I tend to bounce back after illness, injury, or other hardships.	81.9
Under pressure, I stay focused and think clearly.	80.6
I try to see the humorous side of things when I am faced with problems.	72.3
I can deal with whatever comes my way.	71.6
Having to cope with stress can make me stronger.	69.1
Overall	81.6

3.10.4 Teachers in dignified and fulfilling work

Key findings

Based on the results, about 6 out of 10 teachers believe that they are in a dignified and fulfilling workplace. The results further suggest that significantly more females (64.6 percent) agree with the statements compared with male (58.8 percent) teachers. The marker which had the highest agreement was 'My work gives me a sense of purpose'. While the marker with the least proportion of teachers in agreement was 'My teaching profession provides enough income for me and those who depend on me'. This is consistent with the reasons for low motivation and well-being discussed in previous sections of the report.

This section of the report measures the proportion of SEI teachers who are currently employed and who reported that they agreed with at least two of the following dignified and fulfilling work markers²⁷:

- **Reliable Income** refers to income that meets the needs of secondary school teachers and their dependents OR an increase in income compared with existing or previous work (over a consistent time period).
- **Reputable** refers to work that is viewed as honest and is well-regarded by society at large.
- **Respect in the workplace** refers to being treated with appreciation and dignity at work.
- **Sense of purpose** refers to a sense of satisfaction, purpose, and accomplishment.

The section also covers those who reported an improvement in their employment so that it became more dignified and fulfilling.

In measuring this indicator, teachers were asked to self-report on the four work markers above on a Likert scale. Based on the results in [table 3.37](#), about 60 percent of teachers agreed that they are in a dignified and fulfilling workplace. The results further suggest that significantly more females agree with the statements compared with male teachers.

²⁷ As defined by the Mastercard Foundation.

Table 3.37 Proportion of teachers in dignified and fulfilling work (%)

Demographics	Survey 2022
Sex	
<i>Male</i>	<i>58.8</i>
<i>Female</i>	<i>64.6*</i>
School category	
<i>Category A</i>	<i>61.6</i>
<i>Category B</i>	<i>62.2</i>
<i>Category C</i>	<i>58.6</i>
Years of teaching	
<i>Less than 5 years</i>	<i>60.5</i>
<i>5 to 10 years</i>	<i>58.3</i>
<i>More than 10 years</i>	<i>61.2</i>
School sex	
<i>Mixed sex</i>	<i>60.2</i>
<i>Single sex</i>	<i>60.4</i>
Age	
<i>Youth</i>	<i>59.3</i>
<i>Non-youth</i>	<i>61.0</i>
Overall	<i>60.3</i>

*p≤0.05

Table 3.38 provides details of teachers who agreed with the markers for measuring dignified and fulfilling work attributes. Based on the results, about 80 percent of the teachers agree with the statement that “My work gives me a sense of purpose”. The marker with the least agreement is “My teaching profession provides enough income for me and those who depend on me,” which is consistent with the reasons for low motivation and well-being discussed in previous sections of the report.

Table 3.38 Proportion of teachers who agree/strongly agree to dignified and fulfilling work attributes (%)

Attributes	Teachers who agree/strongly agree to attributes
My work gives me a sense of purpose	80.6
I feel respected at my workplace	70.5
My work is respected by people who care about me	69.4
My teaching profession provides enough income for me and those who depend on me	20.5
Overall	60.3

3.10.5 Teachers in SEIs displaying competencies in NTS

Key findings

The findings show a significant increase in the proportion of teachers who are aware of the NTS by about 5 percent up from 55 percent; about a third also claim to have soft or hard copies of the NTS. On the contrary, less than a tenth are demonstrating the practicalities of NTS in the classroom. This suggests that teachers who even have copies of the NTS do not apply it in their teaching practice. Interviews also showed that some teachers have a limited scope of the appropriate pedagogies required in teaching and assessing students' understanding. To ensure that teachers adhere to the NTS, efforts should be made by school leaders to procure copies of the NTS for their teachers. Additionally, the NTS should be integrated in the teacher licensure exams to ensure teachers study and adhere to the standards.

The National Teachers' Standards (NTS) represent Ghana's first-ever collectively agreed standards to guide teachers' preparation and practice. They were developed as a professional tool to guide teacher educators, teachers, learner teachers, and other stakeholders in education to identify in clear and precise terms what teachers are expected to know and be able to do, the 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 pre-tertiary level.

First, data were collected from the SEI teachers on the awareness of the NTS. As seen in table 3.39, among the 1,484 teachers surveyed, about 6 out of 10 are aware of NTS. The results show a statistically significant increment of 5.3 percent from the 2021 survey. Similarly, the proportion of male teachers and teachers with over ten years of experience has also increased significantly by 4.7 and 6.1 percentage points, respectively. Analysis by region also showed that Upper West had the highest proportion of teachers who are aware of the NTS. Similarly, all the teachers in Anfoega senior high and Asawinso senior high schools claimed they are aware of the NTS. (Please see [table A3.23](#) in annex 3).

Table 3.39 Proportion of teachers that are aware of the NTS (%)

Category	Survey 2021	Survey 2022
Overall	55.4	60.7*
Sex		
<i>Male</i>	56.6	61.3*
<i>Female</i>	52.2	59.0
School Category		
<i>Category A</i>	52.8	56.1
<i>Category B</i>	54.2	62.2*
<i>Category C</i>	56.7	61.0
Years of teaching		
<i>Less than 5 years</i>	48.8	54.4
<i>5 to 10 years</i>	57.9	60.3
<i>More than 10 years</i>	58.6	64.7*
School sex		
<i>Mixed-sex</i>	54.5	60.6*
<i>Single-sex</i>	67.3	61.9
Age		
<i>Youth</i>	50.7	56.7
<i>Non-youth</i>	61.0	64.4
Total (N)	1,453	1,484

*p≤0.05

Among the teachers who indicated that they were aware of the NTS, the survey asked if they had hard or electronic copies of the NTS. As shown in table 3.40, less than a third of the teachers claimed to have copies, compared to about one quarter in the 2021 survey; the increment in the overall result is not statistically significant. Some significant increments were noted for teachers in category B schools and teachers with over 10 years of teaching experience. The results further showed that for the 2022 survey, the Volta Region had the highest proportion of teachers (47.6 percent) with copies of the NTS, followed by the Western North Region (45.5 percent), while Bono East Region had the least proportion (17.2 percent). At the school level, Dwamena Akenten and Anfoega senior high schools had the highest proportion of teachers, with 76.9 and 73.3 percent, respectively.

Table 3.40 Proportion of teachers that have copies of the NTS (%)

Category	Survey 2021	Survey 2022
Overall	27.1	31.1
Sex		
<i>Male</i>	27.2	31.7
<i>Female</i>	26.7	29.2
School category		
<i>Category A</i>	27.1	22.8
<i>Category B</i>	29.2	37.4*
<i>Category C</i>	25.9	28.8
Years of teaching		
<i>Less than 5 years</i>	27.0	29.0
<i>5 to 10 years</i>	33.9	35.3
<i>More than 10 years</i>	23.0	29.8*
School sex		
<i>Mixed sex</i>	27.5	31.7
<i>Single sex</i>	22.9	26.0
Age		
<i>Youth</i>	30.4	32.4
<i>Non-youth</i>	24.4	29.6
Total (N)	1,453	1484

*p≤0.05

3.10.5.1 Percentage of teachers in SEIs displaying core competencies in the NTS

The NTS is divided into three main domains and subdivisions, as depicted in Box 3.1. Three different tools are used to collect data for measuring the NTS. These are the lesson observation tool, the teacher follow-up interview tool, and the SEI student triangulation tool²⁸.

To determine the mean percent composite score for a teacher, the three tools are triangulated, and a score is assigned based on the teacher's performance. As a requirement for the indicator, teachers who obtain a minimum composite score of 75 percent are classified as satisfying the criteria of the indicator.

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

For example, for the lesson observation, if a teacher obtains an average score of 3.2 of 4 (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 learner triangulation, if learners had an average score of 2.8 (of 5), this would 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.

Table 3.41 presents the percentage of teachers who displayed core competencies in the NTS during their lessons. The results show that about 3 percent of the SEI teachers displayed core competencies in the NTS in 2022, similar to the 2021 survey result. This is also similar across the sex of teachers, school categorization, and school-sex classification.

The regional analysis also showed that the Volta Region (17.1 percent) had the highest proportion of teachers who satisfied the indicator requirements, followed by the Western North Region (12.5 percent). These findings suggest that teachers' acquisition of copies of the NTS might have an influence over their NTS performance. This is because the Volta and the Western North Regions had the highest proportion of teachers with copies of the NTS and the same regions had the highest proportion of teachers who satisfied the NTS criteria. At the school level, Dzodze Penyi (87.5 percent) and Asawinso (25 percent) senior high schools had the highest proportion of teachers displaying core competencies in the NTS. Also, teachers in 44 of the 50 schools where the lesson observations took

²⁸ Further information on the lesson observation implementation process has been provided in section 2 in chapter 2.

place did not display core competencies in the NTS; thus, only six schools of the 50 had at least one teacher satisfying the indicator criteria (Please see [table A3.24](#) in annex 3).

Table 3.41 Percentage of teachers in SEIs demonstrating understanding and application of the NTS (%)

Category	Survey	Survey
	2021	2022
Sex		
<i>Male</i>	2.8	3.3
<i>Female</i>	4.9	3.2
School category		
<i>Category A</i>	0.0	0.0
<i>Category B</i>	3.1	3.2
<i>Category C</i>	4.5	4.3
School sex		
<i>Mixed-sex</i>	3.6	3.6
<i>Single-sex</i>	0.0	0.0
Overall	3.3	3.26

*p≤0.05

Table 3.42 presents teachers who satisfy the criteria of the competencies of the lesson observation. As shown in the results, more than half of the teachers satisfied the criteria for three competencies out of eleven. There was a significant improvement in three of the competencies but a significant decline in one competency. The results also show that none of the teachers were observed *using a variety of teaching and learning resources that enhance learning, including ICT*. As explained in subsequent sections, the teachers explained that their schools do not have adequate ICT-related TLRs such as projectors. Some of the teachers also shared that they had not received laptops that were shared nationwide.

On the competency, *teacher pays attention to all students, especially girls and students with special educational needs, ensuring their progress*, the key reasons cited by observers for the poor demonstration of the competency include the teacher ignoring quiet and reserved students not actively participating in class, teachers not asking about students who were absent, teachers ignoring a section of the students disturbing and chatting at the rear of the classroom and teachers observed paying attention to only male students.

Regarding the competency, *teacher uses a variety of assessment modes during teaching to support learning*, the lesson observers noted that some of the teachers did not use thought-provoking questions to assess students'

understanding of the topic. According to the observation report, teachers asked rhetorical questions and straightforward questions such as “Do you understand?” with no follow-up questions to explore what the students genuinely understood. For those who asked detailed questions to gauge students’ understanding, they asked only specific students and only those who raised their hands to answer and ignored the nonparticipating students. Furthermore, some teachers reportedly did not even bother asking the students if they understood the questions but only told them to ask those who understood to explain to them after he was done with the class.

Also concerning the competency, *Teacher employs a variety of instructional strategies that encourage student participation and critical thinking*, about 6.8 percent of the teachers were observed demonstrating this competency. Some of the key reasons for the scores are teachers dictating notes for students to write in their notes throughout the lesson period. Some observers also reported that teachers did not involve the students in the lesson delivery but lectured throughout the lesson. Further reports provided also showed that some of the teachers did not organize group work or exercises and brainstorming sessions when the type of lesson taught required that approach.

There has been a significant increase in the competency *create a safe, encouraging learning environment*. Reports from lesson observers was that most of the teachers were observed to be welcoming to the students. They cited various instances where the teacher asked students to applaud students who did not respond correctly to questions for making an effort. None of the observers witnessed teachers insulting students or disrespecting them in the classroom. However, there were instances reported where the teacher shouted at some of the students for making noise while the lesson was ongoing.

With respect to *teacher use of age and grade(s) appropriate strategies to enact in the lesson*. It was reported that some of the teachers observed teaching year 1 students started the lessons by making references to what they were taught at JHS to build on that knowledge. Later explanations provided by the teachers revealed that some of the students did not have a strong grasp on some of the topics at the JHS level, so the teachers saw a need to do recaps of the concepts clearly to aid their understanding.

Table 3.42 Teachers who satisfied the criteria of sub-competencies in the lesson observation (%)

	Survey	Survey
	2021	2022
Teacher exhibits ethical teacher codes of conduct during the lesson delivery	73.2	69.4
Creates a safe, encouraging learning environment	58.1	64.9*
The teacher listens to students and gives constructive feedback	57.8	63.4
Understands how children develop and learn in diverse contexts and applies this understanding in their teaching	43.0	24.6*
The teacher demonstrates effective, growing leadership qualities in the classroom	26.9	24.6
Teacher use of age and grade(s) appropriate strategies to enact in the lesson	23.0	31.3*
Explains concepts clearly using examples familiar to students	9.5	15.3*
Pays attention to all students, especially girls and students with special educational needs, ensuring their progress	6.9	9.3
Uses a variety of assessment modes during teaching to support learning	5.6	8.8
Employs a variety of instructional strategies that encourage student participation and critical thinking	2.8	6.8
Produces and uses a variety of teaching and learning resources that enhance learning, including ICT	0.5	0.0
Total (N)	391	399

*p≤0.05

Multiple regression analysis was conducted to determine the relationship between the demographic characteristics and the NTS scores obtained by teachers. Based on the output results in table 3.42, teachers with more than 10 years' experience obtained significantly more scores than teachers with less than 5 years' experience by 2.4 percentage points. Furthermore, teachers in category B schools and teachers in mixed-sex schools obtained significantly higher scores compared with teachers in category A and single-sex schools.

Table 3.43: Output of multiple linear regression of NTS scores

Category	Coeff (*Sig)	CI
Sex		
<i>Male</i>	Reference	
<i>Female</i>	1.240	-0.798,3.277
<i>Years of teaching</i>		
<i>Less than 5 years</i>	Reference	
<i>5 to 10 years</i>	1.772	-0.845,4.390
<i>More than 10 years</i>	2.356*	0.031,4.679
School category		
<i>Category A</i>	Reference	
<i>Category B</i>	5.924*	2.094,9.754
<i>Category C</i>	2.115	-1.475,5.704
School sex		
<i>Single-sex</i>	Reference	
<i>Mixed-sex</i>	4.629*	0.453,8.804

*p≤0.05

3.10.5.2 Case studies of teachers who appropriately demonstrated NTS during their lesson delivery

The first case of a teacher demonstrating NTS appropriately was a male teacher in the Central region. The teachers were teaching mathematics on the topic Pythagoras' theorem under Plane Geometry in SHS 2. The teacher reported to class right on time and appropriately dressed. The teacher seemed to have a cordial and friendly relationship with the students because of the excitement on the students' faces. For example, one student said "*Sir [name of teacher] is coming*" with some level of optimism and excitement. When the teacher entered the class, he greeted the students and they all responded. The teacher then introduced the observer as a visitor who was joining the class and so encouraged all the students to be on their best behaviour. A student responded by saying, "*Sir, you know we are angles*", to which the teacher smiled and shook his head. At the beginning of the lesson, the teacher asked them about an assignment he had given them in the previous lesson; some of the students responded that they had given them to the class prefect.

At the start of the lesson, the teacher introduced the topic by citing a little history about the background of Pythagoras as a philosopher and teacher. He continued by sharing the objectives of the topic and then drawing a

right-angled triangle on the board and labelled the angles A, B and C, and used the diagram to explain the general theorem or idea behind the concept. In his introduction, he asked the students the fastest way to get to point A from point C (i.e., either through the hypotenuse or through the opposite). Some students raised their hands to answer the questions. He also called the students who did not raise their hands to try and provide an answer. After some students responded, he asked those who agreed or disagreed with the responses provided to raise their hands. He then mentioned the winners (i.e., those who mentioned hypotenuse as the faster route to point A) and explained the concept with an example. An interesting observation made by the observer was that the teacher would often tell the students after he asks a question that *"We're all learning, so don't worry if your answer is correct or wrong, just try your best"*.

Continuing with the lessons, he asked the students to bring out their calculators. He told them to form groups and mixed those who did not have calculators with those who had them. Each group also had male and female students in them. He then wrote another example on the board and asked them to each work to complete the examples. During that time, he went around the groups looking at the progress of their work. When they were done, he exchanged the exercise with the groups for marking. He explained the solution on the board and asked the students to stop him and ask questions if anything he was saying was unclear. While he was solving the questions on the board, he continuously asked both male and female students if they understood. At certain points while solving the questions, he would ask the quiet students in the class, *"[Name of student], so what should I do after this step?"*. This, we believe was a way of assessing the students' understanding of the topic. After completing the lesson for the day, he recapped the key points in the topic and asked if anything was unclear. He after gave them class exercises and assignments and also asked the students to come to him if anything was unclear. He also encouraged them to try their best before asking their colleagues to support them.

Another instance of a teacher rightly demonstrating NTS was a female teacher teaching integrated science under the topic 'Cells and cell division' for SHS 1 in the Central region. The lesson was a continuation of the topic from a previous lesson. As reported by the observer, the teacher reported to the class about 15 minutes before the lesson began. This is because the previous teacher did not teach but gave class exercises for the students to complete and so left before the lesson period had ended. The female teacher was neatly and properly dressed. According to the observer, When the teacher entered the classroom, the students excitedly stood up to greet her, and she responded. The teacher then asked them if they had completed an assignment provided to them in the previous lesson. The assignment was to draw an animal cell, name the parts and state the functions of each part. After collecting the exercise books, she acknowledged the presence of the observer and continued with her lesson. She summarily

recapped what she had taught in the previous lesson interactively. As part of the summary, she would ask questions to gauge whether the students were paying attention. After asking questions, she would call the students and ask them what she had said in the previous lessons. She had the students give applause to the students who answered correctly, and for the students who answered wrongly, she told them she would ask them the same questions again before the lesson was over, so they should pay attention.

She moved on to introduce the topic for the day, which was the structure of a plant cell. She asked the students if they had read about it and asked for a volunteer to come to the board and draw the plant cell. A few students raised their hands. He called one to draw the cell and other students to name the parts. She passed around some sheets of paper that contained a coloured picture of a plant cell and drew a sample on the board. She explained the usefulness and functions of the plant cell and its importance to plants, comparing it to the animal cell while explaining. She showed knowledge of the topic by not referring to her notes to explain the functions of the parts of the cells. In some instances, she joked with the names of the parts of the cells, which made the students laugh. She explained later that the jokes with the names of the parts enable the student to recall the names when drawing the cells. She, however, mentioned the names and asked the students to name them after her. She did that a number of times and then asked them to mention them while pointing at the parts on the board. The teacher asked both male and female students questions to gauge their understanding, and especially called the students who were quiet. She would often say *"If I ask a question and you don't raise your hand, I will call you first"*.

During the lessons, she asked the students to replicate the diagram in their notebooks for purposes of revision later on. She further informed them that the topic would be in the exams and so encouraged them to study hard. One student raised his hand and said *"Madam, every topic you teach, you tell us it will come in the exams"*, to which she said, *"Everything I teach you will come in the exams, so you have to learn everything. You won't get any apo [leaked exam questions] in this class"* to which the students laughed.

Before ending the class, she called the students who could not answer earlier and asked them the same questions she had asked at the beginning of the class. While almost all of them answered, a few could not. She then told them to revise and give her an answer in the next lesson. The teacher continuously asked them if they had understood what had been taught. She then had a recap of what she had taught for the day and gave them the reference page in the integrated science textbook to check and do further reading. She then gave them an assignment and asked them to submit it the following day.

3.10.5.3 Case study of a teacher who did not appropriately demonstrate NTS during their lesson delivery

A case of a teacher who did not demonstrate NTS was a mathematics teacher in the Eastern region. His lesson was on 'Simultaneous equation' for SHS 2. It is important to note that the lesson was observed two weeks before the termly examination and a week before the official school revision period²⁹. The teacher reported about 15 minutes late to the class. When the teacher reported to the class, he apologized to the observer for his lateness but not the students. He was, however, neatly, and properly dressed. He informed the class that they were behind schedule in completing the topics scheduled for the term and so he would "*speed up a little*" to cover the syllabus because he had already set the exam questions. The teacher hurriedly moved on to the topic and wrote two equations on the board. He reminded them that the topic had already been treated in their basic schools and so he would not spend too much time on it. The students murmured, and a female student raised her hand and said, "*Sir, please I did not understand it in JHS*". The teacher responded by suggesting they did not take their lessons seriously back in school. He then told them to continue, and if anything was unclear, he would find time later to explain it to them, or they could see their other colleagues who understood it.

The teacher went on to solve the questions, rarely asking them if his explanation was unclear. While teaching, the teacher observably focused on a few students while ignoring the majority. When he asked if they understood while the lesson was ongoing, only a few students shook their heads in approval while the remaining students remained quiet, copying what the teacher was writing on the board. A few of the students were also chatting undertone and would quickly turn back, pretending to pay attention when the teacher looked away from the board. When it was almost time for the end of the lesson. The teacher asked them if they understood everything. While some students nodded in the affirmative, some students also said it was not very clear. The teacher told them that it was time for the next lesson, and so they should see other students who understood and get back to him if anything was unclear. He further told the class prefect that he would give him some assignments to copy for the whole class.

²⁹ The revision period is observed a week before the termly examination. The period is to enable students revise what has been taught in the term and reach out to the teachers or colleagues if they did not understand anything taught in the term.

3.10.5.4 Qualitative findings on teachers' demonstrating an understanding and application of the NTS

Generally, while about a third of the teachers had copies of the NTS, a sizeable number of the teachers did not apply the NTS. Those who knew about the NTS claimed that they heard about it from colleagues through conversations and some workshops. Among those who knew about the NTS, the majority were able to provide only a general description and idea about what the NTS was but were unable to provide an expansive explanation of its components, usefulness, and purpose.

Teachers' awareness and knowledge about NTS

Among those who know about the NTS, a few claimed that the Ghana National Association of Teachers (GNAT) had provided them with booklets that contain a code of ethics for teachers, which they use as a guide for teaching. Some of the teachers who were unaware of the NTS recommended workshops be organized for the purpose of explaining the use of the NTS. Some teachers further recommended that the NTS should be made mandatory for all teachers by adding it as part of the assessment criteria for teacher licensure and promotional exams. Please see some quotes from teachers below:

- *"It guides us to practice the democratic way of teaching in the sense that students are expected to be given the right and opportunity to also share their views and participate very well in the teaching process. And that the teacher is seen as a facilitator and not just somebody imparting knowledge. You have to help the children by assisting them to create and make knowledge. At the same time, you go by the standard by not going against some of the code of ethics of the profession ". - Male teacher, Ashanti region*
- *".....Okay, like I was saying, I for instance, I have not gotten the information in terms of like the GNAT, they normally bring us small books that contain the code of ethics of the teachers and also the constitution of the GNAT so I feel that it should be made available to the teachers so that we can all have access to them and then read and know more. "- Male teacher, Greater Accra region*
- *"I think they can even incorporate it in our workshop, promotional exams. Yes. The promotional exams, you must learn, I think I have my documents here. I thought I would come and wait for you, so while I wait, I learn. So, if they [GES] incorporate it, we will get it in our heads. "- Female, Ashanti region*

Strategies teachers use in assessing students' understanding

As part of the qualitative interviews, teachers were asked to explain the strategies they use in assessing student understanding and monitoring their progress during lesson delivery. Based on the findings, a majority of teachers claimed that they use oral assessments while lessons are ongoing, followed by class exercises and assignments. Some teachers also indicated that to engage students' interest and attention, they write the questions on the board

and call students at random to answer the questions on the board. According to the teachers, this strategy helps the students become attentive in class due to the prospect that they might be called to answer questions. Some teachers further explained that they are able to assess students' understanding based on the kinds of questions they ask and their facial and bodily expressions while lessons are ongoing to gauge their involvement and understanding of the lesson. The implication is that while the teachers know in theory, what to do, they are failing to implement these strategies during their lessons. Some quotes from teachers are provided below:

- *"Yes, in my lesson, I won't leave the class without assessing because if I don't do it, then I can't confirm whether they got what I taught or not. I will ask questions, I will give examples on the board for them to try, and I will go around and check what everyone is doing. Sometimes I give class exercise." -Male teacher, Eastern region*
- *"We do that by keeping the records. We have the records; we have their files. So, this semester we see how you performed. And even we have semester meetings for staff where we look at the performance of the students, and then you'll be asked why the students are performing this way. And then what steps you are taking to improve them. And then if they are doing well, what steps they're taking to maintain it in all that we have that and then we also have where the final one is when the WASSCE are in, you will come to the assembly, where we have the chart projected on the screen. We are looking at it how this subject performed, what we are doing, the way forward and all that." - Female teacher, Western region*

As shown in the quantitative section of the report, only about 3 percent of the teachers were observed applying the NTS. In relation to the use of ICT and other resources for their teaching, findings from interviews with the teachers showed that although most of the teachers have received laptops for their use in the school, some of them do not bring the laptops to school but keep them in their homes for their personal use. Several complained that due to their financial challenges, they are unable to purchase data to conduct research online, especially because video tutorials on specific topics consume a lot of data that they do not have budgets for. For example, a teacher said that *"the school does not give us data to use, and sometimes when you want to go online like YouTube and Khan academy, all your data will finish, so if the school is able to help us with data at least we can manage. Data is very expensive now"*. Some teachers also explained that the main challenge they have is that the internet connection is poor in the area their school is located, making it difficult for them to research online.

Most teachers were also observed not using a variety of instructional strategies such as role plays, games, storytelling, or group and peer work. The only strategies they use are questions and answers. Some of the teachers confessed that apart from the questions and answers, they were not familiar with other instructional strategies. A teacher in the Eastern region said that *"...the truth is that these methods you are mentioning (games, role play,*

modelling, etc.) are new to me. For me, when I am teaching, I explain the topic to them, and then I ask them to ask any questions if they don't understand. That is the method I have been using".

In relation to a *variety of assessment modes during lessons*, teachers were observed giving exercises and, in some subjects like mathematics, writing questions on the board for a student to answer. However, in an observed instance, the teacher asked the student to answer the question on the board not as a means of assessment but as an approach to punish/disgrace the student for not paying attention. The observer reported that the teacher said, *"You see, you have disgraced yourself. We have a visitor here [referring to the observer], but you can't say anything. When we tell you to learn, you don't want to learn. You think you're doing me, if you don't stop making noise there, I will always call you to come to the board and answer".* Other teachers also confirmed that the only assessment mode they were aware of was the exercises, examples, and assignments they gave to the students.

Some teachers were also observed not using the appropriate teaching and learning materials during lessons. In a few instances on mathematics topics and science topics, teachers were observed drawing on boards to explain concepts, while an appropriate method would be to use real-life replicas to explain the concepts to make them more interesting. Some teachers complained of unavailable teaching materials needed to explain concepts more clearly. The lack of textbooks also hampered the contact hours of the lessons. For example, in an English class, the teacher used about half the lesson period to write notes on the board. This could have been prevented if the students had textbooks to refer from.

A few of the teachers who indicated that they have copies of the NTS also highlighted some challenges they face in implementing the standards. The main challenge they reported was that the NTS approach was time-consuming, and so they were unable to have time to properly go through what is required as part of the standard. A few also claimed that the components of the standards are a lot, and so they're unable to properly implement every aspect of the standards. In one instance, a teacher also mentioned dissatisfaction with the discontinuation of corporal punishment, which in his opinion, has led to students doing whatever they want in the classroom.

3.10.6 Teachers in SEIs using digital technologies to enhance their teaching

Key findings

None of the teachers met the criteria to be classified as using digital technologies to enhance their teaching for both the 2021 and 2022 surveys, despite some teachers reporting that they had received training in digital technologies in their schools. Interviews with teachers showed that, for most teachers, the use of digital technologies entails teachers conducting research online for their lessons and nothing more. Some of the teachers also explained that the training they received usually covered topics such as where they could get research materials, how to use applications like Excel and other Microsoft products, and how to keep digital records of their students. However, most of the training did not include how to integrate the use of digital technologies into lesson delivery in the classroom. Other challenges teachers cited include poor data networks, unavailable projectors and other audio-visual resources, and the lack of funds to purchase data for their use.

Apart from GES providing laptops for teachers, training programmes should be instituted on practical ways on how teachers can integrate the teaching practice with digital technology.

3.10.6.1 Percentage of teachers using digital technologies to enhance their teaching

The 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. As part of the data collection process, three assessment tools were used. First, sampled teachers were observed using or referencing digital technologies during lessons

based on the measurement criteria (see box 3.2). An interview was also conducted with teachers to triangulate the results of the lesson observation. Finally, students completed a self-assessment to triangulate the results of the

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.

lesson observations. For a teacher to meet the minimum criteria for this indicator, a minimum of 75 percent average score is required.

Based on the results, none of the teachers met the criteria to be classified as using digital technologies to enhance their teaching for both the 2021 and 2022 surveys. Table 3.44 presents the proportion of teachers who met the criteria for competency with ICT and digital technologies. As in the baseline survey in 2021, few teachers obtained the minimum criteria in all the competency areas.

With respect to the teaching materials, some teachers in the interviews indicated that they use google to do their search. However, they were unable to provide the specific websites they sourced for the information to prepare their lessons. Some teachers also said that they do not know how to integrate digital technologies to support students with special needs.

Table 3.44 Teachers who meet the minimum criteria on lesson observation competencies (%)

	Survey 2021	Survey 2022
Relevance of ICT to curriculum and topic taught	5.4	9.8
The teacher uses digital technology to support learning in a multitude of ways, a hands-on approach for learners	0.3	1.3
The teacher gives appropriate ICT resources to students with special needs	14.3	10.0
Produces and uses a variety of teaching and learning resources that enhance learning, including ICT.	2.1	5.0
Total (N)	391	399

In an interesting finding, there were significant increments in the proportion of teachers who have received training in digital technologies in 2022. The increment is twofold compared to the 2021 survey across demographic characteristics. The teachers indicated that the training they received was on methods to utilize digital technology to enhance their personal development and not on how to integrate it into their classroom lesson delivery.

Table 3.45 Proportion of teachers who have received training in digital technologies in their schools (%)

Category	Survey 2021	Survey 2022
Sex of teacher		
<i>Male</i>	23.3	41.0*
<i>Female</i>	25.6	45.2*
School category		
<i>Category A</i>	35.4	45.4*
<i>Category B</i>	22.0	44.1*
<i>Category C</i>	22.7	39.8*
School sex		
<i>Mixed Sex</i>	24.0	41.5*
<i>Single Sex</i>	22.1	46.2*
Years of Teaching		
<i>Less than 5 years</i>	21.1	41.6*
<i>5 to 10 years</i>	24.9	42.5*
<i>More than 10 years</i>	25.2	42.1*
Overall	23.9	42.1*

*p≤0.05

Multiple regression analysis was conducted to determine the relationship between demographic characteristics and teachers' digital technology scores. Based on the output results in table 3.46, teachers in category A schools obtained significantly higher scores compared with schools in category B and C by 3.6 and 4.3 percentage points. Also, teachers in mixed-sex schools obtained significantly higher scores compared with single-sex schools by 4.8 percentage points.

Table 3.46 Output of multiple linear regression of NTS scores

Category	Coeff (*Sig)	CI
Sex		
<i>Male</i>	Reference	
<i>Female</i>	-1.253	-3.157, 0.6500
<i>Years of teaching</i>		
<i>Less than 5 years</i>	Reference	
<i>5 to 10 years</i>	.348	-2.081, 2.771
<i>More than 10 years</i>	-.349	-2.515, 1.816
School category		
<i>Category A</i>	Reference	
<i>Category B</i>	-3.647*	-7.208, -0.0865
<i>Category C</i>	-4.312*	-7.644, -0.980
School sex		
<i>Single-sex</i>	Reference	
<i>Mixed-sex</i>	4.779*	0.905, 8.654

*p≤0.05

3.10.6.2 Case study of a teacher who poorly demonstrated the use of digital technology during a lesson delivery

An ICT teacher in the Upper East region was observed poorly demonstrating the use of digital technology during an ICT lesson for SHS 2 students. The topic was related to the 'Application of spreadsheets' using Excel. According to the observer, the lesson was conducted in a classroom instead of an ICT laboratory. The teacher did well by bringing a laptop to class to demonstrate how the Excel application worked. However, the students did not have practical experience using a spreadsheet. According to the observer, the students came in turns to observe a data manipulation procedure in Excel without actually engaging in it directly. When asked, the teacher confirmed that the school did not have a projector to show the procedure and that a functional ICT laboratory was unavailable. The students were excited about the lesson even without the practical experience.

3.10.6.3 Qualitative findings on teachers' demonstrating use of digital technologies

The increment in the proportion of teachers receiving training in digital technologies may be attributed to the distribution of laptops to SEI teachers under the "One teacher, one laptop programme", in which MoE distributed

about 62,000 laptops beginning in December 2021³⁰. Some of the teachers confirmed that they had not received their laptops as at the time of data collection. According to the teachers, only a few of the SEIs have acquired laptops and desktops, including other digital technologies, for use by both students and teachers in ICT laboratories.

- *"Yes. They [my school] have supported me [with] a laptop. Even a computer for our department ". - Male teacher, Volta region*
- *"The laptops we received were from Ghana Education Service, the One Teacher, One Laptop Project but most of them are not functioning. Mine like this, I think the screen got crushed "- Male teacher, Eastern region*
- *"Not my school, but the one that came from the government recently, the laptops. That is what we have so far. I can't say it is from my school or the government. "-Female, Ashanti region*

Teachers who conduct research using digital technologies

Generally, some teachers confirmed that they go online to research literature and information to deliver their lessons via their mobile phones and sometimes laptops. A few of the teachers also confirmed that they do not have smartphones, and so do not go online to conduct research for their lessons.

An interesting finding from the interviews was that some schools, such as H'Mount Sinai SHS have an E-learning programme in which students are allowed to access digital lessons on various topics and subjects for their learning. Some teachers also indicated that they visit Google and Khan Academy to get extra information on various topics. Here are some illustrative quotations from teachers:

- *"Yes. I go online to check on maybe how best I can maybe, you know, we are in a modern society, so you also have to abreast yourself from the traditional way of teaching and doing things. So once in a while, I go to the, let's say, Khan Academy. To find out how best I can, on Google, I Google, I go to Google to see how best I can solve some problems in a very short way. "*
- *"....ok for the previous question about the school providing, not individually anyway, but we have IT lab where there is E-learning, recently the government provided some curriculum lessons where some topics are treated, it's a video so students go to the IT lab when it is time for the E-learning, it's on our time table, so they go and review the aspect that they have difficulty with so they go, sometimes we follow them. In a*

³⁰ <https://www.graphic.com.gh/news/education/ghananews-1-teacher-one-1-laptop-project-ges-distributes-80-in-phase.html>

situation where an area is played on the screen is not well absorbed by the students, we revisit and explain that line to them. So, I think that is one way. "-Male teacher, Eastern region

- *"Sometimes when you are teaching your mathematics, you want to view some practical aspect of it, so you go online, see some application of integration or differentiation so you want to see areas where those aspects of mathematics are applied then you go online and check where they are used. It's unfortunate, sometimes we only use our phones and show them one by one and also sometimes, when you're delivering your lesson, students have an interest in knowing the history of the topic. For example, if you check the Pythagorean theorem, they want to know who Pythagoras was, so we go online and research about that particular mathematician. We a lot of this for scientist and mathematicians, I think when we do that students have the joy, the interest once they know about those people, then they have the interest in learning. "- Male teacher, Central region*

Reasons why teachers do not use digital technologies during lessons

As part of the requirements for demonstrating the use of ICT and digital technologies, teachers are required to make references to digital materials where students can obtain lesson resources and materials for the specific topic being treated. Teachers are also expected to project videos, tutorials, PowerPoint presentations, or other applicable materials during lessons to engage the students. Teachers are also required to, where applicable, provide pictures and posters of digital materials to students during lessons. Based on the feedback from lesson observers, almost all these instances were not adhered to, resulting in the low scores observed in table 3.43. Interviews with teachers showed that, for most teachers, the use of digital technologies entails teachers conducting research online for their lessons and nothing more. Some of the teachers also explained that the training they have received usually covers where they can get research materials, how to use applications like Excel and other Microsoft products, and how to keep digital records of their students. Most of the training did not include how to integrate the use of digital technologies into lesson delivery in the classroom. For example, a teacher indicated that *"I know about Khan academy. I know that I can even create accounts for my students and track them. But it's not applicable here because the students are not allowed to use mobile devices and the ICT lab too has no internet so I can't give them assignments"*.

Another key factor that has prevented teachers from utilizing digital technologies during lessons is the unavailability of projectors. The teachers explained that given the ineffectiveness of using mobile devices or laptops to share information with a whole class, it is important that schools acquire projectors that make it easy to share videos, audio, and practical projects with students to enhance their learning. Some teachers also pointed to a lack of knowledge on where to find online academic resources to find specific information apart from searching via Google.

Another key challenge cited by teachers involves the purchase of data to use for their research. They explained that the lack of wireless networks in the schools requires them to use their own resources to find information, which they perceive as unfair given the effects on their expenditure. Poor network coverage was given by other teachers as challenges they face in using digital technologies. Some quotes from teachers are cited below:

- *"Sometimes when you are teaching a subject, you need to show it to them. I was just discussing with my head of department the other day that if we get a projector, even though the school has one at the ICT department, I was discussing with my head that if we can get one for our own department because most of our things are practical things and sometimes we teach without the objects, and it is difficult for them to understand and so, sometimes some of us will use our phones then we try to go to the internet to download some information and try to use the small phone like that to let them watch what we had and we try to explain. But if every department can get a projector or a big television, something that we can put a pen drive in, and they watch, and you explain. Most of the things are difficult to explain without seeing." - Male teacher, Upper East region*
- *"The classroom is just a marker board. So, if you want to use some of these things, you need the projector and all that. Maybe sometimes you have to get into the lab, ICT lab with the kids. You ask them to search, Google this, and all that. But we do not have it, we are in the classroom." - Female teacher, Ashanti region*

3.10.7 Teachers in SEIs demonstrating GESI-responsive pedagogies

Key findings

The findings showed that about a tenth of the teachers demonstrated GESI-responsive pedagogies during their lesson delivery. The NTS competency with the highest score was teachers' ability to create a safe space for their students and the application of teaching methods equally to both male and female students. The qualitative interviews revealed that most teachers understand GESI as limited to treating male and female students equally but largely ignore groups such as students with disabilities, those with learning disabilities, and those from disadvantaged backgrounds. Future interventions should focus on teachers' use of strategies to challenge gender-roles and norms and also the need for teachers to pay attention to students with special education needs.

3.10.7.1 Percentage of teachers demonstrating GESI-responsive pedagogies

This indicator tracks teachers' demonstration of gender-responsive pedagogy using the criteria shown in box 3.3³¹. Table 3.47 presents the proportion of teachers who demonstrated GESI-responsive pedagogies in their lessons. Based on the results, about one of ten teachers met the minimum criteria for the indicator. The result is not significantly different from the 2021 survey. [Tables A3.25](#) and [A3.26](#) provides the school and regional breakdown of the proportion of teachers demonstrating GESI. The results showed that the Upper East Region had the highest proportion of teachers demonstrating GESI followed by the Volta Region. At the school level, all the teachers in Dzodze Penyi SHS were observed demonstrating GESI followed by Awe Senior

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

³¹ 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. The computational procedure is similar to the process used for the NTS. As a recap, after the three tools are averaged to provide a mean composite score, a teacher is expected to obtain a minimum of 75 percent on the mean composite score to satisfy the criteria of the indicator.

High/Technical. Please see [table A3.27](#) and [A3.28](#) in Annex 3.

Table 3.47 Proportion of teachers at SEI demonstrating GESI-responsive pedagogy (%)

	Survey 2021	Survey 2022
Sex		
<i>Male</i>	7.6	9.8
<i>Female</i>	11.7	14.5
School category		
<i>Category A</i>	6.3	7.1
<i>Category B</i>	7.0	10.1
<i>Category C</i>	10.6	13.5
School sex		
<i>Mixed-sex</i>	9.5	12.5
<i>Single-sex</i>	0.0	0.0
Overall	8.7	11.3
Total (N)	391	399

Table 3.48 also details the proportion of teachers who met the criteria for the teacher competency scores. As shown in the table, there was a significant increment for *Creates a safe, encouraging learning environment* by 6.8 percentage points. Reports from lesson observers were that most of the teachers created an environment that made students feel welcomed to contribute during lessons. They cited various instances where the teacher asked students to applaud students who did not respond correctly to questions for making an effort. There were also instances where the teachers would tell jokes in the class to help the students relax. However, there were instances reported where the teacher shouted at some of the students for making noise while the lesson was ongoing.

The competency *Understands how children develop and learn in diverse contexts and applies this in their teaching* also declined by 18.4 percentage points. This criterion requires that the teachers’ lesson notes and plans show a variety of instructional methods. Most of the lesson notes did not show this, and there were instances where the teachers had not prepared the lesson notes before teaching the lesson. Some teachers were also impatient with students. They did not give them enough time to respond after questions were asked. In some instances, some teachers shared the limited learning materials with specific students by calling them by name while ignoring others.

Teachers were also not observed mixing the students during lesson delivery. In most instances, the females were sitting in the front seats while the male students were sitting at the back.

Table 3.48 Teacher competency scores on GESI-responsive pedagogies (%)

	Survey 2021	Survey 2022
Creates a safe, encouraging learning environment	58.1	64.9*
The teacher applies all teaching methods equally to female and male students	44.0	47.4
Understands how children develop and learn in diverse contexts and applies this in their teaching	43.0	24.6*
Teacher use of age and grade(s) appropriate strategies to enact in the lesson	23.0	31.3*
Identifies and remediates learners' difficulties or misconceptions, referring learners whose needs lie outside the competency of the teacher	22.3	18.3
The teacher uses gender-responsive strategies to challenge gender roles and gender norms	12.3	9.3
Pays attention to all students, especially girls and students with SEN, ensuring their progress	6.9	9.3
Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes	6.9	9.3

*p≤0.05

Multiple regression analysis identified the relationship between demographic characteristics and teachers' digital technology scores. Based on the output results in table 3.49, female teachers obtained significantly higher scores than male teachers by 2.4 percentage points. Also, teachers who have taught for more than 10 years obtained significantly higher scores compared with teachers who have taught for less than 5 years.

Table 3.49 Output of multiple linear regression of NTS scores

Category	Coeff (*Sig)	CI
Sex		
<i>Male</i>	Reference	
<i>Female</i>	2.450*	.018, 4.882
<i>Years of teaching</i>		
<i>Less than 5 years</i>	Reference	
<i>5 to 10 years</i>	1.716	-1.408, 4.840
<i>More than 10 years</i>	3.283*	.5093, 6.056
School category		
<i>Category A</i>	Reference	
<i>Category B</i>	5.732*	1.161,10.303
<i>Category C</i>	1.705	-2.578 5.990
School sex		
<i>Single-sex</i>	Reference	
<i>Mixed-sex</i>	14.934*	9.951, 19.917

*p≤0.05

3.10.7.2 Case studies of teachers who appropriately demonstrated GESI during their lesson delivery

The case studies discussed in this subsection highlight the application of GESI by the male and female teachers who were observed appropriately demonstrating the GESI

One observed case where a teacher was satisfactorily demonstrating GESI during lesson delivery was in the Northern region. The Male teacher was teaching mathematics in SHS 2. The topic for the lesson was ‘Sequence and Series’. According to the observer, the teacher was observed to have a practice where after calling one male to answer a question, he would call a female next in that order. In essence, this ensured that both male and female students were allowed to answer questions. The teacher adopted the same approach when asking a question. In instances where only male students raised their hands, he still insisted that the next person should be a female. The teacher encouraged the female students to answer the questions even if they were unsure about the answer. According to the observer, the teacher said at a point that *“In my class, you’re all the same whether you went to the best private school or site [name associated to public basic schools]”*. According to the lesson observer, the teacher conducted himself in a very warm and friendly manner. Once in a while, he would say something funny to make the students laugh and then continue with the lesson. The observer stated that the students seemed relaxed and confident in responding even if they were unsure of their answers.

In another instance, a teacher in the Western region teaching English on the topic 'Summary' in SHS 1 was also observed demonstrating GESI appropriately. According to the observer, the teacher reported to class on time, explained the objectives of the lessons, and shared the English textbooks with all the students. He divided the comprehension story into paragraphs and called on the students to read each paragraph. He ensured to call both male and female students to read the paragraphs. He also organized the class into groups and asked them to read a passage and summaries. He appointed both male and female group leaders to lead in presenting the summary based on the passages. Where the responses were not accurate, he explained the passage and provided the appropriate areas relevant. An interesting instance noted by the observer was when a student was struggling to read, and some students started to laugh at the student. The teacher quickly shut them down and told them they would leave the class if they tried to mock anyone reading.

3.10.7.3 Case study of a teacher who poorly demonstrated GESI during a lesson delivery

An instance where a male teacher was observed poorly demonstrating GESI was in the Bono region. The teacher was teaching mathematics in SHS 1. Based on the report from the observer, the teacher reported to class early and dressed appropriately. The observer noted, however, that the students seemed a little tensed by the presence of the teacher. They did not smile at each other nor engage in conversations. The teacher had an authoritative demeanour when he came to the classroom. He explained to the class, pointing to the observer that, a visitor had come to observe his lesson and so he did not want any student to make noise. He introduced the topic for the lesson and started explaining the mathematics concepts. Based on the observer's report, the students seemed afraid to ask questions and so were quiet. When the teacher asked a question, none of the students voluntarily raised their hands. In such instances, the teacher called on some students to give an answer. In one instance, when the student provided a wrong response, the teacher asked the student that *"What at all did you learn in your school [referring to the JHS school they attended]?"³²*, to which the student sat down and remained quiet. In subsequent questions, the teacher only called students who were accurately answering the questions ignoring those who did not raise their hands. The teacher however said to the students that, they could come to him if they did not understand anything.

³² Please note that this quote has also been provided in next subsection section to explain a point

3.10.7.4 Qualitative findings on teachers' demonstrating GESI-responsive pedagogies

The quantitative results showed almost 90 percent of the teachers were not implementing GESI in the classroom. As part of the GESI requirement, teachers are supposed to create a safe, encouraging learning platform for students. Though there was a significant improvement from the 2021 survey, lesson observers reported various instances where the teachers did otherwise. As cited earlier in one instance, a teacher called a student to the board with the purpose of disgracing the student for not paying attention in class. In some few instances, some teachers insult the students when they are unable to answer questions correctly. Lesson observers reported that in another example, the teacher told a student who did not respond correctly in the Twi language that *"...As for you, you are very dumb, and you won't pay attention in class too"*. After the observer followed up later to enquire about the reason for that behaviour, the teacher said he was only joking with the student. There was another instance where a mathematics teacher asked the students that *"what at all did you learn in your school [referring to the JHS school they attended]"*. These statements are often times demoralizing and feed into the disinterest of students in certain subjects.

As part of the teacher professional practice in managing the learning environment, the NTS guidelines require teachers to apply all teaching methods equally to both male and female students in the classroom. The quantitative results showed that almost half of the teachers demonstrate this competency. In almost all the key informant interviews, the teachers claimed that they were aware of the need to be impartial between male and female students. However, in practice, some teachers were observed not demonstrating GESI. The first report was the seating arrangements of students. In most cases, the students were reported to be sitting without an effort to mix the male and female students. Teachers gave the excuse that they make sure to ask questions to both sexes and perceive the seating arrangement does not affect their impartiality. For example, a teacher said after an observer asked why the students were not mixed, *"...I think it is important for the students to sit where they are comfortable, so I don't really mix them up. To ensure that I am not biased, I ask both the boys and girls questions in class and also assess them equally"*. Another observation made by lesson observers was that in relation to mathematics, some of the female students seemed reserved and unresponsive. In some cases, the teachers would call the girls to gauge their understanding and ask to clarify if they did not understand anything. On the contrary, some teachers ignored the female students. In an instance after a teacher asked a question, he mocked a female student jokingly saying *"[student name], so when will you raise your hand to answer a question in class? The day you will answer a question, it will snow in Ghana"* to which the students laughed.

Some teachers cited possible reasons that would lead to some of their colleagues not adhering to GESI, especially related to students with learning difficulties. They explained that over the years, they are noticing an increase in the

number of students needing special attention due to their poor performance at the JHS level. Respondents attributed this to the Free SHS policy, which provides education for all students irrespective of their performance. They further elaborated that it is sometimes difficult to pay special attention to these students when lessons are ongoing because they would impede the progress of the class due to their low level of uptake. According to the teachers and some school heads, this has led to most schools establishing extra classes and remedial programmes for such students. A male teacher in the Ashanti region said that *"...special needs students? A lot. Because of the free SHS, there are a lot who come with so many gaps in terms of knowledge. The failure rate they bring to secondary is so high that some can't even read, and the fact that the student cannot read is a big challenge to the teacher in helping the child to be able to move on with academics. So, it's difficult dealing with them when you want to achieve your aim during lessons"*.

The findings also showed that some teachers understand GESI and in their own words, implement GESI. Based on the definitions and explanations provided by the teachers, most understand GESI to relate mainly to fair and equitable treatment of males and females in the classroom. Few of the teachers cited social inclusivity issues, such as students with learning disabilities, physical disabilities, and those from disadvantaged backgrounds as part of their explanation of GESI. Some explanations provided by teachers are provided below:

- *"That is ensuring that both boys and girls in school are given equal opportunity to excel and to practice and move on very well with their teaching and learning basics. That is, every opportunity given to the guy must also be allotted to the girl. Not looking at the fact that a guy must be here, and the lady must be there. They are supposed to be given all the chance to practice what they know. Like even when it comes to the science and math quiz, you realized that some school picks only the guys to go and represent, whereas the girls are left somewhere. It is not the best. They should all be given equal access. "Female, Ashanti region*
- *"What I understand about those terms is simple, it means we must make sure boys and girls have equal opportunities in terms of teaching and learning. For instance, in my area, it is a general perception that girls fear mathematics, but I don't know, maybe because we are dealing with only girls, but I will dispute that one completely because there are girls here who even love mathematics more than any of the science-related courses more than some boys. So, it means we have to let the girls and the boys have an equal opportunity in the teaching and learning process. "- Teacher, Bolgatanga Girls SHS*
- *"When I hear gender, what comes to mind is male and female. Equality is also giving equal opportunities to both male and female, and social inclusion talks about involving everyone in terms of socialization and interaction. "- Dwamena Akenten SHS*

As part of the qualitative interviews, teachers were asked to explain how they implement GESI strategies during their lesson delivery. Based on the explanations provided, most teachers intimated that they ensure that they treat both female and male students equally in class. In some cases, the teachers said that they prioritise the female students in class when they ask questions to ensure their effective participation. For example, a mathematics teacher also cited that the females in his class usually keep quiet and expect the male students to respond because they perceive that mathematics is a male-specific subject, but he tries to ensure girls respond to questions first before the male students.

- *"I have no disregard towards any individual in the class, whether being from a rich home, a poor home, a male, or a female, I see everyone equally capable, so in my class, they are aware, I call anyone, anytime. I treat anyone equally, so there is nothing like you are the best student so always the questions will be coming to you." Female teacher, Central region*
- *" Yes, still ladies, still feel men to superior to them, so sometimes when you are posing questions, they will think guys should go first while I'm insisting that you are equally having the same strength as guys. So I think that is one challenge and then another challenge will be, I will not say it is about gender, I will be about female sickness, I will say that is one aspect that weakens them against the other gender, they have several sicknesses, that, when they are telling you in the class you may doubt sometimes but you can't confirm so you just end up by allowing them to do what they want to do. And you see guys mostly are always active, so you want to treat them as they behave, and a lady saying she's sick, so you also treat them how she also responded." Male teacher, Eastern region*
- *" In my teaching, for that one it's easy. It is all about the students being willing to participate. Then sometimes you must encourage the students. You have, for the girls for instance, sometimes they are shy. Even some of the boys are also shy. Some don't like to talk. So, what I do is I encourage them, especially, when a tease is passed. I remember some of the gentlemen read and then they are teased they are not good readers, and I will shut you down that even he has attempted to read and there you're trying to make fun of him. So that is what I do. I just involve them, and I make sure whatever the girl is doing you can also do it academically. For that one it is easy". - Female teacher, Ashanti*

To ensure inclusivity, a few teachers stated that for students who fall behind the class or are identified to have learning disabilities, special remedial classes are organized for such students to ensure they are able to catch up with their colleagues, these teachers also claimed that they do not charge the students for such services rendered them. See some quotes from teachers below:

- *“ Personally, I try to do some remedial teaching for them. I provide remedial lessons for students with special needs”.*
- *“ Yea! With this, what we do is we try to do some special kind of intervention lessons deliveries to this category of students. When they are identified, we do, we organize a special intervention class for them so that we can integrate them into the normal class learning.” - Female teacher, Western North*
- *“ In every lesson delivery, once you have that at the back of your mind, taking into consideration all these people in society, we create forums for that where those people with special needs are attended to. More often too, we have this special attention for them. Aside from the classroom period allocation, we have after-class interactions, weekend interactions, and during holidays interactions, we do special arrangements so that we will be able to integrate them into the normal classroom, where they will not be discriminated upon”. - Male teacher, Upper East*

A few teachers in single-sex schools assumed that issues of equity and fairness in lesson delivery were not applicable to them. This was revealed through examples shared that sex seemed to be the only indicator for ensuring GESI responsiveness. For single-sex schools, other determinants to ensure GESI responsiveness in the teaching and learning process will include, understanding of the background and context of the learners, considerations for different proficiency groupings, student’s classroom setup, interactions and selection of TLMs (challenging traditional gender stereotypes), use of responsive language, among many others. They explained that during lesson delivery, they ensure that examples that are provided are inclusive across sex and social backgrounds:

“ Yeah, though we are dealing with only girls, sometimes the examples you give in the process of your lesson delivery matter a lot. If all of the [examples] you are using boys' names or characters that are males alone, then it means you are not implementing the inclusion aspect. You should let them understand that whether a boy or a girl, they can do that job. So, if you are citing an example, whatever example, you can bring in girls. You mix them up so that your girls will feel that oh it means they are important in society. The examples that they are given, they normally try to relate to their own lives. So that is how we normally implement it by using examples relating to boys and girls. Girls SHS” – Male teacher, Upper East region

3.11 Secondary education institution findings

This sub section focuses on the leadership and management of SEIs. The objective is to evaluate whether the leaders of the SEIs understand their roles and responsibilities and can demonstrate with evidence the execution of these roles.

3.11.1 Boards and senior management teams of secondary education institutions that demonstrate understanding of their roles and responsibilities

Key findings

The results show a significant improvement in the proportion of school leaders demonstrating their roles and responsibilities. About 5 out of 10 of the school leaders satisfied the criteria compared with 36.4 percent in 2021. Majority of the heads of schools in the Ashanti, Ahafo, Bono, and Upper West regions are implementing strategies such as remedial lessons for students and engaging parents of poor-performing students to improve student performance. They also collaborate with the community and PTA to provide teaching and learning resources. The study further showed that school heads support teachers in their professional development by organizing peer teaching, in-service training, professional learning sessions, and workshops to address specific teaching gaps.

Interviews were conducted with the school boards, head of schools, and senior management staff. The data from the interviews were triangulated to establish commonality and scoring. Box 3.4 presents the criteria for measuring the leadership and management skills of school leaders in SEIs.

Data collection happened when GES was conducting leadership and management training for school leaders in SEIs. Our researchers saw school leaders developing or finalising their school improvement plans (SIPs). They noticed positive changes in the vision and mission statements of the schools compared to 2021. They saw school leaders working with the school community to agree on targets for indicators in the SIPs.

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.

The 2022 results show a significant improvement in the proportion of school leaders demonstrating their roles and responsibilities. About 5 out of 10 (47.5 percent) of the school leaders satisfied the criteria compared with 36.4 percent in 2021. Majority of the heads of schools in the Ashanti, Ahafo, Bono, and Upper West regions are implementing strategies such as remedial lessons for students and engagement with parents of poor-performing students to improve student performance. They are also collaborating with the community and PTA to provide teaching and learning resources. This could be some of the reasons why students in the region performed well in the reading, mathematics, science literacy and 21st century skills assessment.

Table 3.50 disaggregates the data by the competency criteria and shows the performance of school leaders in 2021 and 2022. Of note is the significant decline in the proportion of SEIs with student engagement and performance targets for the 2022 academic year by 14 percentage points.

Table 3.50 Competency scores for boards and senior management (%)

Competencies evaluated	Survey	Survey
	2021	2022
The school mission statement aligns with GES	89.7	100.0
The school vision statement aligns with GES	84.5	100.0
The school provides counseling services for students	56.7	73.0
The school has a SIP that has been shared and aligns with the vision	46.4	96.0
The SIP has student engagement and performance targets	33.0	42.0
The SIP includes leadership and management-focused targets	30.9	54.0
The SIP includes GESI targets	29.9	45.0
The SIP includes teaching and learning targets	25.8	39.6
The school has strategies to support the professional development of teachers	18.6	36.0
The school has strategies to support improvements in student performance	17.5	39.0
Institutional Partnership/Community Engagement targets in your SIP or as a school	14.4	31.0

** $p \leq 0.05$

Qualitative interviews were conducted with school leaders to provide insight into how school leaders were demonstrating their leadership and management skills. First, the school leaders expressed appreciation for the training conducted by GES with support from T-TEL. They indicated that the training has now enabled them to be able to understand better their roles and the skills they need to succeed.

One relevant area of training cited by the heads of schools is the need to revise the vision and mission statements of the schools. One head of school mentioned that *"The training by GES has taught us how to formulate school vision, mission, and core values. We have discussed this as a team and so we will start the process of revision soon"* – Senior manager, Nessie Amanfro SHS.

Some school leaders confirmed that they had identified gaps in their mission and vision statements upon deliberations based on the management training they received. The school leaders indicated that the main gap includes their schools' mission and vision statements not being GESI-responsive. For example, one head of school said *"We just finished with a workshop organised by TTEL. In fact, based on what we were taught, it shows that our mission and vision statement does not align with the GES. It does not cover both male and females and also children who are marginalized. So, we're planning to have a meeting with the board to set up a committee to modify the mission and vision statements"*. – Head of school, Aguayo SHS.

At the time of data collection, the schools were at various stages in the statement revision process. While some were yet to set up bodies to start the revision process, other SEIs had officially set up committees to review the statements. A few of the institutions were waiting for final approval to adopt the statements formally. As of the time of data collection, some examples of schools that were in the process of reviewing the statements include Aguafu SHS, Kadjebi Asato SHS, St Joseph Senior High/Tech, Oppong Memorial SHS, Bimbilla SHS, Yamfo Anglican SHS, Yilo Krobo SHS, Awe Senior High Technical, Zuarungu SHS, Jirapa SHS and Bolgatanga Girls SHS among others.

Generally, school leaders are responsible for managing the school environment. We found that most school leaders were not performing this function. The school leaders confirmed during the qualitative interview that the main challenge they encounter is unavailable resources to carry out planned activities.

However, most of them have now set out strategies for improving the school environment following the leadership training conducted by GES. For example, schools such as Akatsi Senior High Technical School, Ameyaw Akumfi SHS/Tech and Berekum SHS confirmed that they had instituted the guidance and counseling unit to provide support to all students with academic difficulties. This was confirmed by some of the students in a focus group discussion. A member from the FGD said that *"We have been told to go to the counseling service to talk about our problems, be it academic or personal family problems, or if a teacher does something you don't like"*. Some of the school leaders also said that the counseling and guidance unit organizes special orientation for first-year students on what they should expect in relation to their academic journey, the prospects of their programmes of study and how to seek help when they face any academic challenges.

Almost all of the school leaders confirmed that they had instituted extra-classes sessions for all students. Specifically, in schools such as Ngleshie Amanfro SHS, Ghana National College, Efutu Senior High/Tech, and Assin Manso SHS, an additional one hour or two hours have been added to their contact hours; usually, an hour starting from 6:00 am to 7:00 am and 2:30 pm to 3:30 pm. These additional hours have been added to improve student performance. Heads for Winneba SHS and Asesewa SHS confirmed that the morning extra classes had been purposely set up for reading to improve students' reading proficiency. The head of school of Kukuom Agric SHS confirmed this by saying, *"There is an extra-class which is 1 hour. Formerly we close the school at 2:30 pm, but now we close at 3:30 pm. This has helped students to get more contact hours. We have ensured discipline among students because at first, some students were not writing end-of-semester exams, and we said that if a student did not write end-of-semester exams, that student would not be registered. We have also increased strict supervision during prep hours"*.

Another key finding from the qualitative interviews noted that in almost all the schools interviewed, remedial classes had been set up purposely to support students who have been identified as poor performers or slow learners. These remedial lessons are usually organized on weekends or after normal classes on weekdays. For example, the head of school for the Ghana National College said that *"We have a lot of slow learners in our classrooms, so I take my time to teach them as a biology teacher"*.

Heads of schools also emphasized the role of monitoring students during extra classes and remedial lessons. The heads confirmed that they go around in the mornings and during regular lessons to ensure that students are present in class as well as teachers. In addition, heads also confirmed that on several occasions, they had invited parents to come to the schools and engage with teachers on their children's performances. Heads of Berekum SHS and Ngleshie Amanfro SHS confirmed this. The head of school for Manya Krobo SHS also said, *"We have started morning classes from 6 am – 7 am and 3-4 pm. Monitoring the classroom blocks has been shared by the management so that the workload will not be too much on one person. Time-to-time meetings with students and teachers are held to monitor progress"*.

Heads of schools also indicated that they support the professional development of their teachers. The analysis of the qualitative results revealed that the main support the school heads provide to teachers is organization of peer teaching, in-service training for teachers, organization of workshops on specific teaching gaps identified, and professional learning sessions. This information was confirmed by some of the teachers during the key informant interviews. For example, some heads of schools mentioned that:

- *"The head of department occasionally meets teachers at the departmental level to address teaching and learning strategies to improve performance. Teachers also use the Professional development allowance*

to attend workshops organized by the Metro education office to gain points on their NTC portal". – Head of school, Fijai SHS

- *"In-service training is mostly organized for staff members. This is done on a departmental basis. Learning aids are used during the training" – Head of school, Yilo Krobo SHS*
- *"Professional Learning Sessions are organized for teachers periodically to improve upon their teaching and learning, such as Workshops, Seminars etc" – Head of school, Kwahu Ridge SHS*

Despite the claims by the school leaders of providing support to teachers in their professional development, some of the heads were unable to provide documentary evidence to support the assertions.

Most of the schools confirmed that they had collaborations with other organizations, stakeholders, and institutions for the development of their schools, working with their school boards. According to the school heads, on numerous occasions, the board, in collaboration with the PTA and Old Students Associations, provided teaching and learning materials and infrastructural facilities such as additional classroom blocks, washrooms, and dormitory blocks. Also, schools such as Assin Manso SHS indicated that they had received money from the Secondary education improvement project (SEIP) to motivate teachers in the school. Also, Bompeh Senior High/Tech said that they had received donations and support from the Ghana national petroleum commission (GNPC). Based on the qualitative findings, most of the support received had been provided through the collaboration between the school board, the PTA, and the old students' associations. Some of the schools also indicated that they receive support from collaborations with tertiary institutions such as KNUST and UCC. The supports they receive usually include scholarships, learning materials, and career guidance for students.

3.11.2 Secondary education institutions with an inclusive, gender-sensitive environment for staff and students

Key findings

The results showed that about 73 percent of the schools have health and safety procedures in place for staff and students. Inspections also revealed that over 7 out of 10 schools have separate washrooms and changing rooms for males and females, albeit with challenges with hygiene. The inspections further revealed that most of the school facilities are not disability-friendly except for newly constructed facilities which have made provisions for guard rails and ramps. School leaders confirmed that they empower their students to be sexually aware and to report all cases of sexual harassment. The survey with students showed that about 54 percent (56 percent of whom were females) are aware of dedicated officers assigned to oversee sexual harassment cases.

This section measures the extent to which SEIs provide an inclusive gender-sensitive environment for staff and students. In reporting the results for this section, responses from school leaders (including a review of documentation) were triangulated with data from teacher lesson observations and student self-assessment questionnaires. For a school to be considered as having an inclusive, gender-sensitive environment for staff and students, the school must score a minimum of 65 percent when the responses from the school leader are triangulated with the teachers 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 i.e. SENs)

Forty percent of the SEIs are ensuring an inclusive, gender-sensitive environment for staff and students, compared to 36.2 percent in 2021. [Table A3.30](#) in annex 3 disaggregates the results for each school³³. We noticed that more category B schools (45 percent) are ensuring an inclusive, gender-sensitive environment for their staff and students than category A and C schools. In particular, Ghana National College in the Central region recorded the highest score with regard to ensuring an inclusive, gender-sensitive environment for staff and students.

Schools in the Western and Oti Regions appear to be ensuring an inclusive, gender-sensitive environment for their staff compared to their counterparts. This may be due to the availability of resources for the schools.

Table 3.51 disaggregates the result by the criteria measured. Over 7 out of 10 school leaders have health and safety procedures in place for staff and students. This is a great achievement, given that the health and safety of students are paramount. The results are not significantly different from the 2021 results.

Table 3.51 Schools that satisfy inclusive, gender-sensitive environment criteria (%)

Head of school GESI criteria	Survey	Survey
	2021	2022
Health and safety procedures in place for staff and students,	77.0	73.0
Gender-responsive infrastructure like washrooms and changing rooms etc.	77.0	73.0
A transparent reporting system for harassment	76.0	72.0
Recourse and reprimand for harassment	72.0	72.0
Infrastructure in the school accessible to all students (including those with special education needs)	68.0	72.0
Dedicated spaces/admission for students from disadvantaged backgrounds	44.3	45.0
Procedures in place to provide an inclusive and gender-sensitive environment for staff and students	44.3	56.0

Indeed, the school leaders confirmed during qualitative interviews that they now have sick bays with dedicated nurses to attend to all health issues. They further clarified that vehicles are arranged to transport sick students and staff to hospitals when the cases become severe or are beyond the capacity of the sick bay. A total of two SEIs also confirmed that they had dedicated Community Health-Based Planning Services (CHPS) on their campuses; also, with dedicated health officials, including full-time doctors and nurses. The two schools include Asawinso SHS and

³³ Fifty schools were used to compute the indicator because data was triangulated by teachers and students in fifty schools where lesson observations were held

Kadjebi-Asato SHS. Unfortunately, some schools, such as St. Paul's SHS, Dzodze Penyi SHS, and Adu Gyamfi SHS, indicated that they do not have health facilities on their campus.

As part of the data collection process, enumerators inspected and confirmed these claims by the school leaders. Some quotes from inspections by enumerators are cited below.

- *"There are two nurses stationed at the school infirmary by the Ghana Health Service to address health issues of both teachers and students". – Inspection at Fijai SHS*
- *"The school has a sick bay. A doctor goes there every Wednesday. There are four nurses: two for day shift and two for night" – Inspection at Kumasi Senior High/Technical*
- *"The Infirmary has eight dedicated health personnel who run shift, so there's always a nurse at the facility". – Inspection at Juaboso SHS*
- *"Students have a CHIPS compound where a student and a school nurse together with a first aid team attend to both students and teachers" -Inspection at Kadjebi-Asato SHS*

The table further showed that about 73 percent have washroom and changing room facilities for staff and students. Enumerators inspected these facilities and confirmed that in most of the schools, there are separate washrooms and changing rooms for males and females.

However, a key observation from the inspections was that while female staff had separate changing rooms in most schools, a few did not have dedicated changing rooms for female students. The affected schools attributed this to inadequate infrastructure. They explained further that female students are expected to change in the washrooms or go back to their dormitories to change. The inspections also revealed that virtually none of the male students had a dedicated changing room and were all expected to change in their washrooms or dormitories.

- *"The washrooms are used for dual purposes; as changing rooms and urinating as well. Most of them on campus are single structures, but part is labelled as female and the other part male. A tall wall separates the female from males. "– Inspections at Sandema SHS*
- *"The school has adequate infrastructure for hygiene for both male and female students. Teachers equally have hygiene facilities for staff; both male and female"– Inspections at Kpando SHS*
- *"There are washrooms dedicated to teachers and students and availability of hand washing facilities at vantage points. There is water available for use by students as well"- Inspections at Effutu Senior High/Tech*

Additionally, the inspections revealed that some of the schools had challenges with hygiene. Specifically, these schools have running water challenges, non-availability of cleaning materials for the washrooms and inadequate dustbins to dispose of refuse on the campus. Some reports from the inspections are presented below:

- *“ Some of the washrooms are far from the classrooms. Some were unhygienic. The headmistress said the school doesn’t have enough detergents to ensure regular cleaning of the washrooms. The school has a serious water problem. The school has mechanized one borehole for the kitchen. They have an overhead tank to help reduce the water situation on campus. Through the board, they lobbied to get a biogas toilet, but due to the water situation, they locked them. The new boarding house has water closets, but the students are not using them because of the water system. They also block them with the pads. The school has a few dustbins. The furniture situation is worse. Some students pair mono desks. Some sit on gallons to study in class. Few of the school infrastructure has ramps” – Inspection at Bolga SHS*
- *“ The washrooms are closer to the classrooms. There are separate washrooms for males and females. The lighting system in the classrooms is not the best. Some bulbs were not working. Very limited dustbins were seen around. The washrooms were not clean. However, the senior housemaster reported that the school ran out of detergents. The students sometimes clean the washrooms with just water.” – Inspection at Kusanaba Senior High*

Another key criterion for an inclusive gender-sensitive environment for staff and students is facilities that are disability friendly. The interviews and inspections revealed that though most of the old buildings are not inclusive, most of the new facilities that had been completed or are at various stages of completion are inclusive. Enumerators observed that most of the new buildings have guard rails and ramps to make it easy for SEN students and teachers. They further noted that some schools had renovated old facilities to make them more inclusive. Some feedback from enumerators is cited below:

- *“The school has ramps for students with disabilities to use. Separate washrooms for both sexes and separate urinals and toilets for staff. The code of conduct is shared with all students and teachers. There is gender equality in all the activities performed in the school. The positive discipline tools are used in the school ”- Inspection at Effutu Senior High/Tech*
- *“The school ensures that infrastructure in the school takes care of both sexes. New infrastructure projects springing up have disability-friendly facilities such as ramps and guardrails. Gender-inclusive facilities such as urinals and latrines are also gender sensitive ”– Inspection at Northern Business SHS*
- *“Most of the new buildings have flaps. All programs are geared towards all students who gain admission into the school. The old structures are not disability friendly though. ”- Inspection at Kadjebi-Asato Senior High*

On school infrastructure, while some heads of schools perceive secondary school infrastructure as gender-friendly, most students and teachers have different opinions. According to most students, their schools lack adequate infrastructure such as dormitories, classrooms, and adequate toilet facilities. The findings from the students are similar to those of their teachers. The qualitative results also reveal that teachers share opinions similar to those of their students. Many teachers believe that their schools' infrastructure, dormitories, and classrooms are not gender friendly. They rated their school lower when asked to assess their infrastructure regarding gender friendliness. The table also shows that a considerably lower proportion of teachers than students rated the infrastructure in secondary to be disability friendly. Insight from in-depth interviews revealed that the secondary schools lack adequate washrooms. Sometimes, female learners must queue to gain access to washrooms.³⁴

Sexual harassment prevention is one of the most important criteria in ensuring a gender-sensitive environment for staff and students. It is important for all SEIs to put in place measures to prevent any form of harassment committed by either students or staff, and where it occurs, appropriate reprimands be meted out within the confines of the law. The quantitative results in table 3.51 showed that about 72 percent of school leaders claimed that they have measures in place to address issues of harassment. Qualitative Interviews with the school authorities confirmed that some of the schools have put in place various measures to prevent sexual harassment. Some of these measures include educating students, especially females, to be aware of issues of harassment and the appropriate reporting mechanisms. The school leaders explained further that education on sexual harassment is usually done for first-year students during orientations and regular sessions where applicable. Some leaders further explained that documents containing codes of conduct, including instructions on sexual harassment prevention, are shared with students to enhance their knowledge about the processes. On the contrary, among the 2,394 students interviewed, only 57.8 percent (59.7 percent of whom were females) indicated that they were aware of channels the schools had put in place to report sexual harassment and gender-based violence.

Some school leaders also confirmed that they empower their students to report all cases of harassment without any fear of discrimination or judgment. The findings further showed that across the schools, four main reporting avenues had been made available to students to report cases of harassment. These avenues are the guidance and counseling office, the school disciplinary committee, house masters and mistresses, and the school chaplaincy. The leaders further explained that in cases where a person conducted the harassment outside the school premises, the harassment is reported directly to the police for further action. And in instances where harassment occurs on

³⁴ Please note that this point has been discussed more extensively in section 3.11.2

campus, the disciplinary committee investigates and takes appropriate measures. The survey with students showed that about 54 percent (56 percent of whom were females) are aware of dedicated officers assigned to oversee sexual harassment cases. Some quotes from school leaders have been provided below:

- *“The school has a disciplinary board set up to address issues of indiscipline and others. For example, if sexual harassment is between the student and a teacher, the disciplinary committee will write a preliminary report and submit it to the GES Metro education office to apply the GES code of conduct. On the other hand, if it is between two students, the school disciplinary board invites the parents of the students involved and applies the school’s code of conduct. There is also a Friday session organized by the school Guidance and Counseling coordinators for girls to support them when there is any form of harassment. The community is fully aware of the school code of conduct for students during orientation for newly admitted students. Currently, the school has not reported any case of sexual harassment in the past years.” – Head of school, Fijai Senior High*
- *“The school has a disciplinary committee. The school has house masters, house mistresses, counsellors, and Chaplin whom students and teachers report harassment cases to” - Head of school, Wesley Girls Senior High, Cape Coast*
- *“The school uses the teacher’s code of conduct which spells out the dos and don’ts of teachers’ behaviour. The school has also put measures in place to prevent female students from contacting male teachers at odd hours. There is also laid down procedure for reporting, investigating, and punishing sexual harassment cases”- Head of school, Business Senior High School*

Most of the sampled schools confirmed that sexual harassment cases had been reported and were at various stages of resolution. According to the schools, cases of students harassing other students are usually dealt with by the school disciplinary committee and rarely go beyond the school. In such cases, students are dismissed from the boarding facility, suspended from school, and in a few instances, dismissed depending on the severity of the harassment. In cases of teachers who harass students, the incidents are escalated to the district and regional level of education for disciplinary measures. In a few instances, the school leaders stated that the teachers were reported to the police and arraigned before the courts to be prosecuted. And in most cases, the teachers were transferred from the schools. It is, however, essential to note that the act of transferring teachers from the schools does not prevent them from re-engaging in those acts in other schools. An outright dismissal is a more deserving punishment that is rarely meted out to such teachers. Some reported cases of harassment and evidence of reprimand by schools are provided below:

- *“The school uses the GES code of conduct for staff and the students to discipline culprits. The sanctions are referred to the board for approval or otherwise. When sexual harassment involves a student and someone outside the school, the case is reported to the police. Two cases have ever been reported to the police. The senior prefect case, he was given indefinite suspension but was allowed to write his WASSCE. ” - Head of school, Kusanaba Senior High*
- *“Three years ago, a male teacher was reported to have harassed a female student. A committee was set up to investigate the issue and the teacher was released from the school. The student in question was counselled. ” - Head of school, Savelugu Senior High*
- *“A girl was harassed in the night by a community member, and the case was reported to the school and later sent to court ”- Head of school, W.B.M Zion SH, Old Tafo*
- *“The school administers sanctions according to the GES code of conduct. Issues of lesbianism are referred to the guidance and counseling unit. Some students are de-boardinized too. The previous years too, some students were sent home” - Head of school, Bolga Girls Senior High*

Table 3.52 provides triangulated results of students’ responses to SEIs ensuring an inclusive, gender-sensitive environments for staff and students. The results show a significant appreciation of students’ knowledge of sexual harassment, reprimands, and reporting mechanisms from 2021 to 2022. Based on interviews with students, about 45 percent indicated that they would like to report cases of harassment to the guidance and counseling office, followed by 26 percent who indicated that they would like to report to their housemasters or mistresses. About 10 percent of the students indicated that they would like to report directly to the heads of the schools given a chance. Based on the quantitative survey, about 61 percent of the students said they were satisfied with their school’s response in dealing with cases of sexual harassment.

One key recommendation the students gave to prevent sexual harassment is to separate the male and female students during evening classes. According to the students, some male students engage in sexual harassment during the ‘evening prep’³⁵. Other students recommended a total dismissal of students who engage in any form of harassment to serve as a preventive measure for future incidences. Some students also recommended comprehensive training on sexual harassment prevention mechanisms, especially for female students, to avoid any future occurrence of such incidents.

³⁵ This is the time that is allocated for students to do homework, revise work, complete assignments, study or read outside of normal school day hours. Prep is compulsory for all students in the boarding house.

Table 3.52 SEI students who agree with GESI statements (%)

SEI students GESI criteria	Survey	Survey
	2021	2022
Heard of actions being taken against someone who abused a student in your school	54.8	57.8
Aware of any channels in place to report sexual harassment and gender-based violence in the school	52.1	59.7
Aware of the existence of dedicated officers assigned to oversee reports on sexual harassment and gender-based violence in the school	50.2	52.9
Course structure promotes GESI	36.8	36.2
Classroom practice is GESI responsive	28.4	25.4
Teaching and learning materials (TLRs) e.g., blackboard writing and drawing charts, posters, maps, diagrams, graphs, photographs are GESI responsive	19.7	21.6
Infrastructure in the school is accessible to all students (including those with special education needs)	11.3	6.0

Table 3.53 Teachers who satisfy inclusive, gender-sensitive environment criteria³⁶ (%)

Teachers' GESI criteria	Survey	Survey
	2021	2022
Creates a safe, encouraging learning environment	58.1	64.9*
The teachers apply all teaching methods equally to female and male students.	44.0	47.4
Understands how children develop and learn in diverse contexts and applies this in their teaching	43.0	24.6*
Teacher's use of age and grade(s) appropriate strategies to enact in the lesson	23.0	31.3*
Identifies and remediates learners' difficulties or misconceptions, referring learners whose needs lie outside the competency of the teacher	22.3	18.3
The teacher uses gender responsive strategies to challenge gender roles and gender norms.	12.3	9.3
Pays attention to all students, especially girls and students with Special educational needs (SEN), ensuring their progress.	6.9	9.3
Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes.	6.9	9.3

³⁶ Further information on these criteria has been provided in section 3.9.7

3.11.3 Secondary education institutions providing services for their students

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

(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 counseling services that support the process of overcoming environmental, emotional, or social concerns; and,

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

The results were triangulated with students³⁷. A further follow-up interview was conducted to verify the availability of the services at the schools. Heads of schools were also asked about the number of formal and active linkages with industry and tertiary institutions.

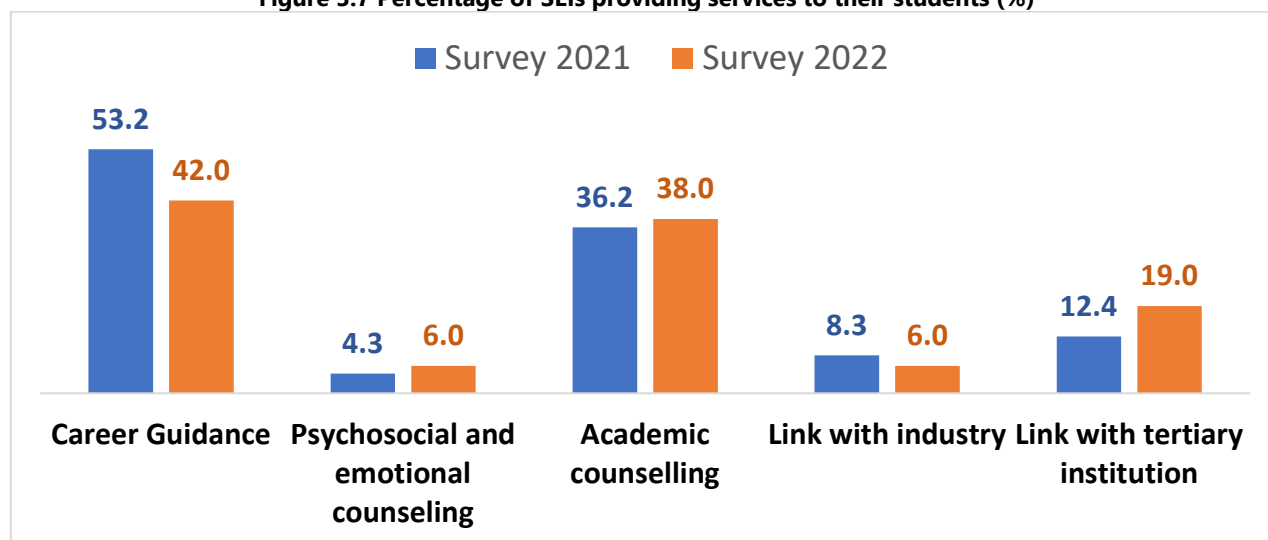
As shown in the results from figure 3.7, no significant differences were recorded for the services except for schools with linkage to tertiary institutions. This saw a significant appreciation from 12 percent in 2021 to 19 percent in 2022. One of the key drivers for the low scores in 2021 and 2022 was the lack of evidence provided by the SEIs on formal agreements with the tertiary institutions.

Box 3.6 Criteria for measuring SEI provision of services

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

³⁷ Students were asked to agree or disagree, using a Likert scale, with the following (or similar) statements: (a) counseling 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.

Figure 3.7 Percentage of SEIs providing services to their students (%)



Based on interviews with the school heads, some of the tertiary institutions provide scholarships to brilliant but needy students who graduate from selected SEIs. For example, the head of the school for Asawinso SHS said that *“Our school has a partnership with KNUST, which offers scholarships to 10 brilliant but needy students who pass the WASSCE with distinction”*. The head of school for Savelugu Senior High also confirmed that *“Kwame Nkrumah University of Science and Technology does offer admissions to six best-performing students who do not meet their cut-off point for admissions but have passed in six, three core and three elective subjects”*. Other schools, such as Wesley Girls SHS, also mentioned that Ashesi University offers scholarships for best-performing students. These scholarship opportunities for students were also reported by schools such as Our Lady of Providence Senior High, Huni Valley Senior High, and Yamfo Anglican Senior High, among others.

Some of the schools also confirmed that almost all the teacher education universities use their schools as a teaching practice and mentorship platform to train their students. For example, the head of Navrongo SHS mentioned that *“We partner with them for teaching practice and internship as well as mentorship”*. Also, the head of Amaniampong Senior High also said that *“UEW-Mampong branch allows their students to practice the teaching practice and internship in our school, so our school is their model school”*.

A number of the SEIs also confirmed that the tertiary institutions regularly visit their schools to give educational talks and career guidance advice to students. Some also provide guidelines on how to apply for school at the

tertiary level. Again, the schools confirmed that some tertiary institutions provide training for their teachers in specific fields. For example, the head of school for Eguafu-Abrem Senior High mentioned that the Agric department from the University of Cape Coast provides training to the Agric teachers in his school. And lastly, some tertiary institutions provide financial support to some SEIs via infrastructure development and teaching materials.

The results further showed that about 6 percent of the schools have links with industries. The relationship with the industries is mainly to provide practical experience to students. For example, the head of school for Kalpohin Senior High said that *"We have a cordial relationship with a leather industry in Tamale here where we take our Visual Arts students to for practical works. They also allow our students to have first-hand experience with their machines"*. Some of the SEIs also confirmed that industries such as Newmont Ghana, Ghana National Petroleum Commission and the Cocoa Research Institute of Ghana also provide them with financial and material support.

3.12 Stakeholders' perspectives about secondary education in Ghana

Key findings

Over half of the stakeholders perceive the quality of secondary education to be Good or Excellent, while about a tenth perceive secondary education to be poor in Ghana. For those who rated secondary education as good, their main satisfaction stems from the Free SHS policy and the inclusive opportunities available to all persons. For the 10 percent who rated the SHS system as poor, they attributed their dissatisfaction to the double track system, which they perceive as inefficient and confusing. Other stakeholders also complained about the ban on corporal punishment, which they perceive has resulted in increasing indiscipline in SHS institutions.

This section of the report documents stakeholders' perspective about secondary education in Ghana. Stakeholders involved in secondary education in Ghana include students, parents, teachers, school administrators, policymakers, and the broader community. Each of these stakeholders may have different perspectives on what is most important in secondary education, such as the quality of education, the relevance of the curriculum, access to educational resources, and the overall impact of secondary education on the country's development. Understanding these different perspectives is essential for policymakers to design effective policies and programmes that meet the needs of all stakeholders and help to improve secondary education outcomes in Ghana.

3.12.1 Perceptions about the quality of secondary education in Ghana

The 2022 annual survey sought to determine stakeholders' perceptions about the quality of secondary education in Ghana. It is worth noting that data for stakeholders' perceptions about secondary education were not collected in 2021. The results from the present survey will be compared to the 2023 survey when the new secondary school curriculum is rolled out. Results presented in table 3.54 indicate that the majority (56.3 percent) of stakeholders rated the quality of secondary education in Ghana as 'excellent or good', followed by 34.1 percent of stakeholders who rated the quality of secondary education as 'fair'. The proportion of stakeholders who rated the quality of secondary education as 'excellent or good' was predominant among alumni (62.6 percent), followed closely by parents (62.5 percent) and agencies/unions/CSOs (61.9 percent). In contrast, almost 10 percent of stakeholders rated the quality of Ghana's secondary education as poor or very poor.

Table 3.54 Stakeholders rating of the quality of secondary education in Ghana (%)

	Parents	Opinion leaders	Alumni	Agencies/ Unions/CS Os	Board members	Teachers	Overall
Excellent	1.3	4.1	5.9	9.5	1.6	2.1	4.1
Good	61.2	63.2	56.7	52.4	49.7	30.1	52.2
Fair	30.8	24.3	28.7	30.2	43.8	46.7	34.1
Poor	5.9	7.9	5.9	4.8	4.3	15.7	7.4
Very Poor	0.8	0.6	2.9	3.2	0.5	5.4	2.2
Total	100	100.1	100.1	100.1	99.9	100	100
N	374	342	171	63	185	1,474	2,609

NB: In this table and in subsequent tables, percentages may or may not sum to 100 percent due to rounding.

3.12.2 What stakeholders like or dislike about secondary education in Ghana

The qualitative survey sought to determine what stakeholders like and dislike about secondary education in Ghana. Regarding what they like, a majority of stakeholders like that secondary education in Ghana is free and provides opportunities for many young learners from poor families to attend SEI. Some stakeholders like secondary education because they believe it provides a platform for preparing learners for the real world, future career development, and offers learners the opportunity to join the labour force. Other stakeholders like secondary education because the free boarding school system allows learners to socialize with persons from different backgrounds and fit in society and enables many people to have access to senior high education, particularly within their catchment areas.

Also, the stakeholders indicated that they are happy with the inclusiveness of secondary education in Ghana, the discipline instilled in learners, and quality teaching, as teachers teach based on their specialization or qualification. Other reasons include the fact that learners are free to select their program of choice. Secondary education also provides opportunities to combine academics with extracurricular activities. Thus, the inclusion of extracurricular activities, such as sporting activities and interschool quiz competitions (e.g., National Science and Maths Quiz), help learners to discover and apply their talents. Some stakeholders like how well-structured and organized secondary education is as well as the introduction of STEM in some schools. In addition, stakeholders like secondary education because it provides holistic education, allows for personality and skills development, keeps children away from crime and violence, prepares learners for tertiary education, and gives every JHS graduate the opportunity to get a WASSCE certificate to either enter a tertiary level or gain employment. Here are some responses from interviews:

- *“The introduction of free SHS is good because it gives equal opportunity to everyone”. – Male parent, Eastern region.*

- *"I like the free SHS policy in the secondary schools". – Female parent, Central region*
- *"Secondary schools promote literacy and eliminate illiteracy among the youth". – Female alumni, Central region*
- *"...through secondary education, we learn a lot of social skills through interaction with other people". – Female alumnae, Eastern region*
- *"Secondary schools have the inclusion of sports to help students discover their talents". – Male opinion leader, Eastern region*
- *"The inclusion of sports and quiz (National Science and Maths Quiz) is very good". – Male opinion leader, Eastern region*
- *"In secondary schools, the teachers teach students to be decent and disciplined". – Male opinion leader, Eastern region*

In terms of what stakeholders dislike about secondary education in Ghana, the qualitative results show that the majority of stakeholders registered their displeasure about the double-tracking system³⁸ of secondary education. They explained that they dislike the double-tracking system because it gives learners too much vacation time thereby distracting them from academic studies. Some respondents also explained that the double tracking system causes learners to overstay at home and subsequently leads to high dropouts with female learners, particularly getting pregnant or getting married. Some stakeholders also criticized the free SHS policy. They believe that the free education program encourages most learners to be lazy and not serious. These stakeholders explained that, due to the free nature of secondary education, most learners do not take their learning and studies seriously. Other stakeholders revealed that there is no competitive scheme regarding academic excellence in the sense that all applicants are admitted into secondary schools, including those who failed in some subjects. They explained that the mere fact that poor-grade learners are admitted into SHS under the FSHS system is not the best of policies.

Some stakeholders also indicated that they do not like the ban on corporal punishment as it makes learners indiscipline. For instance, an alumnus from the Upper East Region stated that, *"some policies do not give room for school authority to use their discretion to run the schools, e.g., no canning of students at schools is breeding indiscipline"*. Another alumnus added his take on the undisciplined behaviour of some learners when they go to secondary schools. He stated that, *"...some students are innocent until they go to secondary schools and learned bad behaviours there"*. – Male alumnus, Greater Accra Region. The stakeholders also revealed that they do not like the mass promotion of learners; thus, no matter how poorly learners perform, all learners are promoted to the next grade. In addition, the survey revealed that stakeholders dislike that secondary education is mostly theory-oriented

with limited practical and abstract learning. Stakeholders explained that the limited emphasis on practical teaching and learning in secondary schools does not promote analytical and creative thinking. Some stakeholders added that the secondary education system is too short, has overloaded content, and pressures teachers and learners to finish the syllabus on time. This results in teachers rushing to finish the syllabus and the best of teachers is not brought out. The qualitative survey also revealed that poor infrastructure in some secondary schools does not create a conducive atmosphere for effective learning. Thus, inadequate infrastructure in some schools coupled with high learner enrolment creates congestion in classrooms and dormitories. Other stakeholders are unhappy with low teachers' salaries which diminishes teachers' motivation. Due to low salaries, stakeholders complained that some teachers are left with no choice but to organize private or extra classes and learners are required to pay so they can participate. Here are some illustrative comments:

- *"The tracking system is bad because it does not give enough time for studies, disrupts academic work, and has the tendency of influencing high school dropout". – Male alumnus, Upper East region*
- *"Students overstay at home when they go for holidays, in the end, they spend more days at home than they do in school". – Male opinion leader, Upper East region*
- *"I do not like the mass promotion of students. Mass promotion of students that pushes all students ahead is bad". – Male opinion leader, Upper East region*
- *"I dislike the long holidays for students and the shift system which makes students forget what they have learnt. – Male parent, Upper East region*
- *"I dislike the haphazard implementation of the free SHS policy". Male opinion leader, Central region.*
- *"What I dislike about secondary education is poor feeding of the students". – Male parent, Oti region*
- *"Because of its [secondary education] free nature, most students do not learn or take studies seriously". – Female alumnus, Upper East region*
- *The free senior high school policy should be abolished. It makes both teachers and students lazy and less committed". Male parent, Greater Accra region.*
- *"The government is not able to provide all resources needed. Free education has increased enrolment so there is overcrowding in classrooms and dormitories". Female parent, Upper East region.*
- *"Loaded content of the syllabus, it's not practically oriented with too much focus on theories and abstract learning. It doesn't make students creative and analytical thinkers. This, I believe, will not help our country to grow and develop as we expect it". – Female parent, Eastern region*
- *"What I don't like about secondary education in Ghana is that little attention is paid to vocational and technical training". – Male stakeholder, Agencies/Unions/CSOs, Central region*
- *"I dislike the shift system because it causes less contact hours. I also dislike the fact that teachers are paid poor salaries". – Male opinion leader, Upper East region*

- *“The infrastructure in our schools does not create conducive atmosphere for better learning”. – Male alumnus, Eastern region.*

Table 3.55 shows how stakeholders rate the infrastructure of secondary schools in which they are familiar, have visited, or which their children attend. Most stakeholders rated the infrastructure of secondary schools as gender friendly; a majority also rated secondary schools’ infrastructure as excellent or good. Across the various types of stakeholders, about two-thirds of board members recorded the highest proportion of stakeholders who rated secondary school infrastructure as gender friendly, followed by agencies/unions/CSOs, opinion leaders, and alumni. Similarly, board members recorded the highest proportion of stakeholders who rated the usage of infrastructure in secondary schools as excellent or good. This is followed by alumni, agencies/unions/CSOs, and parents. The table also indicates that slightly more than 40 percent of stakeholders rate the quality of secondary schools’ infrastructure to be excellent or good. A similar percentage of stakeholders are of similar opinions with respect to the availability of infrastructure of the secondary schools they are familiar with.

Table 3.55 Stakeholders who rated the infrastructure of the secondary school they are familiar with and have visited or their children attend as excellent or good (%)

	Parents	Opinion leaders	Alumni	Agencies & dev. partners	Board members	Overall
Quality	48.7	43.0	53.2	44.4	43.2	46.5
Availability	43.9	39.8	52.6	47.6	33.0	43.4
Usage	51.9	50.6	57.3	54.0	63.2	55.4
Well maintained	17.7	14.9	15.2	22.2	24.9	19.0
Disability friendly	16.6	17.3	17.0	31.8	18.4	20.2
Gender friendly	49.2	52.9	50.9	60.3	66.0	55.9
N	374	342	171	63	185	1,135

NB: The data in this table and table 3.56 are multiple-choice. The totals sum up to more than 100 percent.

While some stakeholders perceive secondary school infrastructure as gender-friendly, most students and teachers have different opinions. According to most students, their schools lack adequate infrastructure, such as dormitories, classrooms, and adequate toilet facilities. The findings from the students are similar to those of their teachers. The qualitative results also reveal that teachers share opinions similar to those of their students. Many teachers believe that their schools' infrastructure, dormitories, and classrooms are not gender friendly. They rated their school lower when asked to

Table 3.56 Rating of the infrastructure of secondary schools by teachers and students (%)

	Teachers	Students
Quality	25.8	32.2
Availability	25.8	30.3
Usage	37.2	31.5
Well maintained	9.1	30.9
Disability friendly	10.5	29.8
Gender friendly	43.2	38.8
N	1,474	2,356

assess their infrastructure regarding gender friendliness. The table also shows that a considerably lower proportion of teachers than students rated the infrastructure in secondary to be disability friendly. Insight from in-depth interviews revealed that secondary schools lack adequate washrooms. Sometimes, female learners must queue to gain access to washrooms. SEN students are therefore forced to use the bush for convenience. Here are some qualitative insights from teachers and students:

- *"...I think the girls in the dormitories are more than boys, but we have fewer dormitories [as compared with boys] to accommodate us. Even though the school is putting up a new dormitory, it is not ready yet, so, some female students are now day students because they don't have dormitories to sleep in. Sometimes, some don't even come to school at all because of the stress involved in coming to school and going home every day. So, I think that's a problem that will hinder us from acquiring holistic academic excellence". – Female student FGD participant.*
- *"Not enough urinals and they are very close to each other. Both sexes use the same type of seat [sometimes the girls sit, and their thighs are exposed]. There are also insufficient toilet facilities in the dormitories, most of the students go to the bush to free themselves. The washrooms for the teaching staff are also woefully inadequate. We have one washroom for males and one for females and the washrooms are very close to each other". – Key informant interview, female teacher*
- *"We have the same class that two courses are sharing, so if the other class is making noise, it affects the other class". – Key informant interview, male teacher*
- *"...At least the girls should get a changing room, in case of any emergency. Although both sexes have washrooms, they are not enough". – Key informant interview, male teacher*

3.12.3 Stakeholders' perceptions of the secondary education syllabus

Key findings

Stakeholders perceive the current secondary education syllabus as voluminous and broad and thus making it difficult for teachers and learners to learn all the subject contents before the final examination period. This reason was also given by teachers to justify the low proficiency level of students in the assessments. The stakeholders also noted that the syllabus is theoretical, which does not allow the students to practice to appreciate the content of the topics studied and prepare them for the world of work. They followed up by claiming that the theoretical nature of the syllabus has led students only to memorize to pass their exams.

The 2022 annual survey sought to solicit qualitative insights on stakeholders' opinions about Ghana's secondary education syllabus. It is important to note that majority of the stakeholders interviewed are not education experts. The information that follows are their perception.

Most stakeholders suggested that the syllabus is too voluminous and broad and thus makes it difficult for teachers and learners to learn all the subject contents before the final examination period. A female parent asserted that, *"the syllabus is too voluminous, and it will need more than three years to complete everything in it"*. Another parent stated that, *"the time frame for completion is not measurable, and the content does not address societal problems"*. The qualitative findings also suggested that a majority of stakeholders dislike the theoretical nature of the syllabus. Stakeholders indicated that the syllabus is too theory-focused and not practically oriented. They added that due to the theoretical nature of the syllabus, most learners are inclined to memorize subject knowledge content to pass exams with little practical experience to prepare them for the outside world of work. A displeased opinion leader from the Volta Region indicated that *"most of the topics and contents are very theoretical and abstract with no room for practical and field visitations"*. The survey also revealed that many stakeholders dislike the implementation of the syllabus. The stakeholders explained that some secondary schools are faced with inadequate TLRs to support illustrations and facilitate effective teaching and learning. Here are some qualitative insights about what stakeholders' dislike about the syllabus:

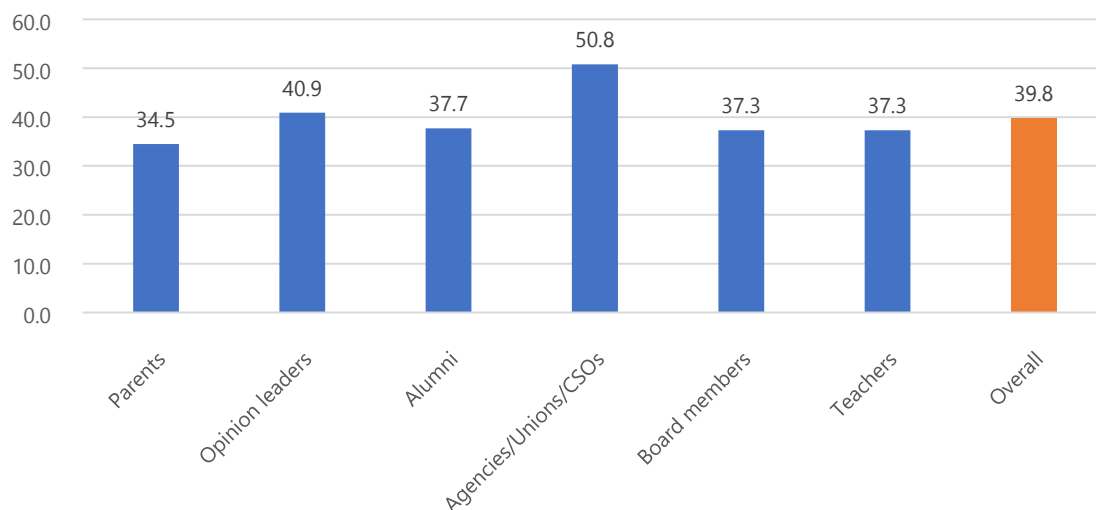
- *"The syllabus is too broad, and it is not practically oriented. In fact, the syllabus for the various year groups is very broad and lengthy to achieve within one academic year". – Male parent, Upper East region*
- *"The time frame is not measurable, and the content does not address societal problems". – Female*

- *“It is full of theory with little practical to prepare the students for industries”. – Male opinion leader, Oti region*
- *“The syllabus has low practical content... the syllabus concentrates more on theory rather than practical aspects”. – Male opinion leader, Bono East*
- *“The content is made up of too many topics and the three years is too short to complete the content in the syllabus”. – Male alumnus, Ashanti region*
- *“Despite the increase in time allotted to the syllabus, a few stakeholders indicated that although the syllabus is good, it is too broad, and the time allocation is inadequate for practical subjects”. - Female parent, Northern region.*
- *“The syllabus has no problem but the implementation of these syllabus for the objectives to be achieved is the problem”. – Male parent, Upper East region*
- *“So many activities without teaching materials”. – Male opinion leader, Bono region*
- *“The implementation is my worry because there are no TLMs in the school to aid learning”. – Female alumnus, Upper East region*
- *“I dislike the lack of teaching and learning materials for effective use of the syllabus”. – Female parent, Upper East region.*

Stakeholders’ perception on whether secondary schools are preparing graduates for further studies and world of work.

The government of Ghana, through the Ministry of Education and its partners, are making efforts to introduce a new secondary education curriculum. The curriculum is intended to produce secondary school graduates who have 21st century skills, are innovative, creative and ready to contribute effectively to the nation’s human capital and national development. The annual survey sought to ascertain whether stakeholders perceive that the current secondary school system is preparing graduates for further studies and the world of work. The figure shows that the majority of stakeholders perceive that secondary schools are not preparing graduates for further studies and the world of work, with less than two-fifth of stakeholders responding in the affirmative. Across the type of stakeholders, agencies/unions/CSOs recorded the highest proportion of stakeholders who perceive that secondary schools are preparing graduates for further studies and the world of work. This is followed by opinion leaders, and alumni. Parents recorded the lowest proportion of stakeholders who perceive that secondary schools are preparing graduates for further studies and the world of work.

Figure 3.8 Percentage of stakeholders who perceive that secondary schools are preparing graduates for further studies and world of work.



The quantitative data are in line with the qualitative insight from the stakeholders. Generally, most of the stakeholders perceive that secondary education in Ghana is not preparing graduates for the world of work. Similar to what stakeholders had to say about their dislikes on the current secondary education syllabus, the majority of stakeholders reiterated that secondary education basically provides graduates with no practical experience or knowledge. A stakeholder said that *"...most graduates after SHS are not able to apply the knowledge learnt because the syllabus is not practically developed to prepare them well"*. – Male opinion leader, Western Region. Some stakeholders suggested that the content of the syllabus does not promote critical thinking, creativity, and innovation. Stakeholders asserted that most secondary school graduates who are working are unable to think outside the box when confronted with challenging tasks. Other stakeholders explained that secondary education is currently not preparing graduates for work because the education system in secondary schools prepares learners only to pass exams. Another stakeholder added that secondary education focuses very little on technical and vocational training, and that affects the quality of graduates produced from secondary schools. Here are some quotations from respondents:

- *"The content doesn't meet the market demand currently because the teachers always see to the theory aspect of the students but not what the students intend to put into practice"*. – Male alumnus, Volta region
- *"The curriculum does not promote innovation and creativity"*. – Female alumnus, Bono region
- *"The current secondary education doesn't promote critical thinking and innovation"*. – Male alumnus, Eastern region.

- *“Secondary education now is about passing examination. Effective learning does not take place in most of the secondary schools. Most teachers concentrate on helping their students to pass exams”. – Male alumnus, Northern region*
- *“Secondary education does not prepare graduates for employment because most secondary graduates cannot think outside the box when they are confronted with a challenging task”. – Female parent, Western region*
- *“The world of work today requires graduates who can use their hands to do something, but secondary education does not have enough practical in the syllabus”. – Female parent, Upper East*
- *“I think secondary education in Ghana is not preparing graduates for the world of work because some of the students who complete secondary school find it difficult to get jobs. Those who get jobs also cannot perform”. – Male parent, Ashanti*
- *“I believe secondary education does not prepare graduates well because students are taught theory in school, and they can’t earn a living with what has been taught”. – Female parent, Western region.*
- *“Most graduates after SHS are not able to apply what they have learnt in school, so, I don’t think secondary education is preparing graduates for the world of work”. – Male alumnus, Upper West region*
- *“Most of the secondary school courses are theoretical in nature which does not help because the syllabus is not well structured to meet the demands of work”. – Male parent, Upper West region.*
- *“I don’t think secondary education do produce graduates who are ready to work because it focuses very little on technical and vocational education. It only places emphasis on passing final exams”. – Male stakeholder, Agencies/Unions/CSOs, Bono region.*

3.12.4 Stakeholders’ recommendations on changes to secondary school syllabus that will ensure graduates are prepared for further studies and the world of work.

Stakeholders³⁹ provided their suggestions on the changes that should be made to the secondary education syllabus to ensure that graduates with subject knowledge and critical and analytical skills are being prepared for further studies and the world of work. It is important to note that even though the views of the stakeholders do not necessarily reflect the expertise in the education sector, the qualitative survey finds some of the suggestions interesting and insightful.

³⁹ Please note that these are opinions of stakeholders who do not necessarily have comprehensive knowledge of education in Ghana.

Generally, most of the stakeholders reiterated that the syllabus should focus more on practical learning to ensure that graduates have hands-on knowledge of what they studied in school. Many stakeholders cautioned that the theoretical nature of studies in secondary schools only makes learners memorize concepts only to pass exams. An opinion leader from the Ashanti region suggested that *"...there should be innovation and creative thinking in the SHS syllabus so that it can prepare graduates for further studies and word of work"*.

Some stakeholders suggested that the syllabus for vocational subjects such as food and nutrition, clothing and textiles, and graphic design should engage learners in practical learning right from the first year rather than waiting till the end of the second year. Due to the relatively higher cost involved in practical and field visitations, some stakeholders appealed that the government or perhaps nongovernmental organizations should invest in practical lessons to enable secondary schools to implement more practical learning. Other stakeholders suggested that the secondary education syllabus should give priority to TVET, where under-resourced schools are well-equipped with equipment for practical learning. Stakeholders also revealed that the syllabus should promote creativity and innovation to help prepare learners for further studies. Stakeholders also recommended that the use of TLRs should be prioritized in the syllabus to facilitate effective teaching and learning. Here are some quotations from stakeholders on their recommendations that will ensure that graduates are prepared for further studies and the world of work:

- *"More emphasis should be placed on practical aspects of lessons. Some practical aspects of lessons should be taught at the time of lesson delivery rather than describing them". – Male opinion leaders, Bono East*
- *"Incorporate more practical knowledge and give the students the opportunity to develop new ideas themselves". – Male alumnus, Bono region*
- *" Much time should be devoted for practical to afford students with employable skills". – Male alumnus, Upper East region*
- *"The syllabuses should be tailored to deal with development challenges". – Male parent, Upper East*
- *"TVET should be given priority. Our schools should have equipment for the students to learn the practical". – Male alumnus, Upper East region.*
- *"Students should be prepared with practical learning to adequately fit into industry". – Male parent, Central region.*
- *"The syllabus should be practical rather than theories and field experience should be encouraged". – Male opinion leader, Oti region.*
- *"It should give room for students to analyse concepts and think critically". – Male alumnus, Eastern region*
- *"Specialization is key and should begin from the secondary school. Students should be made to effectively learn their career skills right from the secondary school level. "– Male opinion leader, Bono region.*

- *“A stakeholder suggested that the syllabus should be more specific on the course of study. For instance, geography students should be made to study just geography and not combined with other subjects such as integrated science, and religious and moral education”. – Male alumnus, Western North.*
- *“Students should be allowed to study subject areas of their interest from the beginning”. – Male alumnus, Bono region.*

3.12.5 Stakeholders' ranking of their level of respect and perceived compensation for teachers and other professions.

Key findings

Secondary school teachers were the 10th-ranked most respected profession by stakeholders out of 14 professions evaluated, beating primary school teachers, web designers, and librarians. An interesting finding was that about a third of stakeholders indicated that they would encourage their children or dependents to take up a teaching profession.

The 2022 annual survey sought to determine the social standing of the teaching profession by asking 950 stakeholders to rank their level of respect for 14 professions.⁴⁰ On a scale of 1 to 14, stakeholders were asked to rank their respect for the 14 professions, with 1 being the most-respected profession and 14 being the least-respected profession. The opinion of stakeholders on how they respect other professions as against teachers is a key aspect of the 2022 annual survey because it can show whether there is a link between the status of teachers in society and the performance of learners in school.

Results presented in table 3.57 show that all stakeholders ranked doctors as the most respected profession, with lawyer following as the second most-respected profession in Ghana. Stakeholders ranked engineers, accountants, and local government managers as the third, fourth, and fifth most respected professions in Ghana, respectively. In terms of the teaching profession, the table shows that headteachers were ranked as the sixth most respected profession, whereas secondary school teachers and primary school teachers fell below in the list as the tenth and eleventh most respected professions in Ghana, respectively. This result is consistent with the 2018 Global Teacher Status Index⁴¹ survey conducted by the UK-based National Institute of Economic and Social Research on behalf of Varkey Foundation, where data collected on teacher status across 35 countries classified secondary school teachers and primary school teachers as the tenth and eleventh ranked respected profession in these countries.

⁴⁰ The 14 professions are doctor, lawyer, engineer, accountant, management consultant, local government manager, nurse, headteacher, web designer, police officer, secondary school teacher, primary school teacher, librarian, and social worker.

⁴¹ Dolton, Marcenaro, de Vries and She, Global Teacher Status Index 2018, Varkey Foundation (2018)

Table 3.57 Stakeholders' ranking of the professions they respect in Ghana (%)

	Parents	Opinion leaders	Alumni	Agencies/Universities/ CSOs	Board members	Students	Overall rank
Doctor	1	1	1	1	1	1	1 st
Lawyer	2	2	2	2	2	2	2 nd
Engineer	3	3	3	3	3	3	3 rd
Accountant	4	4	4	4	4	4	4 th
Local government manager	8	5	5	5	5	7	5 th
Management consultant	5	6	7	5	6	9	6 th
Headteacher	7	8	8	7	7	6	7 th
Nurse	6	7	6	8	8	8	8 th
Police officer	10	11	9	9	9	5	9 th
Secondary school teacher	9	9	10	10	10	10	10 th
Primary school teacher	11	10	11	11	11	11	11 th
Web designer	12	12	12	14	12	14	12 th
Social worker	13	14	13	12	13	12	13 th
Librarian	14	13	14	13	14	13	14 th

Understanding the relationship between the status or respect of a profession in society and the compensation received in that profession is not straightforward (Dolton, Marcenaro, de Vries and She, 2018). The survey sought to determine how well stakeholders think teachers are paid compared to other professions. The survey sought to examine the data on a profession-by-profession basis by 'mapping' the nature of people's joint perceptions of these two related dimensions. As well as a 'forced' ranking of the status of the list of 14 occupations, respondents were asked to rank the same professions in order of how well they believed they were paid on a scale of 1 to 14, where 1 is the highest paid and 14 is the lowest paid.

As shown in table 3.58, of the 14 professions, stakeholders ranked doctors as the highest-paid profession in Ghana. Lawyers were ranked as the second highest, with engineers, accountants and local government managers being

ranked as third, fourth, and fifth, respectively. However, the secondary school teacher and primary school teacher were placed near the bottom of the list of 14 key professions as they were ranked 11th and 12th, respectively above social workers and librarians. Stakeholders perceived low level of compensation for teachers suggests that there is a strong connection between the level of a teacher’s compensation, quality of teaching, and their desire to quit teaching for a higher compensating profession.

Table 3.58 Professions ranked by perceived levels of compensation by stakeholders (%)

	Parents	Opinion leaders	Alumni	Agencies/ Unions/ CSOs	Board members	Students	Overall
Doctor	1	1	1	1	1	1	1 st
Lawyer	2	2	2	2	2	2	2 nd
Engineer	3	3	3	3	3	3	3 rd
Accountant	4	4	4	4	4	4	4 th
Local government manager	5	6	6	6	6	6	5 th
Management consultant	6	5	5	5	5	8	6 th
Headteacher	8	8	9	7	8	7	7 th
Nurse	7	9	7	9	7	9	8 th
Police officer	10	7	10	8	10	5	9 th
Web designer	8	10	8	13	9	10	10 th
Secondary school teacher	11	11	11	11	11	11	11 th
Primary school teacher	12	12	13	10	12	12	12 th
Social worker	13	14	12	14	13	14	13 th
Librarian	14	13	14	12	14	13	14 th

The study also explored the proportion of stakeholders who have respect for the teaching profession. In computing this indicator, stakeholders who ranked teachers among the top five most respected professions out of 14 were considered to have respect for the teaching profession. Based on the findings, 18.5 percent of the stakeholders ranked teachers in their top five. Majority of these stakeholders were SEI students (25.6 percent), opinion leaders (21.1 percent) and parents (20.6 percent). Interestingly, only 14.6 percent of board members rated SEI teachers among the top five most respected professions.

The survey sought to determine the proportion of stakeholders who will encourage their children or guardians to become teachers in the future. Results depicted in the table show that 36.6 percent of stakeholders would definitely or probably encourage their children or guardians to become teachers. Alumni recorded the highest proportion of stakeholders who will definitely or probably encourage their children or guardians to become teachers, followed by agencies/unions/CSOs and board members. The table shows that almost one-third of the stakeholders may encourage their children to become teachers. The table, however, shows that while 15.5 percent of stakeholders will probably not encourage their children to become teachers, 16.5 percent of the public are certain that they will definitely not encourage their children or guardian to become teachers in the future. Insight from the qualitative survey revealed that most stakeholders are unwilling to encourage their children to become teachers because of the low respect for teachers in society and poor salaries. For instance, a female stakeholder stated that *“I am a teacher myself [and I believe that] before a child can become someone in future there should be a good role model. My children see me go to work daily and return late. Yet, when they ask me for something, I am unable to do for them because I cannot afford. My children will ask the same thing from their father, and he will be able to provide for them because he is not a teacher but has a well-paying job”*.

Table 3.59 Stakeholders who would encourage their children or guardians to become teachers (%)

	Parents	Opinion leaders	Alumni	Agencies/Un ions/CSOs	Board members	Overall
Definitely encourage	9.1	10.8	23.4	19.1	13.5	15.2
Probably encourage	18.5	17.0	20.5	23.8	27.0	21.4
Maybe encourage	28.9	39.8	27.5	30.2	30.8	31.4
Probably not encourage	20.9	15.2	11.1	14.3	16.2	15.5
Definitely not encourage	22.7	17.3	17.5	12.7	12.4	16.5
N	374	342	171	63	185	1,135

NOTE: Percentages may not add up to 100 percent due to rounding

Table 3.60 shows the proportion of stakeholders who agree with specific statements about teachers in secondary schools. An overwhelming majority of stakeholders agree that being an effective teacher requires rigorous training. This is followed closely by those who agree that teachers are paid less than they deserve and teachers work hard, respectively. Similarly, a high proportion of the respondents agree that teachers should be rewarded in pay for the effort they put into their jobs and agree that the teachers in their children’s schools are respected by their learners. More than half of the stakeholders agree that the quality of teachers is too variable, with almost 40 percent of the public agreeing that teachers have the autonomy to exercise their professional judgment.

Table 3.60 Stakeholders who agree with statements about teachers (%)

	Parents	Opinion leaders	Alumni	Agencies/Un ions/CSOs	Board members	Overall
Being an effective teacher requires rigorous training	86.9	83.6	86.0	81.0	95.7	86.6
It is too easy to become a teacher	23.5	19.9	20.5	28.6	19.5	22.4
The quality of teachers is too variable	46.5	55.9	49.1	49.2	58.4	51.8
People respect teachers in Ghana	33.2	33.0	36.8	41.3	34.1	35.7
The teachers in my children's school are respected by their learners	73.0	74.9	79.5	81.0	82.2	78.1
Teachers work hard	90.6	91.5	86.0	85.7	84.3	87.6
Teachers should be rewarded in pay according to their learners' results	36.4	36.6	39.2	33.3	38.4	36.8
Teachers should be rewarded in pay for the effort they put into their jobs	81.0	81.0	77.2	73.0	87.0	79.8
Teachers enjoy a positive media image.	31.6	34.2	41.5	46.0	26.5	36.0
Teachers have long holidays	34.8	36.0	37.4	25.4	21.6	31.0
Teachers have the autonomy to exercise their professional judgement	40.9	47.4	45.0	46.0	34.1	42.7
Teachers are paid less than they deserve	87.4	86.6	87.1	88.9	87.0	87.4
Teachers' reward is in heaven	15.0	18.1	12.9	19.1	16.8	16.4
N	374	342	171	63	185	1,135

Discussions on stakeholders' perspectives about secondary education

Findings from this section of the 2022 annual survey indicate that stakeholders have greatly low respect for teachers as compared to other professions and regard the teaching profession as a low-paying job. This perception consequently has a great negative influence on the stakeholders, as a significant proportion are unwilling to encourage their children to become teachers in the future. It was, therefore, unsurprising when the qualitative results revealed that some stakeholders who are teachers revealed that they would not encourage their children to become teachers in the future.

With the assessment results indicating low proficiency levels in the various subject areas, it could therefore be said that working towards improving the social status of teachers will go a long way to motivate teachers and consequently stimulate their desire to improve the quality of their teaching practices. It is beyond doubt that respecting teachers and improving their status in society is not only a moral responsibility - but it's essential for Ghana's educational outcomes.

3.13 Changes in policies and shift in practices in government agencies and universities as a result of T-TEL's support

This section documents shifts in policies and changes in practices in government agencies and universities as a result of T-TEL's support. T-TEL has been working with 11 partner agencies to bring change in teacher and secondary education. These agencies are GES, MoE, NTC, NaCCA, GTEC, NaSIA, University of Ghana (UG), Kwame Nkrumah University of Science and Technology (KNUST), University of Education, Winneba (UEW), University of Cape Coast (UCC), and University for Development Study (UDS). The rest of section 3.13 curates findings from these agencies starting with GES.

3.13.1 Findings from Ghana Education Service

GES is the institution responsible for the implementation of approved national pre-tertiary educational policies and programs to ensure that all Ghanaian children of school-going age, irrespective of tribe, gender, disability, religious and political affiliations, are provided with inclusive and equitable quality formal education. The GES was established, as part of the Public Service of Ghana, in 1974 by NRCD 247 and was subsequently amended by NRCD 252, 357 and SMCD 63. The objectives of GES are in accordance with the National Policy Objectives espoused in the Education Strategic Plan (ESP). The key objectives of the GES are to *i) Increase inclusive and equitable access to and participation in education at all levels; ii) Ensure provision of life skills training and management of personal hygiene, family life, gender, health, HIV/AIDS/STIs, etc. iii) Improve the quality of teaching and learning; and iv) Improve the Management of education service delivery.* Since September 2017, Ghana's basic education has been redefined to include secondary education as part of the government's new policy initiative on Pre-tertiary Education⁴². As a result, all JHS learners now proceed to SHS with placement not based solely on BECE results. This move shows the government's commitment to ensure that all learners from diverse backgrounds will have access to high-quality education.

The 2022 Annual survey sought to solicit insight from officials of GES on the shift in policies over the past year because of T-TEL's support. Qualitative findings revealed that GES implemented several policies with the support of T-TEL.

⁴² National Pre-tertiary Education Curriculum Framework for developing subject curricula, May 2018. Retrieved from <https://nacca.gov.gh/wp-content/uploads/2019/04/National-Pre-tertiary-Education-Curriculum-Framework-final.pdf>

According to the GES representative who was interviewed, T-TEL's support for GES comes in two forms; provision of direct funds and training programmes. Of particular mention is the Secondary Education Transformation Programme (SETP)⁴³. Under this programme, the MoE, GES and T-TEL selected 12 low-performing schools and are currently with these schools to bring about improvements in performance and learning outcomes. The GES representative noted that these schools receive funds intermittently to implement activities in their school improvement plans (SIPs) and submit monthly and quarterly reports with evidence to GES and T-TEL. Please see a quote from the GES representative below:

"Yes, I think we looked at secondary education in general, and we realized that they were a lot of issues. They were a lot of challenges, and we needed to see how best we could surmount these challenges. A lot has to do with leadership. There is a lot of indiscipline and so many other issues... and then T-TEL came about. They were also into the training of leaders, so, they had a discussion with the management of GES, the Director General agreed that we do this intervention. I think we sent a proposal to make sure that there is an improvement in learning outcomes. What happens is, in times past when heads were appointed, they were given some orientation. But the orientation was not detailed and so there was a challenge there. When you are appointed a head and you do not get rigorous training what are expected to do? So, when T-TEL came, we sent a proposal that we wanted to do detailed orientation for newly appointed heads. So, when they saw our proposal it fell in line with what they do, so they agreed to support us. Our training programme is intensive for 4 to 5 days. So far, we have trained school heads who were appointed in 2022 and 2021 and even some in 2020".

The GES representative also indicated that they conducted a 5-day intensive leadership and management training for the heads and senior management of these SETP schools. According to the GES representative, the rationale

⁴³ The Ministry of Education (MoE) and the Ghana Education Service (GES), with financial and technical support from T-TEL through the Mastercard Foundation, are currently working with 12 Senior High and Senior High Technical Schools to bring about improvements in performance and learning outcomes through the Secondary Education Transformation Programme (SETP). SETP has been running for a little over a year now piloting improvement approaches in these 12 schools which will be scaled nationally by MoE and GES in line with the Secondary Education Strategy 2022-2025.

SETP is based on the principle that Senior High Schools (SHSs) and Senior High Technical Schools (SHTSs), and the stakeholders involved in their management, operations and governance are best placed 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.

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

behind the leadership and management training was to upgrade the leadership and management skills of the school leaders to ensure that they are effectively able to improve teaching and learning, and manage resources in their schools.

Aside from the leadership and management training for the SETP schools, the GES representative revealed that T-TEL has also supported their outfit to school heads and senior management from over 700 SEIs on leadership and management. The training was nationwide and helped improve the leadership and management skills of SEI heads and senior management. Additionally, through the training, SEIs now have a school improvement plan that they will be implementing to help improve teaching and learning. *"...T-TEL has supported us to train all heads of schools and senior management (including from each secondary school throughout the country, and that is very large number of beneficiaries and from what we're hearing, it is going to have a positive impact".* Like that of the SETP schools, the general leadership training was aimed at improving the leadership and management skills of these school leaders and ultimately lead to an improvement in learning outcomes. *"...you know when there's an organisation and you want to see some improvement... if their leader doesn't know what he is about, no matter what you do, nothing will happen. But if you're able to get an effective leader, you're sure some good things will happen in the organization... That is what we noticed that a lot of the school heads and school management [members] had challenges, as to what to do to make sure that things are improving... students are improving... teachers are teaching. So, we realised that they need that leadership training to know what they should be doing [for improvement]"*

There were other ad hoc training sessions where T-TEL offered its support to GES. One such training was organized for secondary schools throughout the country where eight persons from each school comprising headmaster, assistant headmasters, coordinator for guidance and counseling and heads of departments attended. *"Apart from that, there are training sessions that we had with T-TEL's support. ...T-TEL has supported us in training eight (8) people from each secondary school throughout the country. There were administrators, headmasters, assistant headmasters, coordinator for guidance and counseling and HoDs. So, eight from each school throughout the country".*

With regards to challenges encountered during the implementation of the initiatives or policies, the qualitative survey revealed misappropriation of funds as the main challenge encountered during the initial implementation of programmes in secondary schools. Funds were either used for personal benefit or for other purposes other than the intended purpose. The GES was compelled to take stringent measures in order to salvage the situation. Heads of schools who were found culpable were stripped of their positions as a deterrent measure for others. The outcome

of this punitive measure has been positive as the heads have now become more responsible in utilizing funds advanced to them. The GES representative stated that, *"there have been instances after our review that some heads can no more be heads [demoted] because they have not been able to account for moneys given them. Yes, we have done that. You have to account for every money that is given. I think the message has now gone out there and so people are now cautious of how they use such money"*.

Since the introduction of these policies and initiatives, organizing training for school heads has become much easier for GES as they are able to extend their reach with financial support from T-TEL and other donors. Monitoring and supervision are no longer left to GES and its partners alone due to increasing interest from communities in what happens and what is expected from the schools. This works in favour of GES with respect to the goal of achieving quality education due to an increased sense of ownership, accountability, and effective monitoring and supervision. According to the GES representative, some school management and board members are showing clear signs of improvement in managing their schools to the expectation of programme implementers. *"Yes, formerly, it was just the school heads and assistant heads but now the communities are getting interested. The school boards are now interested in what is going on. So, people must do the right thing. The communities now know some of the things that are supposed to happen in the school, and this is going to help achieve some of the expected outcomes"*. – *Director, Schools & Instructions Unit, GES*

In line with the government's initiative of digitization, digital literacy in the education sector is catching on gradually upon the introduction of the one-teacher-one-laptop policy. Thus, teachers are now preparing lesson notes at the secondary school level digitally and consequently, lesson notes are being prepared and submitted on time with a resultant improvement in lesson delivery. In response to whether the one-teacher-one policy has resulted in a change in teachers' practice, the GES representative stated that, *"...yes, now teachers are now preparing their lesson notes and on time"*. Secondly, there has been massive behavioural change in the attitudes of heads of schools in relation to financial management and management in general. Most school heads have become more accountable and are seen delivering to expectation following the leadership training initiative organized by GES with assistance from T-TEL and other partners and donors. *"We have identified some of these heads as very good. They didn't just have the knowhow. But they have been given training and the communities too are getting interested"*. Monitoring and supervision have never been easier for the Service following the involvement of communities in matters concerning the school. Thus, GES' desire to intensify monitoring and supervision to some extent is gradually materializing.

In recognizing specific organizations at the heart of driving change in practices in Ghana's secondary school educational system, with the exception of GES, the key names that emerged include MoE, T-TEL, Teachers' Union, Japan International Cooperation Agency United Nations Children's Fund , Korea International Cooperation Agency and Innovations for Poverty Action.

The survey sought to ascertain GES' experience with working with T-TEL. According to the GES representative, the experience of working with T-TEL has been nothing but the best, with specific reference to T-TEL's penchant for quality, transparency, and accountability. The Director for Schools and Instructions unit described working with T-TEL as easy and straight forward an organization with clear-cut objectives, adequate financial strength, good work ethics, and well experienced in their field, which puts them on top of issues.

"Well, it's been interesting. It's been exciting. You see, these are people, though it is a Ghanaian NGO, they are on top of issues. These are people who are looking for quality and accountability. They monitor everything that we do. I like their tool. They gave us a monitoring tool and we have adopted it in my division. And it is working. I like the way they go about their work".

During their work together on different programs, the representative from GES described T-TEL as an organization worthy of trust as they tried as much as possible to exhibit transparency in all their dealings and utmost professionalism, which made working with them quite agreeable. In view of this, the agency is strongly looking forward to the opportunity to relive the experience of working with T-TEL in the future. *"Yes, I would like to work with them. You know you've worked with GES [CRDD], look at the way they do their things; there is no transparency. The way they do things is transparent".*

In general, GES' perception of T-TEL has been very constructive as a useful organization to the Ghana educational sector. In their view, most of the positive changes that have taken place in the sector would not have been possible without T-TEL's support. Technically, T-TEL is seen to be well-versed in issues relating to best practices in managing schools with clear-cut policies and tools for desired results. Specifically, secondary school education has benefitted massively from T-TEL's support, with evidence of improvement in certain secondary schools that were underperforming prior to their involvement in these schools.

3.13.2 Findings from the Ministry of Education

MoE is responsible for all policies on education, including apprenticeships and wider skills acquisition in Ghana. The ministry works to provide education that ensures opportunity is equal for all, no matter what their background or family circumstances. Established in 1957, the MoE is tasked to formulate and coordinate education policies, set standards, and monitor and evaluate their implementation. The MoE exists to ensure that quality education is accessible for all Ghanaians in order to support human capital and national development. For this reason, among others, the Government of Ghana, through the MoE initiated the implementation of the Free Senior Secondary School Programme in 2017. The MoE is committed to ensuring that all Ghanaians are prepared to succeed in the world of work. It achieves this through the development of an educational system that focuses on promoting problem-solving and creativity and building critical skills through academic, technical, and vocational programs. The Government of Ghana initiated some key education reforms to transform teaching and learning and improve educational outcomes under the Education Strategic Plan (ESP 2018-2030) which was approved by the Cabinet in November 2018. It is worth noting that MoE uses the ESP (2018-2030), which “revolves around the goal to improve the quality of education for all in Ghana”,⁴⁴ to formulate its education policies and programmes.

The 2022 annual survey solicited insights from a representative from MoE on the implementation of policies and initiatives over the past 12 months. The qualitative findings revealed that the MoE has begun implementing about six (6) policies and initiatives over the past two years. They include i) Development of a new secondary education curriculum, ii) Free SHS policy, iii) Teacher education reform, iv) SETP v) Leadership Training and Development of School Improvement Plan Initiative and vi) Community of Excellence programme.

Insights from the MoE representative revealed NaCCA is leading the revision of the secondary education curriculum with support from T-TEL and Mastercard Foundation. *“T-TEL sponsored the development of the secondary education curriculum and the stakeholder consultations... We just ended the stakeholder consultation with GES council members, NACCA council members and other stakeholders in education”. – Acting Chief Director, Statistics, Research & Information Management, MoE.* Speaking on the objective of the new secondary education curriculum, the representative indicated that the curriculum is aimed at equipping secondary school graduates with 21st century skills and preparing them for the world of work and further studies. Here is a direct quote from the representative during qualitative interview: *“The policy is to ensure that the country have a 21st century skills curriculum that we*

⁴⁴ Ministry of Education, (2019). *Education Strategic Plan (ESP) 2018–2030*. Retrieved from <https://www.globalpartnership.org/sites/default/files/2019-05-education-strategic-plan-2018-2030.pdf>

can make the curriculum practical to prepare our graduates for the job market. Because we have realized that all along it has been learn, memorize, and pass the examination and that is the end of it, but we want our children to have 21st century skills to be good citizens and also global citizens”.

The MoE representative also noted that the development of the secondary education curriculum was influenced by the ministry’s commitment to improve the quality of teaching and learning as well as science, technology, engineering, and mathematics (STEM) at all levels of education. The representative indicated that the policy formulation on STEM is a priority area for the MoE. The representative also revealed that the MoE received support from T-TEL on the policy formulation of STEM. *“I think they [T-TEL] are also supporting the policy formulation on STEM, that is Science, Technology, Engineering, and Mathematics, which is a priority for the ministry... In fact, the secondary education curriculum is being influenced by the STEM policy”.* The ministry’s representative further explained that the rationale for the development of the policy was not only to meet the reform standards set by the Education Sector Plan (ESP 2018 - 2020), but also to provide a framework to guide NaCCA in the completion of the standard-based curriculum started for the pre-tertiary level of education.

The MoE representative also indicated that MoE with technical and financial support from T-TEL supported the 46 CoEs in Ghana to transition from diploma awarding institutions to B.Ed. awarding institutions. See quote below; *“I think another reform area that is worth mentioning is the teacher education reform, where we have moved away from diploma. The Colleges of Education are no more awarding Diploma certificate but [now] degree because we realized that as the teachers complete the CoE with Diploma, when they get to the classroom, they start thinking about getting a degree, so they abandon the classroom and go for top ups. So, the policy reform direction is to rather make them start issuing degrees so that when they complete, they will stay in the classroom... they will no more be thinking about going for top ups. In any case, if you look at the number of those who would want to do masters, it will not be disturbing as [those with] diploma looking for degrees. So, we have cured teacher absenteeism and teachers abandoning classes for their further studies by... graduating from the COEs with a degree”.*

The MoE representative reiterated the importance of the teacher education reform as a programme that is ensuring that Ghana produces highly qualified teachers who are regularly present in class and using learner centred methods *“...this [the Teachers’ Professional Development policy] is another good reform area that helps to keep the teachers in class and even reduce and even eradicate ‘pupil teachers. Yes, you hardly hear of pupil teachers now in the system. All the teachers are now trained teachers”.*

The representative also highlighted the work that MoE, GES and T-TEL are currently doing with regards to the SETP schools. These has been discussed in the previous section.

Also mentioned was the leadership and management training for almost 700 SEIs discussed in the previous section.

In terms of challenges encountered during the implementation of the policies, the MoE representative revealed that there were no major challenges encountered while implementing any of the policies supported by T-TEL.

On the positive impacts of the policies and initiatives, the MoE representative was quick to point out that the ministry has attained some positive impacts from the SETP initiatives through highly successful WASSCE results. In fact, the ministry recorded the best WASSCE results of all time. *"You can see the results when you take 2021 WASSCE results, 2022 WASSCE results, it is reflecting that something is happening. In fact, the 2022 results are the best so far"*. According to the MoE representative, although the ministry has successfully implemented the above policies and initiatives, impact of some these policies is long term and will continue to reflect in the education system especially the teacher education reform.

The MoE representative providing insight on how T-TEL works. According to the MoE representative, working with T-TEL has been remarkable especially with all their critical support in the Ghana's education sector. The representative was full of praise for T-TEL and stated that the ministry hopes to benefit from the generous support from T-TEL in future. Here are some qualitative verbatims from the interviews: *"I know they are a formidable organisational institution supporting the educational sector. I don't know about T-TEL composition. What I know is that t-tell has been supporting the ministry in critical areas and that is yielding results. They are supporting secondary schools, Colleges of education and the tertiary sector"*.

On whether the MoE is willing to work with T-TEL again, he affirmed that, *"Yes, even this morning we were planning to see if we can contact them to see whether they can support the ministry's directorate, statistics, research, and information management that houses the EMIS [education management information system], in the area od digitization of EMIS which we just discussed this morning. We will be sending our application to them for support"*.

3.13.3 Findings from National Schools Inspectorate Authority

NaSIA is an agency of the MoE established under the 2008 Education Act, 778. The agency was established to perform four main functions. Namely, to regulate the establishment of pre-tertiary educational institutions (PTEIs) by ensuring the suitability of infrastructure and facilities; provide licenses for new and existing PTEIs; support quality school leadership and governance to maintain the highest educational standards and implement monitoring and evaluation measures in the educational sector to uphold set standards and uncover challenges.

According to the representatives of NaSIA, over the past three years, two main policy initiatives have been developed by the agency in collaboration with other educational stakeholders under the MoE. These policies are the School Establishment and Inspection Policy (SEaIP) and the School Licensing Policy (SLiP). Both policies operate simultaneously, as after establishing and inspecting a PTEI, the next phase is to receive a license to operate if all the necessary conditions under the SEaIP guidelines are met. According to the representatives and supporting documents provided, the SEaIP was developed to achieve the minimum standards for establishing and operating pre-tertiary schools to meet the learning needs of students⁴⁵. The guidelines provided under the SEaIP contain clear instructions and guidelines for establishing a PTEI before obtaining a license under the SLiP. The representatives explained that previously, private individuals and organisations who wanted to establish schools had to seek accreditation from the GES at the district level after the construction of the school had been completed. According to the representative, there were no strict structural requirements to set up schools which led to several schools being provided accreditation when their establishments were not up to the standards required for a PTEI. The verbatim below cites the explanation provided by the representative:

“When you do an assessment of how schools were established in the country, you realize that per what GES operates, when you establish a school, you call the district GES to look at it and give you a short form of accreditation or something you begin to operate. You realize that some schools have been in existence for years that GES have [accredited]. Plus, when you look at the structure or the requirements to set up a school, there was none in existence. There was one for KG, [i.e.] the national KG policy. But for GES, you would have gone to establish your own school, and the GES will come in. You realize that GES was also a proprietor, so to strictly see what is required to start a school is a non-starter. This led to the development of a school establishment policy. That if you want to set up a school in the country, where do you start from? Before you even think of digging the ground to build the school, where do you go to, whom do you see, what are the specifications; that led to the development of the policy”.

These conditions cited by the representatives necessitated the need to establish the two policies to ensure compliance and homogeneity in school establishment procedures. They explained further that based on the

⁴⁵ Final Draft, School establishment and Inspection Policy (2020)

guidelines presented in the SEaIP and SLiP and documents reviewed, before establishing a school, the proprietor is required to register the prospective school with the Registrar General's department based on a recommendation letter from NaSIA. The proprietor then completes and submits a Notice of Intent (NOI) form in addition to other supporting documents to be reviewed by NaSIA. If the prospective school satisfies the criteria after a compliance inspection is completed, NaSIA then issues a provisional license for the school to start operations⁴⁶. One of the representatives explained this process in the following quote:

"The policy came with a guideline. The guideline has helped with the implementation. So, it starts from when you want to set up a school, you go through what we call a verification inspection, and you submit your documents to the authority. They go through everything to see whether the building or whatever you want to put up is fit for purpose or whether the proprietor has enough resources to set up the school before the board gives you the approval to go and start. When you are done, and you want to start operations, that's where we mentioned the NOI, you come and give us notice of commencement, and we come and see how fit the classroom is, the lighting and ventilation, environment, and everything".

Further discussions revealed by the representatives showed that in the development of the policies, the key stakeholders who participated included GES, NaCCA, T-TEL, and other education stakeholders. Other regulatory state agencies who were involved in the policy development include Health Facilities Regulatory Agency (HeFRA) for the regulation of infirmaries in pre-tertiary schools, Food and Drugs Authority (FDA) for food safety, Ghana National Fire Service (GNFS) for fire safety, Ghana Police Service for security and law enforcement, Registrar General's Department (RGD) for business registration of pre-tertiary schools, Environmental Protection Agency (EPA) for environmental safety, the Ghana Institution of Engineers (GhIE) and Ghana Standards Authority (GSA) for compliance with building codes and the Local authority for the enforcement of by-laws⁴⁷.

According to the representatives, T-TEL played a critical role in the improvement of the policies, specifically the review of the Inspection Evaluation Framework (IEF) component of the SEaIP. The IEF is a two-part tool for assessing the compliance of schools in the school assessment process. The first part of the IEF tool evaluates the quality of school leadership, teaching and learning, and external assessment results. The second part of the IEF tool evaluates compliance with NaSIA's requirements relating to the quality of school infrastructure as governed by the Ghana Building Code. It also evaluates compliance with quality environmental standards as described by the Environment Protection Agency Act and issues related to the quality of health and safety as stipulated by the Ghana Health Service/Ministry of Health. Additionally, the second part also evaluates the level of inclusion of all learners as defined by the Inclusive Education Policy. The key role T-TEL played in the review of the IEF included supporting

⁴⁶ https://www.nasia.gov.gh/wp-content/uploads/FLOWCHART-FOR-EXISTING-SCHOOLS_20APR2021-V1.0.pdf

⁴⁷ Ibid

NaSIA's management to develop a concept note which outlined the Terms of Reference for the review, including proposed members of the technical working group and an activity schedule.

In relation to the implementation of the two policies, the representatives indicated that the process had started, and inspectors had been trained on the guidelines and requirements. For example, one of the representatives said that *"... [with] the Implementation of the [SEaIP] policy, it's been so far good. The inspectors have gotten acquainted with the processes. The policy came with a guideline. The guideline has actually helped with the implementation"*. They further indicated that because the policy was still in its initial stage of implementation, NaSIA has been focused on training inspectors and engaging stakeholders to be familiar with the guidelines and requirements of the policies. Based on the implementation plan, the representatives explained that the agency had trained the regional chief inspectors to serve as Trainer of Trainers (ToT) in their respective regions. The regional inspectors are also expected to train other inspectors in the regions assigned to them. The training is further expected to trickle down to all stakeholders and schools at the district level in the regions.

The agency highlighted some major challenges that have hampered the progress of the policy implementation exercise. The most prominent challenge has been the availability of funds to engage all stakeholders at the community level. They explained that there are an estimated 1400 private pre-tertiary schools, and to engage them and sensitize them about the new policies and the guidelines requires significant funds, which is not available to the agency. An agency representative said that:

"[Finance] is a challenge because, you know, we are dealing with schools scattered all over the country, and to be able to reach out to each of these schools, you need to go to all the regions and be sent to the various districts. So, it is not going to be easy. Calling school proprietors and heads to sensitize them and give them training. We are talking about over 1,4000 private schools and to even include the GES schools".

Another representative emphasizing this point also mentioned that *"So one of the things we have not been able to do is to engage associations. Because most of these engagements should start with the school associations and the executives, then you scale it down. But for lack of financing, we have not been able to do that"*.

The representatives also explained that another challenge they face is inadequate personnel and inspectors in the field to implement the policies across the country. One representative mentioned that *".....the technical staff in the office trying to merge with the fieldwork is a bit challenging. So far; we are looking at how to break the two [functions]"*. To resolve the challenge of inadequate personnel, the representatives mentioned that arrangements were being made to train more inspectors to implement the policy. One representative mentioned that *"we have a lot more [work to do] because our scope of work is expanding, and we will need more inspectors to train them. So, I think this December we are expecting to train more of the staff"*. To resolve the challenge of a lack of personnel,

the agency recruits contract inspectors across the country to support the agency's efforts. However, the representatives indicated that, at the time of the interview, the contract inspectors had not been provided training on the SEaIP policy. A quote from the representative is provided below.

"Like last year, we had a pool of contract inspectors that were trained on the tools that we are using currently. So, they are all in the regions. However, this new policy [SEaIP] we are talking about, they have not had the opportunity to be trained on. So, in going to do sensitization, you realize that the inspectors that are known in the districts are there, but they have no idea about the new policy. We have about 280 contract inspectors that are on the field, but they have no idea about this whole new policy".

To resolve the issue of adequacy and training of personnel and inspectors, the representatives assured that discussions were ongoing within the agency to establish an "Inspectorate institute" where inspectors would be trained and issued licenses upon completion to increase the number of trained inspectors in the country.

The representatives further said that they had had some difficulties with a few proprietors resisting the implementation of the policy. They explained that *"[proprietors] understanding the whole process together is a challenge. You know, first, you could turn your two bedrooms into a school, but now we are saying you can't do that again. So, getting proprietors to really understand the process and the standard that we have set is a bit challenging".* Another representative emphasizing this point said that *"For the proprietors, they are used to doing certain things in a certain way for a long time, so changes become more difficult".*

Another challenge highlighted by the representatives is the continuous review and update of the policies based on field experiences and the impact on re-training inspectors. They explained that, as the policy is being implemented, updates are done based on field experiences. It becomes difficult to inform the inspectors about every single update that is made in the policy. This uncontrolled update of the policy might lead to inspectors missing out on essential decisions and changes to the policies. The representatives said that,

"In all these things, as we go along and we encounter problems, we find resolutions to them by updating our policy, but as to bringing it down to those who are actually on the field, consistently training them due to the updates is a challenge..... that is the gap, to consistently train inspectors and also train the schools or even engage the schools to understand why we do some of these things, that I think is a major challenge".

Another key aspect of the study was to establish how the introduction and review of the policies had influenced changes in the practices of NaSIA. According to the representatives, a key aspect of the SEaIP and SLiP policy that has had an impact on their processes is the introduction of the 'School Self-evaluation' concept. The school self-evaluation is a process of internal school review using the T-TEL-supported IEF. The self-evaluation enables schools to self-assess and develop their own intervention schemes to address issues identified in the schools. According to

the policy documents, licensed public and private educational institutions are required to submit a self-evaluation report biennially. This concept would reduce the reliance on NaSIA to carry out the evaluation of individual schools to reduce the burden of cost. According to the representatives, the concept was piloted in October 2022 and will be rolled out in January 2023.

According to the representatives, another significant change that has occurred is the introduction of the 'Temporary licensing' process. They explained that, formerly, it took the agency about two months to issue a license after an inspector submitted a report on a school. But due to the introduction of the new licensing regime, schools that meet the standard requirements are given temporary licensing to start operations pending finalization. According to the representatives, this process has made the licensing process more efficient. One representative explained by saying that *"You know, currently, when you are licensing a school after the inspector has done an inspection and brought out the reports and recommendations, it takes almost two months for us to issue the license. But this module runs the DVLA [approach] where immediately you are done, at least you get a temporary license, that is if we see that everything is okay"*.

Secondly, another key change in the practices of NaSIA has been the verification process in relation to a school adding an international curriculum to the current national curriculum. According to the representatives, formerly, NaSIA only focused on a school's ability to provide an additional structure before authorization was provided. But currently, a school is supposed to prove that they have the required TLRs and trained teachers to run the curriculum. In addition, the accreditation board would now insist on a report from NaSIA before accreditation is provided. A representative explained that *"I think the major ones are the verification processes where previously, if you are adding a curriculum, we don't stress too much about verification, but we were focused on the structure as an establishment. But we realized we needed to go beyond just putting up a structure. So now, if you want to add to the national curriculum, you need to be verified to ensure you have the teaching-learning materials and the teachers to run it. Then we also had to interact with the accreditation board to let them insist that schools present our report as a confirmation that our inspection is done before they accredit them. These are some of the things we have done this year"*.

Lastly, another important change in the practice of NaSIA has been the digitization of the licensing process and the standard operating procedures of the organisation. On the former change, school registration, payments, and reporting at the agency have been automated and done online. This has made it easier to track processes and progress and also obtain information in real time. With respect to the standard operating procedures in the organisation, the representatives noted that a google drive system had been set up to enable relevant officers and administrators to access relevant information applicable to their station.

In conclusion, the representatives gave a very positive review of T-TEL in its support of NaSIA, especially in its support of the IEF component of the SEaIP. For example, one representative mentioned that *"They champion transformation within the sector in different areas. Even from the IEF, I think they try to breach the gap in the previous one"*. Another representative also shared that; he studied the programmes implemented by T-TEL as part of his master's programme at the UG. He mentioned specifically that *"I have even written exams on T-TEL. I learned a lot about T-TEL during my master's program when T-TEL was coming. It was part of a semester program in Legon, college of education, which was even part of our semester exams. Learning about transforming teacher education, the lecturer took us to the field to see how new teachers are being integrated into the system and how he was trying to influence them not to pick up the old practices of the old teachers, how T-TEL systems work, and all that. So, for me, T-TEL has been transformational"*. However, some had a few recommendations that T-TEL should market their contributions to make them more visible. He stated that *"You see, all these things they have been doing are not marketed well for everybody unless you are within the education circles, so they should out-scale whatever intervention they have because they are pretty necessary"*.

3.13.4 Findings from National Council for Curriculum and Assessment

NaCCA is a governmental agency under the MoE. The agency was first established following the 2007 education reforms as an Advisory Board to the Curriculum Research and Development Division (CRDD) of GES. NaCCA has the mandate to develop national curriculum and assessment standards for pre-tertiary education other than the technical, vocational, and training educational institutions⁴⁸.

This section of the report focuses on policies, programmes, and initiatives developed by NaCCA in collaboration with other stakeholders over the past 12 months related to secondary education in Ghana. According to the NaCCA representative and secondary documents reviewed, the main policy the agency has developed in collaboration with other stakeholders is the development of a new SEI curriculum with the Secondary Education Strategy and the National Pre-Tertiary Education Curriculum Framework. According to the representative, while the policy has not been implemented yet, significant efforts are being made to finalize the curriculum. Explaining the rationale for the development of a new SEI curriculum, the representative indicated that the current curriculum focuses more on students memorizing and replicating information. He further explained that the curriculum does not enable students to be creative and work collaboratively as a team. He further cited that the curriculum does not prepare students for the world of work due to less focus on problem-solving and 21st century skills. The verbatim below highlights the thoughts of the representative:

"[In the current curriculum], students are trained to just memorize. They are not creative, and in my class, I put them in groups, and you can see the problem that they go through forming groups and doing collaborative work., We think that they can achieve more for the students if we revise the curriculum to make it more collaborative with 21st century skills and to prepare students for the world of work.

The representative also explained that an additional initiative by NaCCA has been the digitization of teaching and learning resources to enable all stakeholders, including teachers access the resources for free. He further emphasized that this approach to accessing teaching and learning resources would reduce the financial burden of the government having to print out materials for teachers. He said that *"Our focus in terms of policy change has been on the production aspect of teaching and learning materials. What we decided to do [was] to move the assessment activities and materials to a digital platform. So, currently, we've designed an online platform, where the teaching and learning materials will be uploaded and for people to access, so there would not be any face-to-face interactions [in terms of distribution]"*

Another reform from NaCCA has been the expansion of the number of authors and producers developing learning materials and the digitization of the assessment of learning materials and other teaching and learning materials

⁴⁸ <https://nacca.gov.gh/who-we-are/>

produced by authors. Explaining this, the representative shared that previously, less than three people were given the opportunity to develop learning materials for the schools. However, with the new reform, other authors are encouraged to contribute to the development of learning materials to enrich the quality of documents developed. The representative explaining this noted that *"What we've also done is that, in as much as we believe in people having the capacity and the knowledge to produce materials, we think that, to enrich the materials, it is important that we don't have one person writing a book or developing a textbook. So as part of our reform, we made it a point that for any textbook that is going to be produced for secondary schools, we don't need to have less than three producers or contributors in terms of authorship. That aside, we also need reports of other contributors, to read and give their comments which will be attached when they are uploading the documents. This will ensure that documents and materials produced are enriched"*.

In terms of the digitization drive, the representative further noted that material developers had been provided a platform to upload all materials for review, critique, and assessment. This platform also gives an opportunity for more contributors to review the learning materials. The platform also provides an avenue for authors to digitally track the progress of documents submitted. He said that *"as a producer, you upload your documents online, and then we also assess it online. This also means the producer will be able to track the progress of the documents submitted"*.

According to the representative, the review of the curriculum and other initiatives and reforms have been spearheaded by NaCCA with collaboration from other educational agencies such as GES, NaSIA, NTC, GTEC, and other educational CSOs. He further stated that T-TEL through Mastercard Foundation provided technical and financial support for the development of the new curriculum. Specifically, he mentioned that T-TEL supported the review and reform of the Common Core programme (CCP), which is a subcomponent of the curriculum review. T-Tel also supported the development of the curriculum writing guide and review materials used in developing the curriculum, as well as the relevant TLRs. Further to that, T-TEL also supported NaCCA's Strategic Operational Framework and Action plan to deliver on its mandate. Please see quote below: *"T-TEL provides technical and financial support to us. They also help train our staff. They also provide the funding to do research such as fidelity of implementation etc. We have signed an MOU with them, so they give us the funds. After it runs out, we go and account to them, and then the next batch of funds are released to us"*.

Speaking about the agency's impression of T-TEL, the representative gave positive reviews about their professionalism and technical expertise. He said that *"I think that they have been fantastic. We had consultants and technical advisors from there who are also supporting our activities, and they've been fantastic. Working with them is good, they have a nice working relationship, and they've been phenomenal, I must say". He also added that "it's*

been cordial, more than cordial even, working with them. I mean, like a family, and they can call at any time and share ideas if there is something that we need to quickly think through”.

3.12.5 Findings from Ghana Tertiary Education Commission

GTEC is a product of the merger of the National Council for Tertiary Education (NCTE) and the National Accreditation Board (NAB) backed by the new Education Regulatory Bodies Act, 2020 (Act 1023). The Act, on August 21, 2020, had a Presidential Assent which paved the way for a Governing Board to be appointed and inaugurated on November 25, 2020. GTEC is the Government of Ghana agency mandated to oversee and quality assure all tertiary education institutions and programmes. GTEC exists to ensure equitable access to relevant world-class tertiary education through the formulation and coordination of policies and plans, provision of accreditation and quality assurance. The objects of GTEC are to regulate tertiary education in all its forms with a view to promote i) efficient and effective administration and accreditation of tertiary education institutions; ii) principles of the provision of consistent quality of service by tertiary education institutions; iii) advancement and application of knowledge through teaching, scholarly research and collaboration with industry and public sector; and iv) the development of appropriate human capital for the sustainable advancement of the national economy.

The 2022 annual survey asked the representative of GTEC whether the commission has implemented any policies or initiatives that are intended to help the organisation achieve its objectives related to teacher education. The GTEC representative indicated that they implemented a lot of activities as part of the B.Ed. reform with support from T-TEL. These activities include i. The development and printing of Professional Development & Supported Teaching in School materials Course manuals, ii. Organising National Implementation Support (NIST) meetings, iii. Fidelity of Implementation of the B.Ed. curriculum, iv. Graduate employability studies, v. College of Education Management Information System (CEMIS), vi. Professional Education Leadership Qualification Framework and vii. GESI action plan, gender clubs and deep dive.

The GTEC representative stated that the entire B.Ed. curriculum and the activities around it will not have been possible without the support of T-TEL. He stated that T-TEL supported the development, printing, and distribution of materials to support the implementation of the B.Ed. curriculum last year. The materials include.

- a. Year 4 PD handbooks
- b. complete set of Arabic language year 1 to 4 course manual and PD handbooks
- c. Year 4 STS handbooks
- d. Year 1 to 4 early grade, upper primary and JHS course manuals

He stated that with support from T-TEL, GESI and its implementation was embedded in the above materials.

He also indicated that GTEC set up a committee that meets quarterly to discuss issues pertaining to teacher training. In 2022, GTEC organized two NIST meetings, one in April and another in December. One of the key outcomes of the April meeting was a decision to conduct a FoI study.

The objective of the FoI study as indicated by the GTEC representative was to determine the extent to which the B.Ed. is being implemented as intended across the 46 public Colleges of Education. The GTEC representative indicated that the FoI study took place between May and July 2022 in all 46 colleges with support from T-TEL.

With respect to the implementation of GESI action plan and deep dive in the colleges, the representative revealed that in 2019, GTEC received support from T-TEL to develop a 5-year national GESI Strategic Framework and Action Plan (2020-2025). The representative explained that the rationale for the GESI strategic framework is to provide a guiding framework for the incorporation of gender equality and social inclusion in the school environment and operational activities in all colleges in Ghana. He added that the GESI action plans intends to affirm GTEC's commitment to promoting gender equality, ensuring a gender equitable and respectful workplace for all female and male staff and student teachers in CoEs. According to the representative of GTEC, the management of GTEC were fully committed to the process of implementation of the GESI actional plans because *"it is critical towards ensuring quality teacher education"*.

In terms of the reactivation and creation of GESI clubs in CoEs through Teacher Trainees' Association of Ghana (TTAG), the representative for GTEC mentioned that the commission received support from T-TEL to support TTAG to harness and create platforms for the effective mobilisation of students to increase awareness of GESI issues and contribute to achieving the overall GESI objectives of their institutions. The representative for GTEC stated that the main objective for the creation of GESI clubs in CoEs was to is to *promote awareness of GESI issues and encourage greater student teacher participation in the implementation of GESI Action Plans"*. He explained that through this initiative, student-teachers will also become leading advocates for change through the activation, creation, or increased activities of GESI clubs on college campus.

On CEMIS, the representative for GTEC revealed that the commission were supported by T-TEL to troubleshoot issues with the operationalization of the CEMIS. According to the representative the initiative main issues including the ineffective initial CEMIS roll-out online training during the COVID-19 period. The representative indicated that

the training was carried out online due to COVID-19 and it did not have the intended impact. The representative also revealed that the troubleshoot exercise also revealed that the CEMIS was reliant on a handful of personnel in the CoEs, and as a result, senior management personnel could not query the system. After identifying these challenges, GTEC, with support from T-TEL, organised an in-person comprehensive capacity development training on CEMIS for staff from each college including the principal, vice principal, college secretary, PD coordinator, IT officer, HR officer, quality assurance officer and finance office. The representative further revealed that GTEC received technical support from T-TEL to introduce GESI metrics in the CEMIS to ensure that colleges planning, monitoring, resourcing, and accountability processes reflect and address gender equality and social inclusion issues.

On challenges encountered in the implementation of the above-mentioned initiatives, the representative stated that GTEC has not encountered any significant challenge and that there were no challenging issues in working with T-TEL. The representative however pointed out that the process of developing the 4 -year B.Ed. programme was over consultative with many backs and forth. *"I've always told them (T-TEL) in the past that the process of developing this 4-year B.Ed. Programme was planned and intended to be very interactive and consultative, so it brings everyone around the table. The only problem I had with it was that it was over consultative. We over consulted because we had series of workshops, going back and forth, bringing the same people back, but it was all good because it helped to give people some sense of ownership and belonging because they understand it inside out and they make input at every stage. But I thought we spent a little more time in the consultation than we could have I mean, even if we had scaled it back a little bit, we could have cut down the implementation time.*

The representative commended the leadership and core team of T-TEL *"Our experience with T-TEL has been fantastic because we've been working together for about 5-6 years now on the reform of teacher education and we have made a lot of progress... The core team of T-TEL has been fantastic; the leadership has been great, and they link up with us very well. We have a great understanding and commonest of purpose".* To reiterate GTEC's desire to work with T-TEL in future, *the representative stated that "Oh yeah, we've had a great experience working with them (T-TEL) and we delivered results... It's being very successful, so, everybody wants to be with the successful team. I have agreed to be part of T-SHEL (you know) a body that has been established, so if I didn't have a good experience, I am not sure I would want to carry on".*

3.12.6 Findings from National Teaching Council

NTC is an agency of the Ministry of Education mandated by the Education Regulatory Bodies Act, 2020 (Act 1023) to promote teacher professionalism in Ghana. The agency is responsible for the registration and licensing of teachers; maintenance of up-to-date database of teachers; development and periodic review of professional standards and code of ethics; conduct teacher licensure examination; and provision of framework for Continuous Professional Development (CPD) of teachers.

The 2022 annual survey obtained insight from NTC on the changes in policies over the past year with support from T-TEL. Insights from the representative of NTC revealed that T-TEL supported NTC and the National Service Secretariat (NSS) to provide a mandatory training in general pedagogy for NSS personnel posted to teach in the SEIs in 2022. These are NSS personnel with no experience in teaching or pedagogy training from a tertiary institution.

Another initiative NTC implemented was a study on teacher licensure examination with support from T-TEL. NTC wanted to understand whether the processes, and procedures put in place for the teacher licensure examination are fit for purpose etc. The representative of NTC revealed that T-TEL supported them to conduct the study. The findings are now being used to reshape the implementation of the teacher licensure examination. Here is a quote from the representative of NTC, *"... a 7-member committee was established to oversee the evaluation study process through the development of concept-note and RFP for tendering; development of criteria for selecting a research firm to undertake the study; supporting the selected research firm to develop research tools, data collection protocols, provide data collection training, implement/quality assure data collection, input into analysis and the research report; and organizing a workshop to disseminate findings to MoE, agencies and educational stakeholders. We have followed through all these processes to ensure that the evaluation assessment goes through a rigorous quality assurance befitting the intended purpose".*

According to the representative of NTC, T-TEL supported them to print and distribute 20,000 copies of the NTS to SEI teachers in Ghana. *"T-TEL stepped in at the right time to provide the needed support to bridge the knowledge and application gaps. The distribution of the NTS served as a starting point for the sensitization programme".* The representative of NTC also indicated that T-TEL supported them to organize sensitization drives to encourage SEI teachers to learn the NTS and use the strategies in the NTS to improve their lessons. *"NTC developed a plan to carry out the campaign at national, regional, and school levels. NTC held orientation workshops for National and*

Regional Executives of selected teacher unions including selected National and Regional officers from the Ghana Education Service as well as tutors from the Colleges of Education”.

3.13.7 Findings from University of Ghana

UG was founded for the purpose of providing and promoting university education, learning and research. The University aims to create an enabling environment that makes the school increasingly relevant to national and global development through cutting-edge research and innovative ICT-driven high-quality teaching and learning. The University of Ghana is focused on producing the next generation of thought leaders to drive national development. T-TEL's support to UG is situated around the partnership agreement between UG and 6⁴⁹ of the 46 CoEs who are implementing the teacher education reform.

Insight from the representative of UG revealed that the university has implemented about four policies and initiatives with support from T-TEL. These include capacity building for CoEs tutors on the fidelity of implementation of the B.Ed. curriculum, the National Teacher Education Assessment Policy, Professional Development (PD) sessions for tutors, and capacity building for assessment officers and IT staff on the university's ITS portal.

In terms of the capacity building for tutors on the fidelity of implementation of the B.Ed. curriculum, the representative of UG revealed that, with support from T-TEL, the UG organises training programs for tutors prior to the commencement of every semester on the course manuals for various subjects in the new curriculum. Subject tutors are engaged specifically on the course manual by UG lecturers who are the subject leads and chief examiners. The UG lecturers have discussions to equip the tutors not only to grasp the content but also to be able to teach the content and identify the means to access resources and information. They noted this to be in line with the recommended pedagogies for teaching the B.Ed. programmes. On the type of support provided to CoEs, the representative stated that *"Every tutor... is brought here [i.e., UG campus] and they meet with the university lecturers who are the subject leads and the chief examiners, and we support them by going through the course manual from lesson 1 [i.e., introduction] to assessment, to the last lesson"*. The UG representative revealed that the rationale for the capacity building is to ensure that tutors transfer the knowledge of effective teaching skills to student teachers to teach pupils in the future by using the right resources and teaching methods. Here, the UG representative explained that *"[Teaching the tutors is different from] when you teach normal university students, who you teach to understand the content, apply it, be able to exhibit understanding during assessment and probably when they go out to the world of work, they may fall on the knowledge and understanding gained. But when you are teaching a teacher, you are teaching the person to go through what the normal university students will go through and to understand how to use that understanding to teach younger pupils in the future and that is the dilemma of teacher*

⁴⁹ Namely, Accra College of Education, Enchi College of Education, Evangelical Presbyterian College of Education at Amedzofe, Peki College of Education, Gbewaa College of Education at Pusiga and Mount Mary College of Education at Somanya)

education". The representative also revealed that the UG has organized a GESI program for CoEs at Dodowa. GESI is an important area which forms part of the dimension of the new curriculum and therefore the training session was held to ensure its effective implementation. *"We've been supporting them [CoEs] in a number of ways and recently we just organized GESI [gender, equity and social inclusion] program at Dodowa for the colleges to ensure that they catch up with the issues of gender equity and social inclusion in the colleges"*.

With respect to the National Teacher Education Assessment Policy (NTEAP), the representative revealed that the rationale that led to the development of the policy was the change in assessment practices from a system based on summative assessment of student teachers work to a system which is driven by student teacher performance (Performance Based Assessment). According to the representative, the NTEAP is guiding colleges to help develop quality student teachers envisaged by the new curriculum and implementing the policy is not to help student teachers to pass well but to help them to understand the new world of teaching. The UG representative further explained that the NTEAP is particularly important because it is more appropriate to assess student teachers through projects and participating in research, group work, critical thinking, and individual presentations. He added, *"...If you teach students through projects, you can assess them through what? Projects... The target is to get our colleges to become immerse in terms of the authentic assessment, creative forms of assessment, innovative assessment based on the policy, by so doing our students will learn from a different culture, and practice in different ways that will conform to the new curriculum in the schools"*.

The representative also revealed that it was the responsibility of the UG to ensure that the CoEs implements the NTEAP correctly. Thus, according to the representative, prior to the emergence of the NTEAP, the CoEs had initially implemented the new B.Ed. curriculum which resulted in the new curriculum feeding into the old and traditional paper and pencil type of assessment. So, the UG stepped in to operationalize the NTEAP to ensure that the colleges implement and focus more on subject projects and subject portfolio. *"Now, we have the National Teacher Education Assessment Policy... We want the CoEs to implement and focus more attention on subject projects and subject portfolio. So, for now they do more of subject projects for IA to make sure that they can use the understanding to solve problems and they can think about problems that are [within] their subject areas and the courses they will be teaching"*. The representative also indicated that the NTEAP was developed by T-TEL and ensured that copies of the policy manual and all needed materials have been distributed to the affiliated universities to ensure the successful operationalisation of the policy.

In terms of PD sessions for tutors, the representative of UG indicated that the organise professional development sessions for tutors to explore interactive approaches to subject teaching. For effective PD sessions, the

representative revealed that, as the coordinator, he embarked on a tour with the provost to the affiliated CoEs to investigate and clearly understand their issues and challenges with the implementation of the new B.Ed. curriculum so that the university can support them appropriately. He narrated this by saying, *"I used to go round with the provost, to visit a number of the colleges to understand the issues and challenges they have with the curriculum implementation, and what the University of Ghana will need to address for them... Actually, that tour helped me to understand many of the issues we have [in the colleges] so that we can deal with them and support them"*. The representative revealed that aside the financial support from T-TEL, T-TEL supported the UG in organising a PD session by inviting external resource personnel from other universities to train tutors on the implementation of the NTEAP. *"...In one of our PD sessions which we organised in the previous semester, T-TEL invited Professor Abroampa, the Dean of Faculty of Educational Studies at KNUST to have a zoom presentation for our college tutors on the implementation of the National Teacher Education Assessment Policy"*. The representative revealed that the PD sessions is like a professional learning community where tutors who have their own master's degree in teaching specific subjects meet once a week to share ideas either about what they have thought, discuss how the teaching is going or about what they have prepared to teach and get feedback from their colleagues to be more innovative in their delivery. This he believes will instil amongst the student teachers a culture of continual learning as they observe the PD sessions amongst their tutors. In terms of positive impact, the representative certainly believes that the children in the basic schools will be the ultimate beneficiaries of the PD sessions because the philosophy, perspective, sociology, culture, and content understanding of student teachers is being modified thereby leading them to becoming quality teachers in future. The representative for UG reiterated the positive impact of PD sessions in colleges by asserting that *"...Due to the PD sessions, something innovative has happened in the CoEs and I know that T-TEL, MOE and GES are trying to replicate it in the secondary schools to achieve similar results"*. That notwithstanding, the representative suggested that there should be an opportunity for student teachers to observe tutors during PD sessions so that it becomes part of their practice in future. He argued that student teachers going through training at the CoE for 4 years is an *'initial teacher preparation'* because after college, they are going to practice the teaching profession for decades, and after many years, the knowledge gained from the college would become less relevant. To emphasise the importance of student teachers observing and practicing PD sessions in future, he rhetorically stated that, *"...will the knowledge given to them today be relevant in about 10 years to come?"*.

With respect to capacity building programme for college administration and non-teaching staff on the university's ITS portal, the representative stated that the rationale for the initiative was *"to enhance their understanding about the ITS system and reduce issues of irregularities connected with registration of students and how they can*

[successfully] navigate the university system, how they can do troubleshooting, and record students results after examinations". According to the representative, the ITS capacity building initiative was developed after UG identified weaknesses in the understanding of IT staff of CoEs on how to navigate the university's registration system. According to the representative, UG realized that many student teachers went through school for majority part of the semester without successful student registration. As a result, posting of examination results of unregistered student teachers became a big challenge, with many student teachers complaining of not receiving their exams results. After an internal audit by the UG, it was evident that the problem was lack of understanding of IT staff and assessment officers in navigating the ITS portal. Considering this, UG therefore organised a 2-day training for administration and non-teaching staff including assessment officers and IT staff in each CoE. The representative revealed that the capacity building program was organised every week of the previous semester with two days of training being dedicated to each CoE. In terms of funding support, the representative revealed that T-TEL was mainly the provider of financial and technical resources. Below is a direct quote from qualitative interview with the representative for UG: *"Once we develop our budget and submit the proposal to them [T-TEL] and it's manageable and reasonable, T-TEL will provide the funding".*

The representative revealed that UG received financial support from T-TEL to hold some PD sessions at AH Hotel in Accra. However, the UG recently experimented with leveraging on technology to hold the PD sessions on a subject basis via Zoom to reduce the cost of bringing tutors and college representatives together. Even though it was a success (as far as UG is concerned), as claimed by the representative, feedback gathered from tutors and participants

"I think UG have been heavily supported by T-TEL in terms of provision of instructional resources, provision of resources for training and financial and logistical support for all PD workshops. So, they will take a large chunk, the university will only focus on the resource persons, we will recruit from here or invite and administrative people who will support but the aspect of bringing together the tutors, accommodating and feeding them has always been supported by T-TEL". – Head, Department of Educational Studies, and Leadership (Coordinator for T-TEL), University of Ghana

from the CoEs suggested a great level of dissatisfaction which had to do with poor internet connectivity due to the distant location of some colleges. Also, they vehemently protested against using virtual means as they were denied some social benefits which they derived when they came together. However, due to the negative recounts on the use of technology as experienced by the CoE, the last subject-based professional development session was held at the university, and the cost was largely borne by the university and the CoEs as well.

In terms of whether UG has provided any form of support in implementing these policies and initiatives, the representative revealed that the UG had procured a new multipurpose heavy-duty printer due to the bulk nature of printouts needed for training programmes and workshops. In addition, the representative stated that UG organizes exams for the affiliated CoEs and recruits resource persons for capacity-building programs. He also revealed that the university intends to purchase a pickup truck to coordinate activities for the CoEs. In terms of challenges encountered during the implementation of policies and initiatives, the representative revealed that no significant challenges were encountered due to the tremendous support of T-TEL. He described the few nudges encountered by saying that *"...they are not really challenges; they are something to be expected"*.

- *"...the Dean and the Provost commissioned eight lecturers to use about one week to go into the [CoE] system. So, every lecturer was assigned to one college for the university to understand all the issues in every [affiliated] college. Every lecturer brought an audit report on the issues with student assessment, past examination results, and they have been given the resources to rectify them... It was based on the audit that we trained the IT staff and assessment officers"*.
- *"Now, we know the issues and we have dedicated one lecturer to every college. So, as soon as the students register, the lecturer will input the results for them. So, by the end of probably next academic semester, all past examination issues about our colleges [would have been worked on]... So, between UG and the CoEs, we understand the issues and we also understand the processes of remediation that we are all going through and that is an improvement"*.

In terms of changes in practices, the representative revealed that UG has improved upon the assessment component of the relationship between the university and affiliated CoEs. He indicated that UG has improved upon the assessment of student teachers in terms of the quality of questions, organisation of examination, and distribution of examination resources to the colleges. The representative also indicated that about a year ago, UG welcomed a new Dean, Provost, and Coordinator for the programme. To ensure effective monitoring and support for the CoEs, the university commissioned eight (8) lecturers and assigned them to each CoE for a thorough audit of their educational system to identify issues and challenges and how best the university can support them.

As stated earlier, this practice by UG to familiarise themselves with the CoEs resulted in identifying and working towards resolving major issues, such as irregularities in the student registration system and posting students' results. The representative stated that UG and the colleges are expecting that by the end of the next academic semester, all issues with student registration and entering of students' results will be resolved.

In terms of UG's experiences with working with the T-TEL/T-SHEL, the representative for UG stated that working with T-TEL has been a game changer in terms of transformations in teacher education. He added that T-TEL is reliable when the university needs financial and technical support for the effective implementation of policies and initiatives. Below are some verbatim insights from the interview with the representative for UG:

- *"In terms of logistical support, in terms of technical support, they are always there for us, and we can always count on them, and they have their office here, so they are readily accessible".*
- *"I think they have been phenomenal; they are the game changer when it comes to transformations in teacher education".*
- *"As for T-TEL, they are fantastic, they are doing awesome, great, they shouldn't leave Ghana now because when they leave, everything will reverse... With what they are doing, very soon, we will see changes in the country".*
- *"I have specialised in teaching education, and I know whatever we are doing is what we need in the education [sector] now. I like the fact that they [T-TEL] have started the change with teacher education. They didn't just start the change with curriculum, they started with teacher education and from there they are now coming to secondary education and the curriculum, which the teachers will be using to teach".*

3.13.8 Findings from University of Education, Winneba

UEW was established in September 1992 as a University College. In May 2004, the institution was upgraded to a full-status university after enacting the University of Education Act, Act 672. The UEW brought together seven diploma colleges as one institution. These colleges were the Advanced Teacher Training College, the Specialist Training College and the National Academy of Music, the School of Ghanaian Languages at Ajumako, the College of Special Education, Akwapim- Mampong, the Advanced Technical Training College, Kumasi, and the St. Andrews Agricultural Training College, Asante-Mampong. The UEW is the sole university in Ghana dedicated to teacher education. The university has a mission to train competent professional teachers for all levels of education as well as conduct research, disseminate knowledge and contribute to educational policy and development. The UEW aims to i) provide higher education and foster a systematic advancement of the science and the art of teacher education; ii) train tutors for CoEs and other tertiary institutions; iii) provide teachers with professional competence for teaching in pre-tertiary institutions; and iv) foster links between the schools and the community in order to ensure the holistic training of teachers. The UEW is one of the five public universities designated by GTEC to oversee the implementation of the 4-year B.Ed. programme of study in collaboration with their fifteen affiliated CoEs⁵⁰.

Insight from the representative of UEW revealed that the university had implemented three major academic policies and initiatives over the past 12 to 24 months. These policies and initiatives include a Leadership programme, mentorship programme and the Gender Equality and Social Inclusion (GESI) policy.

With respect to the Leadership Programme, the UEW representative revealed that the initiative was implemented and funded by UEW to build the leadership skills of head teachers and teachers at basic schools and SHSs to effectively take charge of mentoring student teachers to become quality and experienced teachers in the future. The representative stated that *“the leadership training workshop places the headmaster as the one who directs affairs in molding our students to become good teachers”*. According to the UEW representative, the university oversees student teachers going for mentorship or internship in the basic and senior high schools, so they designed the leadership training programme to build the capacity of the heads of schools to lead and guide the mentoring

⁵⁰ The 15 CoEs are Ada College of Education; Akatsi College of Education; Presbyterian College of Education; Bagabaga College of Education; Bia Lamplighter College of Education; Komenda College of Education; Mampong Technical College of Education; Methodist College of Education; Nusrat Jahan Ahmadiyya (NJA) College of Education; Agogo College of Education; Presbyterian Women’s College of Education; S.D.A. College of Education; St. John Bosco College of Education; St. Louis College of Education; and Wiawso College of Education.

process to achieve the objectives of the university. *"We send our students to basic and senior high schools for an internship programme. The heads of the schools are our partners, and they mentor our students, so we run leadership workshops for them". - Deputy Registrar, Institute for Teacher Education and Continuing Professional Development*

In terms of the mentorship programme, the representative revealed that the programme was implemented by the UEW to assign experienced mentors (who are professional teachers in schools) to mentor student teachers in teaching practice, assess their performance during their teaching practice, monitor their progress, offer the necessary support, and train student teachers to adequately meet the standards of a professional teacher in Ghana. The representative explained this by stating that *"our business is to train teachers... So, [through the mentorship programme], we emphasize on the practical skills that the student teachers should have; how to organize the classroom, and how to put in strategies when your class is not performing as they should. We organize workshops for selected teachers for basic and senior high school teachers and we tell them to go through what we call the 'yellow book.' Yellow books are assessment record books where the student teacher's internship progression on how he/she learns to teach is recorded".* According to the representative, the mentorship programme was introduced and funded by the UEW as well as the Carnegie Corporation of New York. *"The university supported the programme by training lecturers and other stakeholders on leadership and mentorship and by organizing school-based workshops for schools on leadership and mentorship".* The university funds the programme through the development of leadership and mentorship manuals, training of head teachers of affiliated SHSs, supervision of student teachers, and payment of allowance to supervisors. The representative indicated that the Carnegie Corporation of New York funded the development of the yellow books (internship record books).

Selected head teachers and teachers from the partnership schools were taken through training on mentorship and leadership programme. Selected lecturers who will supervise student teachers' teaching practice also participated in the training. During student teachers' practice in partnership schools, lecturers from UEW visit them regularly to observe their lessons and offer them the needed support. *"We have developed a system where the university trains head teachers and teachers at partnership Schools and offer them the needed support to impact knowledge to students who come to their Schools for internship program. Supervisors [lecturers] from UEW visit student teachers to observe their lessons and offer them with the necessary support".*

With respect to the GESI policy, the representative for UEW indicated that the policy seeks to create a framework that would assist the university and its affiliated colleges in ensuring gender equality in all staff and student activities, equitable participation, and appropriate representation of all persons in all decision-making processes. Specifically, the policy commits the university to apply the principle of gender equality and equity in staffing; training and development; student enrolment; and provision of equal opportunities in teaching, learning, and research. *“The Gender Equality and Social Inclusion policy is a very good innovative policy that seeks to break the gap between gender and social disadvantage. So, we have been working with the policy. GESI is not only focusing on gender but it also focusing on the inclusion of all wider groups”*. The representative stated that the GESI policy was initiated and implemented by UEW with tremendous support and sponsorship from T-TEL. Insight from the UEW representative indicated that T-TEL sponsored the training of staff of the university and fifteen (15) Colleges of Education and developed GESI implementation manuals for UEW and the CoEs.

The representative explained that through the support of T-TEL, a team of experts were put together to develop the GESI manual. With support from T-TEL, a two-day workshop was held for a nine-member GESI committee (selected staff of UEW and the affiliated CoEs) to monitor, evaluate, and act as capacity-building teams and regularly report to UEW. The facilitators of the workshop were from T-TEL (Key Advisors on GESI), and they provided the participants with the opportunity to be acquainted with the National GESI Strategic Plan as well as the GESI implementation procedures in the CoEs.

In terms of challenges, the representative for UEW revealed that the university was mainly faced with issues such as inadequate funds and teacher attrition or transfer. The representative explained that UEW was at times challenged with inadequate funds to organize the training for head teachers and teachers involved in the program. He explained that some of the SHS are in different regions, and sometimes assigning supervisors to those schools becomes a challenge due to inadequate funding to cater to the transportation, accommodation, and logistics for the supervisors (lecturers).

On teacher attrition, the representative explained that teachers in partner schools who have been trained as mentors are sometimes transferred to different schools, vacate their posts, or resign from the teaching profession.

According to the representative, this affects the programme financially because it creates a gap in mentors with the need to train additional teachers. This affects the quality of teaching and learning and the finance of the institution. Inserted is a quote from the representative during the interview.

On the positive impact of the policies and initiatives, the representative revealed that the Leadership and Mentorship programmes have equipped school heads with the requisite skills to manage human and material resources in their schools. He added that the programmes have resulted in making heads of schools role models for teachers. The representative also stated that the programmes have made the teaching profession attractive because teachers who have been taken through the training programmes exhibit a high level of professionalism in their work. Student teachers have a

"I think one problem we have is teacher attrition because if we train, we do a selection of tutors and teachers from various schools all over the country. But the attrition is so much that some of the trained teachers are transferred to another school and others also just leave their post. So, even though we have partnered with the school, we don't allow anybody at all [who have not been trained under the programme] to be mentoring our students". – Representative for UEW (Deputy Registrar, Institute for Teacher Education and Continuing Professional Development)

change of attitude because the mentorship policy gives room for students to learn about their code of conduct of the teaching profession and practice.

In terms of the GESI policy, the representative indicated that the policy had had a significant impact on the nation. He explained that the policy has resulted in sensitivity to gender issues and commitment to address gender imbalances in staff employment and student enrolments. The representative added that there have been some improvements in terms of equal value for men and women in all aspect of the UEW's work and provision of equitable opportunities for development. Here is verbatim from the representative for UEW – *"there is respect for all students and teachers, and gender issues are considered in the appointment of teachers to key positions in the school, the leadership of the CoEs, opposes discrimination on the grounds of gender, ethnic or national origin, employment status, special needs, family status, marital status, sexual orientation, gender identity, age, religious and/or ethical beliefs. This policy requires that all selections, appointments, promotions, and evaluation processes should be based on an impartial assessment or merit"*.

On the changes in the practice of the UEW, the representative revealed that there had been a change in attitude of head and their assistants in terms of offering support to student teachers as a result of the mentorship and

leadership programme. Thus, head teachers are now more resourceful and developed problem solving skills. *“Head teachers are now problem solvers and role models for student teacher”*. The representative also stated that the UEW has introduced a new Master’s degree programme in mentorship and supervision due to the high demand by other professionals to study mentorship.

The survey asked the UEW representative to share the university’s experience with working with the T-TEL. According to the UEW representative, working with T-TEL has been great for him personally and has built his capacity to function effectively and efficiently in his line of work at the university. Below are some quotes from the representative on UEW’s experience in working with T-TEL:

- *“Working with T-TEL has been great as we have learned a lot of things from their training. T-TEL has impacted positively in my academic life and has also helped me to function as expected of me in this University. T-TEL always assembles a team of experts to take us through a series of programs to gain experiences to function in our work. Through the support of T-TEL, the SHS Curriculum is developed, and T-TEL provides funding and technical support for projects like the T-SHEL projects. For me, it was a great opportunity working with T-TEL and I will always work with them when the opportunity comes. T-TEL has a team of experts to provide technical support for the development and implementation of good policies”*.
- *“For me, I know T-TEL has come to identify the problems in our educational system and they have brought in funds to build capacities, that is both human capacity and capacity in logistics to be able to overcome the challenges in our educational system. So, [for example] if we are talking about curriculum deficit, T-TEL will bring people together to develop a policy or develop a manual to fill that gap. If they feel that, teachers are not trained well or better enough, they bring in funds to train them to attain a certain standard. I think T-TEL has been useful because they are always looking at where the gaps [in our educational system] and they are providing solutions to bridge those gaps”*.
- *“Oh, for me it was an eye opener because they always look for people who can do the job for them and because their financial rewards were also good, I don’t know I cannot talk about how it was also good because they also attracted the best brains to come together to draw policies and brings a lot of interventions into the educational system which have benefited the nation. And I think if they have not come, and the colleges were transformed into tertiary colleges they will have been experiencing horrified teachers being called into colleges of education. I think they came, and they put in the interventions to transform quite a lot of attitude change to the things*

that they have done so well. They brought the idea that led to documenting our policies. They usually have manuals for colleges or let's say universities, they brought the idea".

3.12.9 Findings from Kwame Nkrumah University of Science and Technology

KNUST was originally founded as Kumasi College of Technology by a Government Ordinance in 1951 and was upgraded to a full university in 1952. It is a distinguished educational center that excels in all academic disciplines and leads West Africa's efforts to enhance technology. In 1951, the Kumasi College of Technology admitted its first students into the engineering faculty. Even though the university started off as an institution to train teachers over 70 years ago, the late president Dr. Kwame Nkrumah changed the institution into one which focused on technology and all trainees student- teachers who were present at the time were enrolled at UEW until the recent development about 6 years ago where the faculty of educational studies was re-introduced to the university due to the need to strengthen the Science, Math and Technology Education by the Ministry of Education. The faculty of educational studies through its Department of Teacher Education aims to train teachers who can work in 21st-century learning environments and promote learning among students from all backgrounds. Proceeding the approval on the rolling out of the 4-year B. ED programme by the National Accreditation Board in July 2018, KNUST was one of the five (5) public universities assigned with the task to support colleges of education to implement the 4-year B. ED program which commenced from October 2019. The university was further affiliated with five (5) colleges of education; Tamale College of Education, Akrokerri College of Education, St. Joseph College of Education-Bechem, Evangelical Presbyterian College of Education- Bimbila and Wesley College of Education- Kumasi.

Insight from the representative of KNUST revealed that, the institution has implemented five (5) policies and initiatives. The policies include NTEAP, the Supported Teaching in Schools (STS), the School Partnership Policy (SPP), GESI and PDS.

According to the representative of the institution, the rationale behind the 4-year B.Ed. programme which birthed all these policies and initiatives as stated earlier, was to correct over century's anomalies with teacher education here in Ghana. The representative revealed that, since the establishment of the first teacher education college, which is the Presbyterian College of Education-Akropong in 1848, there hasn't been any reform solely directed to teacher education. Hence the need to review the delivery of teacher education in Ghana to prepare student-teachers for the 21st century classroom teaching and learning. Here is how the representative describe the situation.

"So, I will say teacher education is about 169 years in Ghana. Now over this period until just about 4 years ago when we had this reform, we never had any reform on how teachers were trained in Ghana".

With respect to NTEAP, the representative indicated that the rationale that resulted in the development of the policy was to equip the teachers of the B.Ed. with the requisite knowledge, skills, principles, and competencies, to demonstrate at the end of the programme the values which is tied to the National Teaching Standard. The policy on how student-teachers were assessed was to ensure the achievement of the Teacher Education Reform. According to the representative, the NTEAP represents a fundamental shift in assessment practices, which is from a system based on summative assessment of student-teachers work to one which is driven by student-teachers performance. This will yield improvement in students' learning outcomes and life chances as narrated in his statement... *"So, what that means is that by the time these student teachers go through the 4-year B. ED programme, their performance will be assessed by the standard prescribed by the National Teachers' Education policy. They are also expected to demonstrate the national teaching standards to ensure that by the time student-teachers complete the 4-year B. ED they will be in the capacity of demonstrating competencies, skills and values as expected to enable them function well in the 21st century classrooms we find in Ghana"*. NTEAP was initiated by NTC, and supported T-TEL as revealed by the KNUST representative that *"T-TEL has been the center of it though they are leading from behind you know, but their support has been enormous*.

Concerning the STS, the representative explained that the rationale that led to the development of the policy was to help student-teachers apply and develop skills, knowledge and understanding acquired in their college-based training in schools with the support of mentors and tutors. Here is an excerpt from the representative. *"The school partnership policy also defines what district education directorate and which schools qualify within a particular district and the teachers who qualify to be mentors to the student-teachers from the CoEs"*. The KNUST representative further indicated that the STS policy was initiated by NTC and with technical and financial support from T-TEL. The KNUST representative further indicated that the STS has a link with the NTEAP in that it also shows how the STS should be assessed.

Regarding GESI, the KNUST representative indicated that the rationale that led to the development of the initiatives was to ensure that teaching and learning in colleges is inclusive, and college tutors are promoting and using GESI responsive pedagogies in their lesson.. This he believed when implemented will serve as a model for the student-teachers. *The Gender Equality and Social Inclusion is supposed to ensure that in the training of teachers, we promote inclusivity, we ensure that all student-teachers irrespective of their background, religion, creed, sex, are all adequately catered for through the use of GESI responsive pedagogies and assessment strategies. This will result*

in the realization of such models when they find themselves in these basic schools". GTEC and T-TEL supported this initiative through the provision of funds for the GESI capacity building workshop.

With regards to PDS, the KNUST representative indicated that the rationale that resulted in the development of the initiative was to support college tutors to improve their pedagogical skills, which will reflect in their lesson delivery. He indicated that PDS was introduced and supported by T-TEL.

Insights from the KNUST representative reveal some positive impacts of the above-mentioned policies in the colleges of education. First, the KNUST representative indicated that the B.Ed curriculum and related policies implemented have led to an improvement in teaching and learning in the colleges of education in Ghana. *"Once you find yourself in the college of education, you become their trainee. The colleges have impacted a lot of student-teachers. The impact of the B.Ed. has also reached the basic schools even though the first batch of students just completed. This is because as part of the STS, we train headteachers and selected teachers from partner schools that the colleges send their students to practice teaching.."* We can also see that; the various interventions have contributed to the increase in attendance at PD sessions. Initially, attendance was not encouraging but now its importance has been realised by the tutors. *"I even forgot to mention PD sessions, tutors are supposed to be taken part in PD sessions and over the years attendance has increased significantly when it comes to participation as it was, you know couple of years ago participation in PD sessions as you see it now and PD sessions has really been helpful".*

In terms of experience working with T-TEL, the representative expressed how great the experience has been as T-TEL provided him the avenue and opportunity to learn and also implement things he studied for his PHD as a curriculum development expert. He shared his personal experience on how working with T-TEL had allowed him to fully implement the changes he desired to see in the education system in Ghana. This further opened other opportunities such as his current position as a founding Dean in the development of the faculty of educational studies in KNUST. Due to the experiences, he had with T-TEL, the representative gave his assurance of being available anytime T-TEL calls on him. Below are some of the experiences the representative shared about working with T-TEL.

"I will say T-TEL helped me to discover the other part of me. My association with T-TEL has been a good one and I want to be associated with the good changes in education in the country. The development of the four-year B. ED got me involved with T-TEL. I was part of the development of the 4-year B. ED program and the changes in the SHS

curriculum running down to the basic schools. Now I have seen and gone through the practical aspect of it. I led pedagogy team for the CoE, the development of the core courses, the development of the PD manuals and I must say that I am very happy anytime T-TEL calls. We would have been highly conceptualizing issues but with the coming in and the help of T-TEL, most of these things have seen the light of day. The support of T-TEL has not dwindled, and I mean the passion has been there. I will be bias if I want to talk about T-TEL. I will work with T-TEL again because of the opportunities. Working with T-TEL has been a good one as it's a learning curve to me. I have been deeply involved to see some of the changes I had wanted to see in education in Ghana".

3.12.10 Findings from University of Cape Coast

UCC was established in October 1962 as a University College affiliated with the University of Ghana, Legon. On 1st October 1971, the University College became an autonomous institution with the authority to confer its degrees, diplomas, and certificates by an Act of Parliament - The UCC Act, 1971 [Act 390]. The first Act was subsequently replaced with the UCC Law, 1992 [PNDC Law 278]. The existing Law (P.N.D.C.L. 278) is under review after being in force for 25 years. The University was established with an original mandate to train graduate professional teachers for Ghana's second-cycle institutions and the MoE to meet the manpower needs of the country's accelerated education program at the time. This original mandate was revised in the mid-1990s and led to the university expanding and diversifying its programmes in response to changing needs. In 1973, the then 'School of Education' was changed to 'Institute of Education' to function as a liaison between the universities, the MoE, and all agents of education in the interest of the continual improvement of teacher education and training in Ghana. UCC is one of the five public universities designated by GTEC to oversee the implementation of the 4-year B.Ed. programme in the colleges of education⁵¹.

Insight from the representative for UCC revealed that UCC has overseen the implementation of four initiatives, namely development of Teacher Professional Learning (TPL) manuals, Tutor Professional Learning Community (TPLC) sessions, STS handbook and training of STS coordinators.

With respect to the development of TPL manuals, the representative revealed that UCC developed TPL manuals on different subject areas, i.e., over 40 courses. The representative indicated that the development of the TPL manuals was executed by selected tutors from their 14 affiliate colleges and supported by subject-specific coordinators from UCC's Institute of Education departments. *"The TPL manual or handbook was developed by tutors from our affiliated CoEs... and supported by about coordinators from the university with expertise in the course areas"*. According to the representative, the authors of the TPL manuals were grouped according to subject specialization and the course coordinators from the university were assigned to each subject group to provide technical support

⁵¹ Fourteen colleges are affiliated to UCC. These are; Foso College of Education; St. Francis College of Education, Hohoe; OLA College of Education, Cape Coast; Kibi College of Education; Holy Child College of Education, Takoradi; St. Teresa's College of Education, Hohoe; Jasikan College of Education; Berekum College of Education; St. Monica's College of Education, Mampong-Ash.; Atebubu College of Education-Primary; Offinso College of Education; S.D.A. College of Education, Agona-Ash.; Abetifi Presbyterian College of Education; St. Ambrose College of Education, Dormaa-Akwamu.

and advice. The writers used the knowledge, experience and skills gained from the TPL Manual framework to produce the manuals aligning them to the NTS, TECF and ensuring they are GESI and ICT responsive.

With respect to the TPLC sessions, the representative for UCC revealed that the university and their affiliated colleges run a slightly different approach compared to colleges affiliated to the other four universities. He indicated that they organise weekly TPLC sessions rather than weekly PD sessions. The representative explained that the TPLC sessions are dedicated periods in the CoEs' weekly where all tutors come together and work collaboratively to improve the practice of teaching.

With respect to STS handbook and training of STS coordinators, the representative for UCC indicated that they received financial and technical support from T-TEL to develop STS handbooks for student teachers in year 4 in their affiliate colleges. According to the representative, the STS handbook focuses on macro teaching and reflection on macro teaching. In terms of the training of STS coordinators, the representative revealed that UCC has trained STS coordinators on macro teaching practice and equipped them with knowledge and skills on ensuring successful rollout of the macro teaching (off-campus) implementation and mode of using the rubrics for assessment and observation. STS Committees, link tutors/supervisors, mentors and mentees have also been trained on macro teaching, equipping them with knowledge on the new practices and requirements of macro teaching, refreshed their mind-set on the mode of assessment and delivery.

In terms of experience in working with T-TEL, the representative for UCC was full of praise for influence of T-TEL on improving teacher education in Ghana. The representative stated that *"I know T-TEL is an organization focuses on improving teaching and learning... they have been extremely influential in providing support for teacher training, secondary school curriculum development, and material development"*. According to the representative, no significant challenges were encountered in the implementation of the initiatives.

The representative further stated that working with T-TEL has been effective because they set realistic and achievable goals. *"They have their standards and benchmarks they want to achieve, so what I will say is that they normally will want you to work to achieve their goal but sometimes they can adjust to organizational goals if it is in line with their goals. that is what I will say"*. On whether UCC would want to work with T-TEL again in future, the representative indicated that UCC is ever ready to work with them again.

3.12.11 Findings from University of Development Studies

In 1992, the Government of Ghana established UDS with the aim to accelerate development in the then three regions in the north of Ghana. The programmes designed in the faculty of education are geared towards responding to the ongoing teaching and learning, research, and dissemination in the country. The faculty aims at meeting the nation's developmental needs, educational quality, administration, and management challenges in education through the courses offered. UDS is one of the five mentoring universities in Ghana. The university is mentoring 6 colleges of education. These are; Tumu, McCoy, Dambai, Gambaga, St. Vincent and Al-Faruq Colleges of Education.

Insights from the representative of UDS revealed that the university together with UG, KNUST and UEW with support from T-TEL developed PD and STS manual for their mentoring universities. The representative of UDS also indicated that they conducted training for PD coordinators and STS coordinators. He further revealed that with support from T-TEL, they worked with their affiliate colleges to train headteachers and teachers of basic schools that allow student teachers to visit as part of the STS.

The representative of UDS also revealed that the university with support from T-TEL developed and printed a complete set of Arabic language year 1 to 4 course manual and PD handbooks for Al-Faruq College of Education. Qualitative findings also revealed UDS with support from T-TEL have been able to produce Course Manuals and Tutor Professional Development Handbooks for Arabic Language Studies.

With regards to the area of GESI, the university has been able to develop a sexual harassment policy. The rationale which led to this development was from the viewpoint that, the issues of gender ought to be given prominence. T-TEL fully supported the university to implement "a 16-days of activism campaign on gender-based violence⁵²". Here is a quote from the representative of UDS *"I can talk of issues of GESI (Gender Equality & Social Inclusion). I can mention in that direction that UDS has even developed a Sexual Harassment policy. And I'm sure it was in line with the general thinking that issues of gender ought to be given prominence"*.

The representative of UDS indicated that the above activities have led to a general change in the pedagogical skills of college tutors. The representative explained that teaching and learning has become more of student centred, he indicated that tutors are now using group work, giving assignments, and incorporation of GESI in their lesson.

⁵² The 16 Days of Activism against Gender-Based Violence is an annual campaign that begins on 25 November, the International Day for the Elimination of Violence against Women and runs through International Human Rights Day on 10 December.

“Generally, the pedagogical skills have also changed. This time it is more student-centred... a lot of group work, a lot of assignment, there is a lot of gender equality incorporations as well”.

With regards to the universities relation and experience working with T-TEL, the representative revealed that T-TEL has *“lived beyond my expectation”*. This the representative attributed to the massive transformation happening in the colleges of education. He described T-TEL as an organization that is literally playing the role of a “father” to the colleges. The representative highlighted that there has been an improvement in the educational background of tutors. The representative revealed that T-TEL has positively impacted on college tutors due to the fact that the college tutors are always trying to stay up to date with new trends of teaching and learning in the 21st century. According to the representative, all these changes have been possible due to T-TEL. The representative further shared there have been transformation with the attitude, behaviour, perception about the teaching profession by student-teachers which is due to their access to the NTS. The representative described the NTS as a “bible”. He further shared that he hopes to see such transformation in the SEIs. Below are some of the quotations from the representative shared about T-TEL.

- *“These days when you go to the Colleges, you will see PhD holders, you will see M.Phil. holders by research... you will see tutors are up to date with trends of teaching and learning in the 21st century”.*
- *“With student- teachers, there has been a change in their attitude, behaviour, perception about the teaching profession due to the National Teaching Standards”.*
- *“Our hope is that as TTEL is venturing into secondary education, experiences in building the COE will be translated into the secondary education”.*

With respects to the representative experience working with T-TEL, the representative described the experience to be “wonderful”. According to the representative, *“Working with T-TEL has been wonderful. I have learned a lot from them. T-TEL do not joke with their timelines, deliverables, setting targets and the execution of their target”*. The representative shared his personal experience of been exposed to the current trend of teaching and learning due to working with T-TEL. The representative shared the training opportunities received from T-TEL such as his participation on an online course from the University of Amsterdam during the COVID period. According to the representative, almost all college tutors have received training on the use of online tools.

4.0 DISCUSSION & IMPLICATION OF FINDINGS FOR POLICY AND PRACTICE

4.1 Discussion

This section of the report discusses the key findings and recommendations from the findings in the 2022 assessment. The discussions are organised based on the key indicators measured and tracked from the baseline assessment. The discussions synthesise the main results and provides a perspective of what should be done moving forward to ensure the effective implementation of the interventions.

Subject knowledge and 21st century skills

Proficiency in subject knowledge and 21st century skills has not significantly improved from the 2021 annual survey. However, the results suggest that category A schools perform better than category B and C schools. Given that teachers did not improve in demonstrating NTS, GESI, and best pedagogical practices, the key distinguishing feature that has propelled the performance of category A schools is the availability of teaching and learning resources as well as infrastructure facilities compared to the other school categories. Alumni and PTA contributions have played a significant role in achieving this feat.

The responsibility of the current situation cannot be blamed wholly on the SEI leaders and teachers alone. Some students going to the SEIs are coming with poor grades. Their performance has led to many schools establishing remedial and extra classes to enable such students to catch up with their colleagues. This also suggests that instead of focusing on the SHS-level appropriate syllabus, teachers have had to revert to basic school-level content. This leads to more work for the teachers and an inability for them to complete the syllabus based on the limited time. Even though some school stakeholders blame the Free SHS policy for the current situation due to the increased enrolment, the results from studies by the OECD⁵³ in some developing countries do not support this claim. To establish the veracity of this claim by stakeholders, a Free SHS impact assessment would need to be carried out.

⁵³ OECD, PISA 2018 Results (Volume 1): What Students Know and Can Do

Teacher motivation and retention

About nine out of 10 teachers in SEIs lack motivation in the teaching profession. More than half of the teachers would leave the teaching profession given a better opportunity. The results are consistent with other studies, which found that few teachers intend to stay in the teaching profession⁵⁴.

This low level of motivation among teachers has implications for students' learning outcomes. To motivate teachers a number of strategies may be adopted. Studies on teacher motivation in Ghana identified salary, working conditions, incentives, medical allowance, security (future pension benefits), recognition, achievement, growth, students' indiscipline, school policy, and status as important motivation factors for teachers⁵⁵. The findings from the survey also show that teachers believe there has been a significant increase in their workload because of the admission of more students coupled with the increasing number of extra classes and remedial sessions for low performers while their incomes remain the same. Others have also suggested that their disinterest in the teaching field has been elevated by the lack of essential teaching and learning materials for teaching.

Demonstration of core competencies in the NTS

The NTS is designed to improve the quality of teachers' delivery and students' performance and should therefore be used as a reference tool⁵⁶. The Standards are clear expectations of skills that teachers should be able to demonstrate. Unfortunately, only 3 percent of the teachers in 2021 and 2022 understand and are demonstrating the NTS. The results suggest that despite about six out of ten teachers being aware of NTS, just about a third have electronic or hard copies. Even for those who have copies, many do not demonstrate the standards in their teaching. The results suggest the need for intensified education on the tenants of the NTS among teachers in SEIs in Ghana to improve learning outcomes for students.

Use of digital technology by teachers to enhance learning

The use of digital teaching and learning tools in classrooms increases student engagement, helps teachers improve their lessons, and facilitates personalized learning. It also helps students build essential 21st century skills. Using technology in teaching and learning increases collaboration and communication in the classroom, provides

⁵⁴ Spio SY (1999). High labour turnover among graduate teachers: Causes and solution. A dissertation presented to the School of Administration, University of Ghana, for award of MBA.

⁵⁵ Seniwoliba A. J. (2013). Teacher motivation and job satisfaction in senior high schools in the Tamale metropolis of Ghana. Merit Research Journal of Education and Review, 1(9), 181-196

⁵⁶ MOE (2017). National Teachers' Standards for Ghana: Guidelines. Accra: Ministry of Education (Ghana), Available online at www.t-tel.org/hub.html

personalized learning opportunities, sparks curiosity in the students, and improves teacher productivity and efficiency⁵⁷. Despite all these benefits, none of the teachers were observed appropriately using digital technology to enhance their teaching. The findings suggest that though many teachers are expected to incorporate ICT and digital technology in their teaching, many have not received adequate training in that respect.

Demonstration of GESI-responsive pedagogy

The results of the study show that less than one-tenth of teachers in SEIs demonstrated GESI-responsive pedagogy in both the 2021 and 2022 surveys. The NTS requires that every teacher is able to ensure equity and inclusion in their classroom, with emphasis on girls and other vulnerable groups⁵⁸. This is currently not happening in SEIs in Ghana, as seen from the study.

Understanding and implementation of roles and responsibilities by senior management

The SEI leaders are mandated to ensure effective governance and administration of secondary schools. The job of the governing body is to promote the best interest of the school to ensure that the learners at the school receive the best education possible. The leaders in SEIs are also expected to collaborate to organise and manage the school activities in an effective and efficient way.

School heads lead the academic activities of the school, provide leadership, oversee the implementation of policy directives, report on the performance and progress of the school to the school board, regional education office, and the GES national office. In addition, the school head establishes school-community relationships and organises school-based in-service training for staff. These activities greatly promote teaching and learning. The survey findings show a significant improvement in the number of school leaders demonstrating an understanding of their roles and responsibilities. This was evident in the schools by the increased rate of supervision among school leaders and the increased number of remedial interventions to support student performance. The GES and MoE are commended for this feat owing to the number of capacity training sessions that were ongoing at the time of data collection across the country.

⁵⁷ Fard, A. (2022). Technology in education: How technology has benefited education.

⁵⁸ MOE (2017). National Teachers' Standards for Ghana: Guidelines. Accra: Ministry of Education (Ghana), Available online at www.t-tel.org/hub.html

Guidance and Counseling services

The findings from this baseline survey show that fifty-three percent of the SEIs provide career guidance while about a third provide academic counseling. Also, less than five percent of the SEIs provide psycho-social and emotional counseling services to students.

Links with industry and tertiary institutions

Industry depends on SEIs to provide well-educated and trained personnel, while SEIs depend on industry to provide employment, guidance as well as financial support. This study found that less than 10 percent of SEIs have links with industry.

Similarly, links with tertiary institutions are also beneficial to SEIs. These benefits include professional development, access to technology, and information to enhance teaching and learning. However, only a few SEIs have formal links with tertiary institutions.

4.2 Recommendations for policy and practice on secondary education

Based on the findings of the study, the following recommendations are made for policy and practice.

Subject knowledge and 21st century skills

- Teaching and learning of mathematics and reading need a critical review to improve the students' demonstration of subject knowledge. Subject associations and GES can spearhead the training of teachers in these two areas.
- 21st century skills are best demonstrated through practical activities. The education system needs to explore creative and innovative solutions that allow the harnessing of national and international resources to promote the acquisition of 21st century skills in SEIs.
- MoE and other educational stakeholders should revise the BECE requirements to enable students who fail to be retained for an additional year to re-sit or be enrolled in a remedial programme to improve their performance before enrolling at the Senior high level.

Teachers

- The NTS handbook should be supplied to SEI teachers (both hard and soft copies). Professional learning sessions should be organised in the schools to promote the discussion, understanding and use of the NTS during lessons.
- SEI teachers should be trained in the use of GESI-responsive pedagogy in their lessons. This should be done through weekly professional learning sessions in the schools. GES and MoE should develop a National SEI GESI Strategy, which can form the basis for the development of individual SEI GESI action plans.
- Teachers should be trained with respect to the 21st century skills, ICT, and digital technology so that they will be able to incorporate them into their teaching.
- GES and MoE should make attempts to improve SEI teachers' conditions of service. In this regard, there should be a review of the salary and conditions of service of SEI teachers.

School management

- GES should resource the schools to set up guidance and counseling units. The schools should also be oriented on the importance of partnership and cooperation particularly with industry and tertiary institutions.

- Schools should be encouraged to provide an inclusive, gender-sensitive environment for staff and students. Regional, Metro, municipal and district directors of education should supervise the creation of this environment for the SEIs.
- Textbooks should be reviewed to ensure that they are GESI compliant.

The results presented should be understood within the context that the major interventions to improve the quality of SEIs are yet to be implemented as the development of the secondary education curriculum is still in the finalization phase. The recommendations provide critical issues which need to be addressed as part of the intervention programme to ensure the improvement and outcome of students' education.

ANNEX

Annex 1: Indicator scoring rubrics



TSHEL Indicator
rubrics.rar

Annex 2: Data collection tools



Pilot Study Report -
T-SHEL (1).docx



Instruments for
T-SHEL Annual Survey

Annex 3

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 C. 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 c 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.

Table A3.1 Student teachers by type of institution and level

	Year 1	Year 2	Year 3	Year 4
KNUST	11.02	29.13	37.01	22.83
UG	21.13	36.62	26.06	16.20
UEW	19.77	27.51	29.23	23.50
UDS	13.86	32.83	31.63	21.69
UCC	8.03	33.44	40.47	18.06
KNUST	11.02	29.13	37.01	22.83

Table A3.2 Reading literacy proficiency level by region

Region	Highly proficient	Proficient	Approaching proficiency	Developing proficiency	Emerging
Central	22.9	22.1	19.1	17.6	18.3
Western	16.7	21.7	16.7	18.3	26.7
Volta	14.6	12.5	23.6	25.0	24.3
G. Accra	9.4	17.7	23.5	23.5	25.9
Eastern	7.7	13.0	23.1	26.6	29.6
Ahafo	4.2	0.0	8.3	20.8	66.7
Oti	4.2	12.5	29.2	16.7	37.5
U. East	3.6	13.1	22.6	29.8	31.0
Ashanti	2.8	14.4	24.1	26.9	31.9
Bono	0.0	8.3	16.7	26.7	48.3
Bono East	0.0	2.1	12.5	22.9	62.5
Northern	0.0	4.6	13.8	24.8	56.9
U. West	0.0	8.3	25.0	33.3	33.3
Western North	0.0	11.1	5.6	33.3	50.0

Table A3.3 Reading literacy proficiency level by school

Name of school	Highly proficient	Proficient	Approaching proficiency	Developing proficiency	Emerging
Wesley Girls Senior High, Cape Coast	83.3	8.3	8.3	0.0	0.0
Mawuli School, Ho	76.9	7.7	0.0	0.0	15.4
Fijai Senior High	75.0	25.0	0.0	0.0	0.0
Aburi Girls Senior High	58.3	25.0	16.7	0.0	0.0
Winneba Senior High	58.3	41.7	0.0	0.0	0.0
Ghana National College	50.0	33.3	8.3	0.0	8.3
Accra Academy	41.7	8.3	33.3	16.7	0.0
Aggrey Mem. A.M.E. Zion Snr. High	33.3	41.7	8.3	16.7	0.0
St. Paul's Senior High, Denu	33.3	8.3	41.7	16.7	0.0
St. Peter Senior High	27.3	18.2	36.4	9.1	9.1
Assin Manso Senior High	25.0	33.3	33.3	8.3	0.0
Kpando Senior High	25.0	58.3	8.3	8.3	0.0
Nungua Senior High	25.0	33.3	25.0	16.7	0.0
Awudome Senior High.	16.7	16.7	33.3	16.7	16.7
Kumasi Senior High/Tech	15.4	23.1	53.9	7.7	0.0
Adu Gyamfi Senior High	9.1	0.0	18.2	45.5	27.3
Akatsi Senior High/Tech	8.3	16.7	16.7	25.0	33.3
Amaniampong Senior High	8.3	25.0	16.7	41.7	8.3
Anglican Senior High, Kumasi	8.3	58.3	25.0	8.3	0.0
Asesewa Senior High School	8.3	16.7	25.0	33.3	16.7
Awe Senior High/Tech.	8.3	8.3	41.7	16.7	25.0
Bueman Senior High School	8.3	16.7	50.0	8.3	16.7
Ejisu Senior High/Tech	8.3	25.0	41.7	16.7	8.3
Kpando Bishop Herman College	8.3	8.3	50.0	25.0	8.3
Kukuom Agric Senior High	8.3	0.0	0.0	41.7	50.0
Kwahu Ridge Senior High School, Obo-K..	8.3	0.0	0.0	16.7	75.0
Navrongo Senior High Senior High	8.3	8.3	25.0	41.7	16.7

Shama Senior High	8.3	50.0	16.7	16.7	8.3
Wbm Zion SH, Old Tafo	8.3	33.3	50.0	0.0	8.3
Zuarungu Senior High	8.3	33.3	33.3	25.0	0.0
Adanwomase Senior High	0.0	7.7	15.4	23.1	53.9
Ameyaw Akumfi Senior High/Tech.	0.0	0.0	0.0	58.3	41.7
Anfoega Senior High	0.0	8.3	16.7	50.0	25.0
Asawinso Senior High	0.0	8.3	0.0	33.3	58.3
Atebubu Senior High	0.0	8.3	16.7	8.3	66.7
Benkum Senior High School, Larteh	0.0	16.7	8.3	16.7	58.3
Berekum Senior High	0.0	8.3	33.3	25.0	33.3
Bimbila Senior High	0.0	0.0	0.0	8.3	91.7
Bodwesango Senior High	0.0	0.0	0.0	8.3	91.7
Bolga Girls Senior High	0.0	16.7	25.0	25.0	33.3
Bompeh Senior High/Tech	0.0	25.0	25.0	33.3	16.7
Boso Senior High Technical	0.0	0.0	23.1	61.5	15.4
Business Senior High School	0.0	0.0	50.0	16.7	33.3
Christian Methodist Senior High	0.0	0.0	0.0	16.7	83.3
Dagbon State Senior High/Tech	0.0	0.0	7.7	7.7	84.6
Dormaa Senior High	0.0	0.0	8.3	33.3	58.3
Dwamena Akenten Senior High	0.0	8.3	25.0	41.7	25.0
Dzodze Penyi Senior High	0.0	0.0	8.3	50.0	41.7
E.P.C. Mawuko Girls Senior High	0.0	0.0	41.7	41.7	16.7
Effiduase Senior High/Com	0.0	8.3	25.0	0.0	66.7
Effutu Senior High/Tech	0.0	33.3	8.3	16.7	41.7
Eguafo-Abrem Senior High	0.0	8.3	33.3	33.3	25.0
Ghanasco Senior High School	0.0	0.0	25.0	33.3	41.7
Ghanata Senior High	0.0	23.1	23.1	38.5	15.4
H'Mount Sinai Senior High	0.0	25.0	33.3	33.3	8.3
Huni Valley Senior High	0.0	8.3	16.7	25.0	50.0
Jirapa Senior High School	0.0	8.3	25.0	33.3	33.3

Juaboso Senior High	0.0	16.7	8.3	41.7	33.3
Kadjebi-Asato Senior High	0.0	8.3	8.3	25.0	58.3
Kalpohin Senior High	0.0	16.7	8.3	50.0	25.0
Kaneshie Senior High/Tech.	0.0	41.7	33.3	8.3	16.7
Keta Senior High/Tech.	0.0	25.0	41.7	16.7	16.7
Kintampo Senior High	0.0	0.0	25.0	25.0	50.0
Kumasi High School	0.0	0.0	0.0	45.5	54.6
Kusanaba Senior High	0.0	0.0	8.3	16.7	75.0
Kwegyir Aggrey Senior High	0.0	8.3	33.3	50.0	8.3
Mando Senior High/Tech.	0.0	0.0	8.3	50.0	41.7
Manya Krobo Senior High	0.0	0.0	33.3	25.0	41.7
Nana Brentu Senior High/Tech	0.0	8.3	8.3	25.0	58.3
New Edubiase Senior High	0.0	8.3	41.7	25.0	25.0
Ngleshie Amanfro Senior High	0.0	0.0	16.7	41.7	41.7
Nkawkaw Senior High	0.0	8.3	16.7	33.3	41.7
Northern School of Business	0.0	0.0	8.3	25.0	66.7
Nyakrom Senior High Tech	0.0	0.0	38.5	7.7	53.9
Okomfo Anokye Senior High	0.0	0.0	25.0	50.0	25.0
Oppong Mem. Senior High	0.0	0.0	16.7	16.7	66.7
Our Lady of Providence Senior High	0.0	25.0	25.0	33.3	16.7
Owerriman Senior High/Tech	0.0	16.7	50.0	25.0	8.3
Pong Tamale Senior High	0.0	16.7	8.3	33.3	41.7
Presby Senior High/Tech, Aburi	0.0	16.7	33.3	33.3	16.7
Presby Senior High/Tech, Larteh	0.0	8.3	8.3	33.3	50.0
S.D.A. Senior High, Bekwai	0.0	16.7	33.3	16.7	33.3
Sandema Senior High	0.0	8.3	8.3	50.0	33.3
Sandema Senior High/Tech	0.0	16.7	16.7	33.3	33.3
Savelugu Senior High	0.0	0.0	8.3	8.3	83.3
St. Augustine's Senior High, Bogoso	0.0	0.0	25.0	16.7	58.3

St. John's Grammar Senior High	0.0	16.7	33.3	25.0	25.0
St. Joseph Senior High/Tech, Ahwiren	0.0	15.4	23.1	30.8	30.8
St. Paul's Senior High, Asakraka Kwahu	0.0	7.7	23.1	15.4	53.9
Swedru School of Business	0.0	40.0	30.0	10.0	20.0
T. I. Ahmadiyya Senior High, Kumasi	0.0	16.7	0.0	58.3	25.0
Tamale Girls Senior High School	0.0	8.3	8.3	41.7	41.7
Three Town Senior High	0.0	0.0	0.0	0.0	100.0
Wamanafo Senior High/Tech	0.0	0.0	0.0	0.0	100.0
Wenchi Meth. Senior High	0.0	8.3	16.7	41.7	33.3
Wesley Senior High, Konongo	0.0	27.3	18.2	27.3	27.3
Yamfo Anglican Senior High School	0.0	0.0	16.7	0.0	83.3
Yeji Senior High School	0.0	0.0	8.3	0.0	91.7
Yilo Krobo Senior High/Com	0.0	8.3	16.7	58.3	16.7
Zion Senior High	0.0	0.0	27.3	54.6	18.2

Table A3.4 Item framework of reading literacy proficiency level by region

region	Text type				Aspects/cognitive processes			Situation	
	<i>Description</i>	<i>Narration</i>	<i>Argumentative</i>	<i>Instruction</i>	<i>Access and retrieve</i>	<i>Integrate and interpret</i>	<i>Reflect and evaluate</i>	Personal	Public
Ahafo	43.1	25.0	22.9	37.5	37.8	31.0	33.3	13.7	39.8
Ashanti	57.7	33.8	32.6	48.6	57.8	44.6	41.6	17.1	54.7
Bono	53.1	26.7	26.7	33.3	49.8	40.2	30.5	12.5	49.2
Bono East	44.4	20.8	21.9	18.8	42.5	31.8	22.3	9.2	39.2
Central	70.0	57.3	46.6	63.4	72.6	60.0	55.9	23.0	67.3
Eastern	61.8	37.3	35.2	49.7	61.5	51.3	41.8	17.2	56.1
G. Accra	65.2	41.2	34.1	56.5	64.8	55.8	42.0	17.3	60.9
Northern	48.1	27.5	24.8	31.2	47.4	31.3	23.3	9.6	42.7
Oti	59.4	41.7	35.4	54.2	59.2	50.6	40.5	16.7	54.5
U. East	58.5	31.0	29.2	41.7	58.7	43.9	35.9	14.8	52.1
U. West	56.4	16.7	25.0	41.7	54.2	45.2	35.7	14.7	50.4
Volta	63.2	46.5	39.6	54.9	64.3	53.5	48.1	19.8	60.7
Western	67.8	46.7	43.3	63.3	67.4	57.9	52.6	21.7	63.7
Western North	50.5	25.0	26.4	16.7	49.3	40.5	27.8	11.4	44.9

Table A3.5 Item framework of reading literacy proficiency level by school

	Text type			Aspects/cognitive processes				Situation		Cognitive demand		
	Description	Narration	Argumentative	Instruction	Access and retrieve	Integrate and interpret	Reflect and evaluate	Personal	Public	Low	Medium	High
Fijai Senior High	91.4	91.7	83.3	100.0	94.1	89.3	90.5	37.3	90.9	96.9	88.1	93.1
Wesley Girls Senior High,	90.0	75.0	62.5	91.7	95.5	79.8	83.3	34.3	87.9	98.1	76.2	83.3
Mawuli School, Ho	89.2	76.9	57.7	84.6	92.0	87.9	75.8	31.2	85.3	93.2	85.7	78.2
Winneba Senior High	88.8	91.7	54.2	91.7	96.2	91.7	66.7	27.5	86.0	100.0	83.3	65.3
Aburi Girls Senior High	85.2	75.0	62.5	100.0	92.4	75.0	72.6	29.9	85.6	91.4	71.4	84.7
Ghana National College	83.1	75.0	58.3	83.3	84.4	81.0	76.2	31.4	76.9	86.1	78.6	77.8
Kpando Senior High	82.1	75.0	66.7	66.7	86.1	82.1	65.5	27.0	77.3	88.3	78.6	62.5
Accra Academy	81.2	50.0	41.7	75.0	83.7	65.5	56.0	23.0	76.1	82.7	60.7	68.1
Aggrey Mem. A.M.E. Zion S	80.5	66.7	70.8	75.0	85.4	70.2	69.0	28.4	78.8	86.1	69.0	72.2
Nungua Senior High	80.2	66.7	50.0	75.0	80.9	82.1	54.8	22.5	75.4	82.1	76.2	66.7
Assin Manso Senior High	79.0	83.3	66.7	75.0	84.7	64.3	70.2	28.9	79.5	87.7	57.1	68.1
St. Paul's Senior High, D	76.2	58.3	70.8	75.0	78.5	66.7	66.7	27.5	75.0	78.4	64.3	77.8
Shama Senior High	76.2	58.3	54.2	75.0	74.0	73.8	65.5	27.0	70.1	75.3	69.0	61.1
Kumasi Senior High/Tech	75.2	69.2	46.2	69.2	78.5	67.0	53.8	22.2	70.3	79.8	60.4	57.7
Zuarungu Senior High	73.1	66.7	50.0	58.3	73.3	59.5	54.8	22.5	68.2	75.3	52.4	62.5
Wbm Zion SH, Old Tafo	72.4	41.7	41.7	75.0	77.1	56.0	58.3	24.0	66.3	77.2	57.1	51.4
Anglican Senior High, Kum	71.9	91.7	79.2	91.7	77.8	71.4	71.4	29.4	76.1	80.2	69.0	72.2
Ejisu Senior High/Tech	71.2	41.7	37.5	83.3	75.7	60.7	52.4	21.6	67.8	76.9	53.6	54.2

St. Peter Senior High	70.6	100.0	59.1	81.8	76.9	71.4	58.4	24.1	67.4	79.5	63.6	63.6
Bueman Senior High School	69.3	50.0	45.8	66.7	68.4	70.2	50.0	20.6	62.1	72.2	54.8	54.2
Kpando Bishop Herman Coll	68.1	50.0	33.3	75.0	70.5	63.1	51.2	21.1	65.9	70.7	56.0	52.8
Kaneshie Senior High/Tech	67.9	50.0	45.8	75.0	69.1	57.1	58.3	24.0	64.8	71.6	50.0	65.3
Swedru School of Business	67.4	70.0	50.0	60.0	71.7	61.4	52.9	21.8	67.3	72.2	52.9	48.3
Awudome Senior High.	66.9	58.3	41.7	50.0	68.4	60.7	52.4	21.6	63.3	70.1	54.8	62.5
Owerriman Senior High/Tec	65.5	25.0	37.5	58.3	70.5	56.0	48.8	20.1	66.3	70.1	51.2	45.8
Ghanata Senior High	64.4	53.8	34.6	46.2	65.4	53.8	37.4	15.4	64.0	65.8	42.9	39.7
Boso Senior High Technical	64.2	0.0	7.7	23.1	62.5	47.3	24.2	10.0	55.2	59.0	42.9	34.6
Our Lady of Providence Se	64.0	50.0	37.5	41.7	62.2	48.8	46.4	19.1	57.2	63.6	47.6	43.1
H'Mount Sinai Senior High	64.0	50.0	41.7	83.3	68.1	54.8	57.1	23.5	64.0	71.9	47.6	54.2
Amaniampong Senior High	63.8	66.7	54.2	66.7	64.6	53.6	56.0	23.0	66.3	66.4	45.2	59.7
Awe Senior High/Tech.	63.8	8.3	20.8	41.7	63.9	53.6	38.1	15.7	54.2	63.3	51.2	47.2
Okomfo Anokye Senior High	63.3	16.7	20.8	33.3	60.8	41.7	32.1	13.2	56.1	59.6	36.9	43.1
Keta Senior High/Tech.	63.1	66.7	58.3	75.0	64.9	57.1	57.1	23.5	65.5	66.4	50.0	61.1
Presby Senior High/Tech,	62.9	50.0	45.8	66.7	63.2	52.4	47.6	19.6	62.5	63.0	44.0	44.4

Asewewa Senior High School	62.1	41.7	29.2	58.3	62.8	58.3	44.0	18.1	53.0	65.1	47.6	51.4
Pong Tamale Senior High	61.9	25.0	12.5	16.7	59.4	45.2	19.0	7.8	47.7	56.8	40.5	22.2
St. John's Grammar Senior High	61.4	33.3	33.3	58.3	60.1	58.3	44.0	18.1	57.6	62.0	52.4	41.7
Wesley Senior High, Konongo	61.3	18.2	22.7	54.5	59.8	44.2	58.4	24.1	60.3	60.9	40.3	54.5
Bompeh Senior High/Tech	61.2	50.0	50.0	91.7	64.6	50.0	58.3	24.0	64.4	67.3	45.2	54.2
New Edubiase Senior High	60.5	16.7	12.5	41.7	60.8	47.6	39.3	16.2	54.5	61.7	51.2	36.1
Kwegyir Aggrey Senior High	60.5	50.0	50.0	66.7	65.3	44.0	53.6	22.1	61.7	64.8	39.3	50.0
Juaboso Senior High	60.2	25.0	29.2	16.7	60.1	53.6	32.1	13.2	54.5	58.6	47.6	31.9
Adu Gyamfi Senior High	60.0	27.3	22.7	36.4	62.5	42.9	31.2	12.8	56.2	61.3	36.4	40.9
Navrongo Senior High	60.0	41.7	33.3	41.7	62.8	44.0	40.5	16.7	54.5	62.0	40.5	51.4
St. Joseph Senior High/Technical	59.8	30.8	23.1	46.2	59.9	46.2	41.8	17.2	53.5	61.8	41.8	38.5
Anfoega Senior High	59.8	25.0	25.0	41.7	56.3	46.4	42.9	17.6	53.4	57.7	40.5	44.4
Berekum Senior High	59.5	25.0	25.0	50.0	56.3	51.2	41.7	17.2	57.6	55.9	51.2	45.8
Effutu Senior High/Tech	59.5	41.7	37.5	41.7	58.0	48.8	40.5	16.7	53.0	58.6	42.9	40.3
Akatsi Senior High/Tech	59.3	41.7	29.2	41.7	62.2	50.0	44.0	18.1	58.7	61.4	46.4	43.1
Yilo Krobo Senior High/Co	58.8	33.3	33.3	25.0	56.6	48.8	38.1	15.7	48.1	57.7	50.0	37.5
E.P.C. Mawuko Girls Senior High	58.1	41.7	33.3	58.3	60.1	44.0	42.9	17.6	54.5	61.1	34.5	47.2

Dwamena Akenten Senior Hi	57.6	16.7	16.7	41.7	53.1	53.6	33.3	13.7	48.1	53.1	42.9	41.7
Nkawkaw Senior High	57.6	33.3	25.0	25.0	53.1	44.0	34.5	14.2	48.9	54.6	41.7	23.6
Ameyaw Akumfi Senior High	57.4	0.0	0.0	0.0	49.0	36.9	6.0	2.5	37.5	45.4	27.4	27.8
Kwahu Ridge Senior High S	57.1	8.3	8.3	8.3	47.9	56.0	14.3	5.9	42.0	46.0	45.2	33.3
Business Senior High School	57.1	41.7	37.5	41.7	58.3	41.7	33.3	13.7	53.8	58.6	36.9	36.1
T. I. Ahmadiyya Senior Hi	56.4	25.0	16.7	25.0	52.4	47.6	31.0	12.7	49.6	53.4	39.3	29.2
Jirapa Senior High School	56.4	16.7	25.0	41.7	54.2	45.2	35.7	14.7	50.4	53.4	40.5	38.9
St. Augustine's Senior Hi	56.4	16.7	16.7	16.7	53.8	41.7	16.7	6.9	45.5	52.8	29.8	22.2
Bolga Girls Senior High	56.0	50.0	37.5	41.7	55.9	41.7	33.3	13.7	48.9	54.6	33.3	43.1
Zion Senior High	55.6	27.3	27.3	45.5	58.7	36.4	36.4	15.0	55.4	57.9	33.8	34.8
Nyakrom Senior High Tech	55.4	15.4	15.4	46.2	53.8	40.7	30.8	12.7	50.0	52.7	33.0	30.8
St. Paul's Senior High, A	55.4	23.1	26.9	30.8	54.5	41.8	31.9	13.1	49.0	54.4	31.9	35.9
S.D.A. Senior High, Bekwai	54.5	33.3	33.3	50.0	56.6	35.7	51.2	21.1	55.3	58.6	34.5	47.2
Mando Senior High/Tech.	54.3	16.7	8.3	16.7	50.3	42.9	26.2	10.8	45.5	51.2	41.7	19.4
Tamale Girls Senior High	53.8	16.7	16.7	33.3	51.7	39.3	26.2	10.8	43.9	51.2	34.5	29.2
Sandema Senior High/Tech	53.8	16.7	25.0	41.7	55.9	40.5	35.7	14.7	47.7	54.9	38.1	41.7
Kalpohin Senior High	53.6	41.7	33.3	41.7	55.9	29.8	36.9	15.2	52.3	56.5	27.4	34.7
Sandema Senior High	53.6	33.3	33.3	58.3	54.5	39.3	42.9	17.6	53.8	55.9	33.3	33.3

Huni Valley Senior High	53.6	16.7	12.5	33.3	50.7	34.5	32.1	13.2	47.7	50.6	32.1	34.7
Dormaa Senior High	53.3	8.3	8.3	33.3	51.7	20.2	22.6	9.3	50.0	49.7	19.0	27.8
Benkum Senior High School	53.3	25.0	62.5	33.3	48.3	32.1	34.5	14.2	48.9	46.6	28.6	47.2
Presby Senior High/Tech,	52.9	16.7	25.0	50.0	49.0	35.7	33.3	13.7	48.1	49.1	35.7	36.1
Eguafo-Abrem Senior High	52.4	50.0	41.7	50.0	54.9	36.9	47.6	19.6	55.3	56.5	33.3	41.7
Kukuom Agric Senior High	51.4	33.3	29.2	41.7	46.2	47.6	34.5	14.2	47.7	48.1	44.0	26.4
Christian Methodist Senior	51.2	0.0	0.0	8.3	42.0	35.7	4.8	2.0	34.1	38.6	26.2	29.2
Ghanasco Senior High School	50.7	41.7	25.0	41.7	50.0	34.5	20.2	8.3	43.2	50.3	23.8	27.8
Effiduase Senior High/Com	50.5	33.3	33.3	33.3	44.8	33.3	33.3	13.7	44.7	45.4	29.8	31.9
Wenchi Meth. Senior High	50.5	41.7	41.7	33.3	53.8	39.3	33.3	13.7	50.8	53.4	28.6	36.1
Dzodze Penyi Senior High	50.5	16.7	16.7	33.3	48.6	29.8	26.2	10.8	50.0	47.5	25.0	34.7
Manya Krobo Senior High	50.2	33.3	29.2	41.7	51.0	47.6	39.3	16.2	47.7	50.6	46.4	40.3
Ngleshie Amanfro Senior H	50.2	33.3	33.3	58.3	52.4	38.1	39.3	16.2	53.8	52.2	34.5	27.8
Kadjebi-Asato Senior High	49.5	33.3	25.0	41.7	50.0	31.0	31.0	12.7	47.0	48.8	28.6	27.8
Kusanaba Senior High	49.3	0.0	4.2	8.3	44.8	28.6	6.0	2.5	37.1	41.7	21.4	20.8

Kintampo Senior High	48.8	25.0	29.2	25.0	48.6	34.5	36.9	15.2	49.2	50.3	32.1	36.1
Kumasi High School	48.3	0.0	13.6	45.5	44.3	26.0	28.6	11.8	43.4	42.4	26.0	24.2
Asawinso Senior High	45.7	33.3	25.0	16.7	39.6	39.3	16.7	6.9	36.0	39.5	28.6	25.0
Dagbon State Senior High/	45.5	15.4	15.4	7.7	43.6	23.1	7.7	3.2	38.8	39.9	18.7	19.2
Atebubu Senior High	45.5	25.0	20.8	16.7	48.6	39.3	21.4	8.8	43.9	48.8	35.7	26.4
Nana Brentu Senior High/T	45.5	16.7	25.0	16.7	48.3	28.6	34.5	14.2	44.3	48.8	22.6	31.9
Adanwomase Senior High	44.0	53.8	42.3	46.2	46.2	31.9	31.9	13.1	44.4	47.0	20.9	29.5
Northern School of Busine	42.6	16.7	16.7	25.0	39.9	32.1	19.0	7.8	36.4	39.5	27.4	23.6
Oppong Mem. Senior High	38.8	25.0	45.8	25.0	35.4	23.8	31.0	12.7	36.0	36.7	25.0	27.8
Wamanafo Senior High/Tech	38.3	8.3	20.8	8.3	25.0	41.7	8.3	3.4	30.7	23.1	36.9	9.7
Savelugu Senior High	38.1	8.3	25.0	41.7	38.5	19.0	27.4	11.3	39.4	37.3	23.8	18.1
Bodwesango Senior High	36.0	8.3	25.0	25.0	35.4	17.9	22.6	9.3	34.8	34.6	19.0	23.6
Yamfo Anglican Senior High	34.8	16.7	16.7	33.3	29.5	14.3	32.1	13.2	31.8	30.2	15.5	22.2
Bimbila Senior High	30.0	41.7	41.7	33.3	29.2	17.9	21.4	8.8	29.2	28.7	13.1	23.6
Three Town Senior High	26.7	16.7	12.5	8.3	22.9	13.1	13.1	5.4	21.2	23.1	9.5	12.5
Yeji Senior High School	26.0	33.3	37.5	33.3	24.0	16.7	25.0	10.3	26.1	24.4	16.7	22.2

Table A3.6 Mathematics literacy proficiency level by region

Region	Highly proficient	Proficient	Approaching proficiency	Developing proficiency	Emerging
G. Accra	11.6	8.1	14.0	22.1	44.2
Ashanti	6.5	5.1	8.8	27.3	52.3
Volta	6.3	6.3	15.5	36.6	35.2
Central	5.3	12.9	20.5	31.8	29.6
Eastern	4.8	1.2	18.5	28.6	47.0
Western	3.3	5.0	21.7	35.0	35.0
Ahafo	0.0	0.0	8.3	25.0	66.7
Bono	0.0	8.2	6.6	36.1	49.2
Bono East	0.0	2.1	2.1	25.0	70.8
Northern	0.0	0.9	9.4	36.5	53.3
Oti	0.0	0.0	4.2	62.5	33.3
U. East	0.0	2.4	11.9	33.3	52.4
U. West	0.0	8.3	8.3	16.7	66.7
Western North	0.0	0.0	2.8	44.4	52.8

Table A3.7 Mathematics literacy proficiency level by school

Name of school	Highly proficient	Proficient	Approaching proficiency	Developing proficiency	Emerging
Aburi Girls Senior High	25.0	8.3	41.7	8.3	16.7
Accra Academy	41.7	33.3	8.3	16.7	0.0
Adanwomase Senior High	0.0	0.0	16.7	8.3	75.0
Adu Gyamfi Senior High	0.0	0.0	0.0	33.3	66.7
Aggrey Mem. A.M.E. Zion Snr. High	8.3	33.3	16.7	33.3	8.3
Akatsi Senior High/Tech	0.0	0.0	25.0	58.3	16.7
Amaniampong Senior High	25.0	8.3	25.0	0.0	41.7
Ameyaw Akumfi Senior High/Tech.	0.0	8.3	0.0	41.7	50.0
Anfoega Senior High	0.0	0.0	0.0	83.3	16.7
Anglican Senior High, Kumasi	25.0	25.0	16.7	25.0	8.3
Asawinso Senior High	0.0	0.0	0.0	8.3	91.7
Asesewa Senior High School	0.0	8.3	25.0	41.7	25.0
Assin Manso Senior High	33.3	41.7	25.0	0.0	0.0
Atebubu Senior High	0.0	0.0	8.3	16.7	75.0

Name of school	Highly proficient	Proficient	Approaching proficiency	Developing proficiency	Emerging
Awe Senior High/Tech.	0.0	0.0	0.0	16.7	83.3
Awudome Senior High.	0.0	0.0	30.8	38.5	30.8
Benkum Senior High School, Larteh	0.0	0.0	0.0	25.0	75.0
Berekum Senior High	0.0	0.0	8.3	75.0	16.7
Bimbila Senior High	0.0	0.0	0.0	16.7	83.3
Bodwesango Senior High	0.0	0.0	0.0	16.7	83.3
Bolga Girls Senior High	0.0	0.0	16.7	33.3	50.0
Bompeh Senior High/Tech	8.3	0.0	25.0	58.3	8.3
Boso Senior High Technical	0.0	0.0	25.0	33.3	41.7
Bueman Senior High School	0.0	0.0	0.0	75.0	25.0
Business Senior High School	0.0	0.0	16.7	66.7	16.7
Christian Methodist Senior High	0.0	0.0	0.0	0.0	100.0
Dagbon State Senior High/Tech	0.0	0.0	0.0	25.0	75.0
Dormaa Senior High	0.0	8.3	16.7	16.7	58.3
Dwamena Akenten Senior High	8.3	8.3	0.0	41.7	41.7
Dzodze Penyi Senior High	0.0	0.0	0.0	36.4	63.6
E.P.C. Mawuko Girls Senior High	0.0	0.0	0.0	27.3	72.7
Effiduase Senior High/Com	0.0	0.0	8.3	16.7	75.0
Effutu Senior High/Tech	0.0	0.0	16.7	41.7	41.7
Eguafo-Abrem Senior High	0.0	0.0	0.0	33.3	66.7
Ejisu Senior High/Tech	0.0	16.7	16.7	33.3	33.3
Fijai Senior High	8.3	16.7	8.3	50.0	16.7
Ghana National College	0.0	8.3	25.0	50.0	16.7
Ghanasco Senior High School	0.0	8.3	8.3	50.0	33.3
Ghanata Senior High	0.0	0.0	7.1	64.3	28.6
H'Mount Sinai Senior High	0.0	0.0	8.3	16.7	75.0
Huni Valley Senior High	0.0	8.3	16.7	33.3	41.7
Jirapa Senior High School	0.0	8.3	8.3	16.7	66.7
Juaboso Senior High	0.0	0.0	8.3	75.0	16.7
Kadjebi-Asato Senior High	0.0	0.0	8.3	50.0	41.7
Kalpohin Senior High	0.0	0.0	0.0	41.7	58.3
Kaneshie Senior High/Tech.	8.3	8.3	16.7	33.3	33.3
Keta Senior High/Tech.	8.3	25.0	8.3	41.7	16.7
Kintampo Senior High	0.0	0.0	0.0	16.7	83.3

Name of school	Highly proficient	Proficient	Approaching proficiency	Developing proficiency	Emerging
Kpando Bishop Herman College	8.3	16.7	50.0	8.3	16.7
Kpando Senior High	0.0	0.0	8.3	25.0	66.7
Kukuom Agric Senior High	0.0	0.0	16.7	16.7	66.7
Kumasi High School	0.0	0.0	16.7	8.3	75.0
Kumasi Senior High/Tech	58.3	16.7	8.3	16.7	0.0
Kusanaba Senior High	0.0	0.0	8.3	25.0	66.7
Kwahu Ridge Senior High School, Obo-K..	0.0	0.0	0.0	0.0	100.0
Kwegyir Aggrey Senior High	0.0	8.3	25.0	16.7	50.0
Mando Senior High/Tech.	8.3	0.0	41.7	41.7	8.3
Manya Krobo Senior High	0.0	0.0	25.0	33.3	41.7
Mawuli School, Ho	38.5	7.7	23.1	23.1	7.7
Nana Brentu Senior High/Tech	0.0	0.0	0.0	50.0	50.0
Navrongo Senior High Senior High	0.0	8.3	16.7	41.7	33.3
New Edubiase Senior High	0.0	0.0	0.0	41.7	58.3
Ngleshie Amanfro Senior High	0.0	0.0	0.0	16.7	83.3
Nkawkaw Senior High	0.0	0.0	25.0	50.0	25.0
Northern School of Business	0.0	0.0	0.0	41.7	58.3
Nungua Senior High	33.3	8.3	41.7	0.0	16.7
Nyakrom Senior High Tech	0.0	7.1	0.0	57.1	35.7
Okomfo Anokye Senior High	0.0	0.0	8.3	41.7	50.0
Opong Mem. Senior High	0.0	8.3	16.7	25.0	50.0
Our Lady of Providence Senior High	0.0	16.7	8.3	58.3	16.7
Owerriman Senior High/Tech	0.0	8.3	8.3	33.3	50.0
Pong Tamale Senior High	0.0	0.0	50.0	0.0	50.0
Presby Senior High/Tech, Aburi	0.0	0.0	0.0	58.3	41.7
Presby Senior High/Tech, Larteh	8.3	0.0	41.7	25.0	25.0
S.D.A. Senior High, Bekwai	0.0	0.0	0.0	25.0	75.0
Sandema Senior High	0.0	0.0	8.3	33.3	58.3
Sandema Senior High/Tech	0.0	0.0	16.7	25.0	58.3
Savelugu Senior High	0.0	0.0	0.0	36.4	63.6
Shama Senior High	0.0	0.0	50.0	25.0	25.0
St. Augustine's Senior High, Bogoso	0.0	0.0	8.3	8.3	83.3
St. John's Grammar Senior High	0.0	8.3	25.0	16.7	50.0
St. Joseph Senior High/Tech, Ahwiren	0.0	0.0	16.7	25.0	58.3

Name of school	Highly proficient	Proficient	Approaching proficiency	Developing proficiency	Emerging
St. Paul's Senior High, Asakraka Kwahu	0.0	0.0	16.7	8.3	75.0
St. Paul's Senior High, Denu	10.0	20.0	30.0	30.0	10.0
St. Peter Senior High	33.3	0.0	33.3	33.3	0.0
Swedru School of Business	0.0	10.0	0.0	10.0	80.0
T. I. Ahmadiyya Senior High, Kumasi	0.0	0.0	0.0	25.0	75.0
Tamale Girls Senior High School	0.0	0.0	8.3	50.0	41.7
Three Town Senior High	0.0	0.0	0.0	41.7	58.3
Wamanafo Senior High/Tech	0.0	0.0	0.0	7.7	92.3
Wbm Zion SH, Old Tafo	0.0	0.0	16.7	41.7	41.7
Wenchi Meth. Senior High	0.0	16.7	0.0	25.0	58.3
Wesley Girls Senior High, Cape Coast	8.3	25.0	33.3	16.7	16.7
Wesley Senior High, Konongo .	0.0	0.0	0.0	75.0	25.0
Winneba Senior High	0.0	8.3	41.7	41.7	8.3
Yamfo Anglican Senior High School	0.0	0.0	0.0	33.3	66.7
Yeji Senior High School	0.0	0.0	0.0	25.0	75.0
Yilo Krobo Senior High/Com	0.0	0.0	0.0	25.0	75.0
Zion Senior High	8.3	8.3	8.3	25.0	50.0
Zuarungu Senior High	0.0	8.3	16.7	58.3	16.7
Total	4.2	4.9	12.8	31.8	46.3

Table A3.8 Item framework of mathematical literacy assessment by region

Region	Content area				Competencies/processes include:			Cognitive level
	Quantity	Space and shape	Change and relationship	Uncertainty and data	Formulating situations mathematically	Employing mathematical concepts, facts, procedures, and reasoning	Interpreting, applying, and evaluating mathematical outcomes	
Ahafo	43.1	25.0	22.9	37.5	37.8	31.0	33.3	Low
Ashanti	57.7	33.8	32.6	48.6	57.8	44.6	41.6	Low
Bono	53.1	26.7	26.7	33.3	49.8	40.2	30.5	Low
Bono East	44.4	20.8	21.9	18.8	42.5	31.8	22.3	Low
Central	70.0	57.3	46.6	63.4	72.6	60.0	55.9	Low
Eastern	61.8	37.3	35.2	49.7	61.5	51.3	41.8	Low
G. Accra	65.2	41.2	34.1	56.5	64.8	55.8	42.0	Low
Northern	48.1	27.5	24.8	31.2	47.4	31.3	23.3	Low
Oti	59.4	41.7	35.4	54.2	59.2	50.6	40.5	Low
U. East	58.5	31.0	29.2	41.7	58.7	43.9	35.9	Low
U. West	56.4	16.7	25.0	41.7	54.2	45.2	35.7	Low
Volta	63.2	46.5	39.6	54.9	64.3	53.5	48.1	Low
Western	67.8	46.7	43.3	63.3	67.4	57.9	52.6	Low
Western North	50.5	25.0	26.4	16.7	49.3	40.5	27.8	Low

Table A3.9 Item framework of mathematical literacy assessment by school

	<i>Quantity</i>	<i>Space and shape</i>	<i>Change and relationship</i>	<i>Uncertainty and data</i>	<i>Formulating situations mathematically</i>	<i>Employing mathematical concepts, facts, procedures, and reasoning</i>	<i>Interpreting, applying, and evaluating mathematical outcomes</i>	<i>Low</i>	<i>Medium</i>	<i>High</i>
Kukuom Agric Sen	30.6	38.3	37.5	44.9	32.7	20.1	54.3	54.2	24.4	23.3
Yamfo Anglican S	30.2	47.5	41.7	31.9	23.1	24.8	33.3	39.7	30.6	24.2
Adanwomase Senior High	28.4	37.5	29.2	40.3	34.6	28.2	48.1	48.9	27.2	20.8
Adu Gyamfi Senior High	24.1	40.8	45.8	44.4	38.5	22.9	58.3	53.3	18.9	22.5
Amaniampong Senior High	45.1	60.0	66.7	56.0	50.0	44.9	62.3	68.9	36.7	43.3
Anglican Senior	55.6	56.7	83.3	69.9	54.5	50.0	67.9	70.0	52.8	50.0
Bodwesang Senior High	26.5	36.7	33.3	37.0	23.1	24.1	35.2	38.1	25.6	19.2
Dwamena Akenten	38.3	46.7	50.0	50.0	40.4	33.6	60.5	63.6	32.8	29.2
Effiduase Senior	27.8	40.8	41.7	41.2	22.4	20.1	46.3	44.2	28.3	21.7
Ejisu Senior High	33.6	51.7	66.7	54.2	48.1	35.6	65.1	57.8	33.9	30.8
Kumasi High	21.3	44.2	45.8	39.8	27.6	22.2	46.3	45.0	26.1	18.3

School										
Kumasi Senior Hi	63.9	86.7	87.5	72.7	65.4	66.0	70.1	76.7	68.9	55.8
New Edubiase Senior High	33.3	35.8	41.7	43.5	27.6	27.1	49.4	48.3	20.6	26.7
Okomfo Anokye Senior High	36.4	36.7	45.8	37.0	38.5	26.6	49.7	51.1	26.1	25.8
Oppong Mem. Senior	26.9	39.2	62.5	52.3	40.4	35.4	60.2	57.5	30.0	23.3
Owerriman Senior	33.6	36.7	41.7	44.9	32.7	35.6	50.9	55.3	34.4	18.3
S.D.A. Senior Hi	28.1	36.7	41.7	38.9	29.5	19.0	45.1	49.4	26.1	20.0
St. Joseph Senior	26.5	40.8	66.7	50.9	34.0	33.1	54.0	52.2	30.6	20.0
T. I. Ahmadiyya	29.9	35.0	25.0	41.7	14.1	21.8	40.4	41.9	22.8	15.8
Wesley Senior Hi	30.2	32.5	62.5	44.9	34.6	28.2	53.4	56.4	27.8	23.3
Berekum Senior H	39.2	43.3	62.5	48.6	36.5	34.3	56.2	56.9	32.8	22.5
Dormaa Senior Hi	42.0	35.0	50.0	45.4	31.4	25.2	51.2	56.9	27.2	30.0
Our Lady of Prov	35.5	45.0	66.7	50.0	44.2	38.4	61.7	66.1	34.4	26.7
Wamanafo Senior	25.4	35.4	15.4	36.3	17.2	21.6	41.0	32.8	20.0	18.5
Wenchi Meth. Sen	31.8	50.8	45.8	42.6	32.7	28.7	50.0	46.1	28.9	23.3
Ameyaw	41.0	46.7	33.3	42.1	29.5	34.3	46.6	51.9	29.4	28.3

Akumfi Se										
Atebubu Senior H	19.1	39.2	45.8	38.0	31.4	19.9	50.6	43.1	22.2	21.7
Kintampo Senior	27.5	31.7	50.0	34.3	30.1	13.0	44.8	48.1	22.2	23.3
Yeji Senior High	28.7	35.8	25.0	36.1	30.8	19.4	47.2	46.7	25.6	21.7
Aggrey Mem. A.M.	54.9	60.8	75.0	59.3	51.9	59.3	59.3	68.6	48.3	40.8
Assin Manso Seni	70.1	81.7	91.7	66.7	64.7	66.4	67.3	71.4	67.8	61.7
Effutu Senior Hi	38.3	47.5	41.7	47.2	31.4	32.2	48.5	55.3	31.1	25.8
Eguafo-Abrem Sen	25.6	37.5	45.8	44.4	30.1	24.1	48.8	49.7	20.0	27.5
Ghana National C	46.9	51.7	62.5	51.9	44.9	42.8	60.2	68.1	40.6	32.5
Swedru School of	26.3	47.0	40.0	44.4	30.8	22.2	51.5	47.7	28.7	21.0
Kwegyir Aggrey S	36.7	42.5	54.2	51.4	37.2	37.3	53.7	61.4	32.2	27.5
Mando Senior Hig	41.7	61.7	66.7	52.8	52.6	39.6	65.1	63.3	35.6	35.0
Nyakrom Senior H	39.4	40.7	60.7	53.2	37.9	40.3	56.1	58.3	34.3	23.6
Wesley Girls Sen	46.3	60.8	79.2	60.2	49.4	51.4	61.7	68.3	46.7	36.7
Winneba Senior H	47.5	54.2	87.5	52.8	46.2	46.1	59.6	68.6	37.8	33.3
Aburi Girls Seni	52.5	72.5	87.5	63.9	59.0	53.2	65.1	67.2	51.1	50.0
Asesewa Senior H	49.1	42.5	58.3	47.2	41.0	33.3	58.0	58.3	32.2	35.8
Benkum Senior Hi	25.0	34.2	54.2	36.6	29.5	20.1	47.2	49.2	23.3	22.5
Boso	42.3	47.5	37.5	47.2	37.2	35.2	50.6	56.4	28.9	27.5

Senior High										
H'Mount Sinai Se	25.6	38.3	50.0	36.1	30.8	21.3	46.3	47.2	25.0	22.5
Kwahu Ridge Seni	19.1	43.3	29.2	37.5	28.2	18.5	47.8	44.7	17.2	20.8
Manya Krobo Seni	38.6	55.0	54.2	45.8	40.4	33.1	51.2	49.7	33.9	41.7
Nkawkaw Senior H	40.1	40.8	54.2	45.4	39.1	32.2	55.2	61.1	30.6	26.7
Presby Senior Hi	23.8	41.7	54.2	44.4	34.0	24.1	55.9	53.9	23.9	22.5
Presby Senior Hi	38.3	50.8	54.2	50.9	43.6	34.3	59.9	62.8	37.2	27.5
St. Paul's Senio	21.3	43.3	33.3	39.4	30.8	24.3	45.7	45.8	18.9	24.2
St. Peter Senior	68.2	65.0	87.5	61.6	56.4	56.0	67.6	78.1	53.3	51.7
Wbm Zion SH, Old	33.3	36.7	62.5	48.1	39.1	24.3	60.2	60.0	27.2	18.3
Yilo Krobo Senio	25.9	33.3	29.2	42.1	30.8	19.4	54.3	51.7	17.8	22.5
Accra Academy	69.8	77.5	95.8	67.6	62.2	64.1	71.0	81.1	62.2	59.2
Christian Method	24.1	35.0	25.0	31.9	21.2	18.1	43.5	37.5	17.2	19.2
Ghanata Senior H	34.1	42.9	64.3	41.7	34.1	25.6	52.6	53.6	26.2	31.4
Kaneshie Senior	46.0	47.5	62.5	49.1	39.1	39.4	52.2	61.4	38.9	28.3
Ngleshie Amanfro	23.1	38.3	41.7	42.1	26.3	14.6	51.5	48.3	23.9	15.0
Nungua Senior Hi	59.0	75.8	91.7	61.6	57.1	59.5	63.9	70.6	54.4	55.0
St. John's Gramm	36.1	44.2	37.5	43.1	36.5	24.3	56.2	59.2	32.8	19.2
Navrongo	32.7	56.7	66.7	45.8	42.3	30.8	54.9	56.1	27.2	35.0

Senior										
Bimbila Senior H	23.8	40.0	29.2	36.1	31.4	21.3	47.5	43.1	21.1	25.8
Dagbon State Sen	25.6	34.2	41.7	44.9	29.5	21.3	49.1	45.6	26.1	23.3
Ghanasco Senior	36.7	50.8	25.0	54.2	39.7	35.2	61.1	63.1	32.2	20.8
Northern School	22.5	41.7	29.2	41.7	35.3	25.2	51.5	46.9	22.8	26.7
Pong Tamale Seni	29.3	43.3	50.0	47.7	39.1	34.5	52.5	55.6	31.1	25.8
Savelugu Senior	23.2	40.9	36.4	43.9	30.8	19.7	52.9	52.7	23.0	29.1
Bueman Senior Hi	56.2	33.3	25.0	46.3	24.4	37.3	48.5	58.1	31.1	29.2
Kadjebi-Asato Se	31.8	37.5	45.8	44.9	34.0	31.5	49.7	51.1	27.8	21.7
Business Senior	35.5	46.7	54.2	47.7	44.2	33.6	56.2	60.3	30.0	29.2
Kalpohin Senior	26.5	32.5	45.8	41.2	27.6	15.7	50.9	48.9	21.7	20.0
Awe Senior High/	28.1	40.0	25.0	38.4	32.7	23.8	48.1	50.3	21.1	23.3
Bolga Girls Seni	32.1	36.7	45.8	47.2	32.7	26.9	53.1	57.2	27.2	21.7
Kusanaba Senior	25.3	42.5	29.2	44.0	28.2	22.5	48.1	49.4	24.4	15.8
Tamale Girls Sen	31.8	40.8	29.2	45.8	37.8	32.9	51.9	53.6	28.3	22.5
Zuarungu Senior	40.4	45.0	50.0	54.6	42.9	37.3	63.9	65.6	35.0	26.7
Jirapa Senior Hi	29.9	47.5	45.8	41.7	40.4	30.1	53.1	56.9	29.4	21.7
Sandema Senior H	25.3	35.0	41.7	41.2	37.2	19.0	60.2	56.1	19.4	15.8

Sandema Senior H	23.8	39.2	50.0	44.4	32.7	25.5	53.7	52.2	23.3	21.7
Akatsi Senior Hi	34.3	50.8	70.8	53.2	38.5	37.5	56.5	55.0	35.6	35.0
Anfoega Senior H	29.6	41.7	62.5	49.5	34.0	27.1	47.2	53.3	27.2	31.7
Awudome Senior H	43.9	35.4	61.5	51.7	37.3	34.2	61.5	62.6	31.3	25.4
Dzodze Penyi Sen	27.9	38.2	31.8	40.9	24.5	22.5	43.4	48.8	23.0	20.9
E.P.C. Mawuko Gi	24.2	38.2	50.0	38.4	36.4	15.9	54.9	53.6	22.4	23.6
Keta Senior High	49.7	56.7	70.8	59.7	50.6	44.2	63.6	66.4	41.1	39.2
Kpando Senior Hi	29.0	32.5	45.8	40.3	22.4	23.1	44.8	48.6	20.6	22.5
Kpando Bishop He	51.9	62.5	62.5	57.9	55.8	57.6	63.6	65.0	52.2	34.2
Mawuli School, H	62.4	72.3	96.2	65.8	59.2	56.4	68.7	76.2	46.2	58.5
St. Paul's Senio	57.0	58.0	85.0	55.6	53.1	46.9	68.5	70.3	42.7	41.0
Three Town Senio	26.2	42.5	50.0	44.0	31.4	21.8	51.2	54.4	26.1	20.8
Zion Senior High	28.4	45.8	62.5	52.3	39.7	31.0	58.3	58.1	32.8	30.8
Bompeh Senior Hi	46.0	40.0	62.5	54.6	50.0	43.5	65.1	68.9	36.7	32.5
Fijai Senior Hig	52.2	52.5	70.8	52.8	44.2	44.7	60.2	66.9	43.3	35.0
Huni Valley Seni	28.7	59.2	54.2	47.7	43.6	31.9	54.3	52.5	34.4	25.0
Shama Senior Hig	33.6	59.2	58.3	51.4	45.5	39.1	59.6	56.9	39.4	28.3
St. Augustine's	27.5	48.3	29.2	36.6	34.0	26.9	49.1	50.6	17.8	20.0

Asawinso Senior	18.2	47.5	16.7	35.2	26.3	17.1	41.7	36.4	21.1	25.8
Juaboso Senior H	36.7	37.5	41.7	56.0	28.8	38.7	52.2	53.9	36.1	17.5
Nana Brentu Seni	29.0	33.3	45.8	44.0	33.3	23.1	55.2	54.4	21.7	28.3

Table A3.10 Proficiency level for science literacy assessment by region

	Highly proficient	Proficient	Approaching proficiency	Developing proficiency	Emerging
Ahafo	0	4.2	45.8	8.3	41.7
Ashanti	0	6.1	31.6	37.2	25.1
Bono	0	0.0	26.7	31.7	41.7
Bono East	0	2.1	12.5	33.3	52.1
Central	0	18.2	38.6	30.3	12.9
Eastern	0	10.7	31.6	41.7	16.1
G. Accra	0	11.0	42.7	39.0	7.3
Northern	0	2.8	8.3	49.1	39.8
Oti	0	4.2	12.5	58.3	25.0
U. East	0	1.2	28.6	39.3	31.0
U. West	0	8.3	8.3	58.3	25.0
Volta	0.7	13.3	34.3	30.8	21.0
Western	0	11.7	38.3	41.7	8.3
Western North	0	0.0	11.1	38.9	50.0

Table A3.11 Proficiency level for science literacy assessment by school

	Highly proficient	Proficient	Approaching proficiency	Developing proficiency	Emerging
Aburi Girls Senior High	0.0	58.3	33.3	8.3	0.0
Accra Academy	0.0	41.7	50.0	8.3	0.0
Adanwomase Senior High	0.0	0.0	41.7	16.7	41.7
Adu Gyamfi Senior High	0.0	0.0	41.7	58.3	0.0
Aggrey Mem. A.M.E. Zion Snr. High	0.0	41.7	33.3	25.0	0.0
Akatsi Senior High/Tech	0.0	8.3	16.7	66.7	8.3
Amaniampong Senior High	0.0	16.7	33.3	50.0	0.0
Ameyaw Akumfi Senior High/Tech.	0.0	0.0	8.3	58.3	33.3
Anfoega Senior High	0.0	0.0	36.4	9.1	54.6
Anglican Senior High, Kumasi	0.0	25.0	66.7	8.3	0.0
Asawinso Senior High	0.0	0.0	0.0	16.7	83.3
Asesewa Senior High School	0.0	0.0	33.3	50.0	16.7
Assin Manso Senior High	0.0	16.7	66.7	16.7	0.0
Atebubu Senior High	0.0	8.3	25.0	8.3	58.3
Awe Senior High/Tech.	0.0	0.0	16.7	33.3	50.0
Awudome Senior High.	0.0	8.3	41.7	33.3	16.7
Benkum Senior High School, Larteh	0.0	0.0	58.3	33.3	8.3
Berekum Senior High	0.0	0.0	33.3	58.3	8.3
Bimbila Senior High	0.0	0.0	0.0	41.7	58.3
Bodwesango Senior High	0.0	0.0	16.7	25.0	58.3
Bolga Girls Senior High	0.0	0.0	25.0	41.7	33.3
Bompeh Senior High/Tech	0.0	16.7	25.0	50.0	8.3
Boso Senior High Technical	0.0	8.3	50.0	41.7	0.0
Bueman Senior High School	0.0	8.3	8.3	75.0	8.3
Business Senior High School	0.0	8.3	8.3	83.3	0.0
Christian Methodist Senior High	0.0	0.0	8.3	75.0	16.7
Dagbon State Senior High/Tech	0.0	0.0	8.3	25.0	66.7
Dormaa Senior High	0.0	0.0	33.3	25.0	41.7
Dwamena Akenten Senior High	0.0	0.0	41.7	25.0	33.3

Dzodze Penyi Senior High	0.0	0.0	25.0	25.0	50.0
E.P.C. Mawuko Girls Senior High	0.0	0.0	25.0	41.7	33.3
Effiduase Senior High/Com	0.0	0.0	33.3	33.3	33.3
Effutu Senior High/Tech	0.0	0.0	50.0	41.7	8.3
Eguafo-Abrem Senior High	0.0	0.0	25.0	41.7	33.3
Ejisu Senior High/Tech	0.0	0.0	50.0	16.7	33.3
Fijai Senior High	0.0	33.3	58.3	8.3	0.0
Ghana National College	0.0	16.7	50.0	25.0	8.3
Ghanasco Senior High School	0.0	0.0	0.0	25.0	75.0
Ghanata Senior High	0.0	0.0	50.0	40.0	10.0
H'Mount Sinai Senior High	0.0	16.7	41.7	33.3	8.3
Huni Valley Senior High	0.0	8.3	41.7	50.0	0.0
Jirapa Senior High School	0.0	8.3	8.3	58.3	25.0
Juaboso Senior High	0.0	0.0	16.7	50.0	33.3
Kadjebi-Asato Senior High	0.0	0.0	16.7	41.7	41.7
Kalpohin Senior High	0.0	8.3	25.0	25.0	41.7
Kaneshie Senior High/Tech.	0.0	8.3	50.0	41.7	0.0
Keta Senior High/Tech.	0.0	33.3	16.7	33.3	16.7
Kintampo Senior High	0.0	0.0	8.3	41.7	50.0
Kpando Bishop Herman College	0.0	33.3	41.7	25.0	0.0
Kpando Senior High	8.3	8.3	41.7	41.7	0.0
Kukuom Agric Senior High	0.0	8.3	83.3	0.0	8.3
Kumasi High School	0.0	8.3	25.0	58.3	8.3
Kumasi Senior High/Tech	0.0	25.0	50.0	25.0	0.0
Kusanaba Senior High	0.0	0.0	16.7	16.7	66.7
Kwahu Ridge Senior High School, Obo-K.	0.0	16.7	8.3	50.0	25.0
Kwegyir Aggrey Senior High	0.0	8.3	33.3	41.7	16.7
Mando Senior High/Tech.	0.0	8.3	41.7	50.0	0.0
Manya Krobo Senior High	0.0	8.3	33.3	33.3	25.0
Mawuli School, Ho	0.0	50.0	41.7	8.3	0.0
Nana Brentu Senior High/Tech	0.0	0.0	16.7	50.0	33.3
Navrongo Senior High Senior High	0.0	0.0	41.7	33.3	25.0
New Edubiase Senior High	0.0	0.0	16.7	33.3	50.0
Ngleshie Amanfro Senior High	0.0	0.0	41.7	58.3	0.0
Nkawkaw Senior High	0.0	8.3	25.0	41.7	25.0

Northern School of Business	0.0	0.0	0.0	41.7	58.3
Nungua Senior High	0.0	8.3	50.0	25.0	16.7
Nyakrom Senior High Tech	0.0	0.0	21.4	28.6	50.0
Okomfo Anokye Senior High	0.0	0.0	16.7	66.7	16.7
Oppong Mem. Senior High	0.0	0.0	0.0	58.3	41.7
Our Lady of Providence Senior High	0.0	0.0	25.0	25.0	50.0
Owerriman Senior High/Tech	0.0	0.0	33.3	58.3	8.3
Pong Tamale Senior High	0.0	0.0	8.3	75.0	16.7
Presby Senior High/Tech, Aburi	0.0	0.0	25.0	66.7	8.3
Presby Senior High/Tech, Larteh	0.0	0.0	0.0	58.3	41.7
S.D.A. Senior High, Bekwai	0.0	8.3	33.3	50.0	8.3
Sandema Senior High	0.0	0.0	16.7	66.7	16.7
Sandema Senior High/Tech	0.0	8.3	25.0	50.0	16.7
Savelugu Senior High	0.0	0.0	8.3	58.3	33.3
Shama Senior High	0.0	0.0	50.0	50.0	0.0
St. Augustine's Senior High, Bogoso	0.0	0.0	16.7	50.0	33.3
St. John's Grammar Senior High	0.0	16.7	50.0	25.0	8.3
St. Joseph Senior High/Tech, Ahwiren	0.0	0.0	0.0	36.4	63.6
St. Paul's Senior High, Asakraka Kwahu	0.0	0.0	33.3	41.7	25.0
St. Paul's Senior High, Denu	0.0	16.7	58.3	25.0	0.0
St. Peter Senior High	0.0	16.7	66.7	16.7	0.0
Swedru School of Business	0.0	10.0	50.0	20.0	20.0
T. I. Ahmadiyya Senior High, Kumasi	0.0	16.7	33.3	33.3	16.7
Tamale Girls Senior High School	0.0	8.3	16.7	66.7	8.3
Three Town Senior High	0.0	0.0	41.7	16.7	41.7
Wamanafo Senior High/Tech	0.0	0.0	0.0	0.0	100.0
Wbm Zion SH, Old Tafo	0.0	8.3	25.0	41.7	25.0
Wenchi Meth. Senior High	0.0	0.0	41.7	50.0	8.3
Wesley Girls Senior High, Cape Coast	0.0	75.0	25.0	0.0	0.0
Wesley Senior High, Konongo .	0.0	8.3	33.3	16.7	41.7
Winneba Senior High	0.0	25.0	33.3	41.7	0.0
Yamfo Anglican Senior High School	0.0	0.0	8.3	16.7	75.0
Yeji Senior High School	0.0	0.0	8.3	25.0	66.7
Yilo Krobo Senior High/Com	0.0	8.3	8.3	66.7	16.7
Zion Senior High	0.0	0.0	25.0	41.7	33.3

Zuarunqu Senior High	0.0	0.0	58.3	33.3	8.3
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Table A3.12 Item framework of science literacy assessment by school

	<i>Local/National/Social</i>	<i>Global (Life across the world)</i>	<i>Identify scientifically oriented issues</i>	<i>Explain phenomena scientifically</i>	<i>Use scientific evidence</i>	<i>Knowledge of science (physical, living and technology systems, etc.)</i>	<i>Knowledge about science (scientific inquiry and explanations)</i>	<i>Low</i>	<i>Medium</i>
Ahafo	79.2	61.3	54.0	46.7	39.6	54.6	41.7	66.7	46.8
Ashanti	82.3	67.1	57.3	51.7	34.4	58.5	41.9	71.9	49.3
Bono	78.3	61.4	52.8	44.8	25.0	52.7	38.7	68.2	43.1
Bono East	66.7	54.6	46.7	39.7	27.1	46.7	33.8	60.9	39.2
Central	90.9	75.0	63.9	60.6	38.3	65.3	51.1	79.7	57.5
Eastern	83.9	70.9	60.2	58.2	37.8	62.3	46.6	74.7	55.7
G. Accra	93.9	74.0	63.3	61.1	40.2	65.6	49.5	78.0	58.4
Northern	60.2	59.2	48.3	46.5	28.2	50.2	37.3	62.7	44.3
Oti	70.8	62.9	51.3	52.2	31.3	54.6	39.4	64.3	50.0
U. East	76.2	63.8	54.6	49.8	31.5	56.0	39.9	67.6	47.9
U. West	83.3	65.2	57.2	45.6	20.8	57.8	35.2	73.8	42.6
Volta	83.2	72.1	61.7	56.9	37.4	63.8	46.3	76.9	54.7
Western	85.0	72.2	62.2	59.2	38.3	64.6	47.2	76.3	57.4
Western North	69.4	57.0	47.1	44.1	29.2	46.6	39.2	63.4	42.2

Table A3.13 Item framework of science literacy assessment by school

	<i>Local/National/Social</i>	<i>Global (Life across the world)</i>	<i>Identify scientifically oriented issues</i>	<i>Explain phenomena scientifically</i>	<i>Use scientific evidence</i>	<i>Knowledge of science (physical, living and technology systems, etc.)</i>	<i>Knowledge about science (scientific inquiry and explanations)</i>	<i>Low</i>	<i>Medium</i>
Kukuom Agric Senior High	100.0	76.7	68.1	63.3	62.5	69.9	56.5	79.8	63.7
Yamfo Anglican Senior High School	58.3	45.9	39.9	30.0	16.7	39.2	26.9	53.6	29.9
Adanwomase Senior High	75.0	54.3	47.5	40.6	29.2	47.8	33.3	62.3	40.2
Adu Gyamfi Senior High	100.0	77.1	66.3	60.0	37.5	67.5	46.3	79.4	57.8
Amaniampong Senior High	91.7	75.4	64.1	60.6	70.8	67.7	55.6	79.8	59.8
Anglican Senior High, Kumasi	91.7	85.9	71.7	73.9	20.8	75.8	54.6	89.3	66.2
Bodwesango Senior High	58.3	56.0	50.4	35.0	12.5	49.2	22.2	64.7	33.3
Dwamena Akenten Senior High	75.0	64.1	53.6	46.7	37.5	54.8	39.8	71.0	43.6
Effiduase Senior High/Com	100.0	64.3	54.3	50.6	25.0	54.6	41.7	69.8	47.1
Ejisu Senior High/Tech	100.0	69.2	61.6	48.3	37.5	61.3	39.8	75.8	47.1
Kumasi High School	83.3	71.6	61.6	58.3	37.5	61.6	52.8	76.6	54.9
Kumasi Senior High/Tech	100.0	82.1	73.6	65.6	33.3	76.1	45.4	89.3	59.3
New Edubiase Senior High	83.3	57.5	50.4	40.0	33.3	48.7	35.2	61.1	40.7
Okomfo Anokye Senior High	83.3	63.2	51.8	51.1	41.7	54.0	47.2	68.7	50.0

Oppong Mem. Senior High	66.7	56.8	45.7	43.9	20.8	47.0	33.3	57.1	40.7
Owerriman Senior High/Tech	83.3	72.4	59.1	58.3	33.3	63.7	40.7	73.8	53.9
S.D.A. Senior High, Bekwai	91.7	67.5	59.1	51.7	37.5	59.9	41.7	70.6	51.0
St. Joseph Senior High/Tech, Ahwiren	54.5	49.2	41.5	33.9	18.2	40.8	26.3	55.8	32.6
T. I. Ahmadiyya Senior High, Kumasi	75.0	73.5	62.3	56.1	45.8	64.5	45.4	77.8	54.4
Wesley Senior High, Konongo	66.7	66.9	55.8	55.0	45.8	57.3	51.9	70.6	53.4
Berekum Senior High	75.0	69.4	60.9	49.4	20.8	60.8	38.0	76.6	45.6
Dormaa Senior High	91.7	66.5	55.8	48.9	20.8	58.1	37.0	73.4	44.1
Our Lady of Providence Senior High	83.3	58.3	52.2	38.3	41.7	50.3	40.7	63.5	40.2
Wamanafo Senior High/Tech	58.3	44.2	35.9	32.2	4.2	34.4	27.8	52.0	31.9
Wenchi Meth. Senior High	83.3	68.4	59.4	55.0	37.5	60.2	50.0	75.4	53.9
Ameyaw Akumfi Senior High/Tech.	58.3	56.6	46.4	45.6	50.0	48.4	38.0	57.5	46.1
Atebubu Senior High	66.7	63.0	54.7	47.2	25.0	54.6	38.9	68.7	46.6
Kintampo Senior High	75.0	54.5	48.6	38.3	16.7	47.3	31.5	64.7	37.3

Yeji Senior High School	66.7	44.4	37.3	27.8	16.7	36.6	26.9	52.8	27.0
Aggrey Mem. A.M.E. Zion Snr. High	91.7	84.6	71.4	68.9	58.3	74.5	62.0	91.7	65.7
Assin Manso Senior High	100.0	84.0	73.9	66.1	25.0	74.5	51.9	88.5	62.7
Effutu Senior High/Tech	75.0	71.2	63.8	56.7	45.8	63.2	48.1	75.8	56.4
Eguafo-Abrem Senior High	100.0	61.1	53.3	43.9	16.7	52.4	35.2	66.7	39.7
Ghana National College	83.3	79.7	64.1	67.2	54.2	67.7	59.3	81.0	64.7
Swedru School of Business	80.0	74.4	61.7	56.0	40.0	62.9	47.8	80.0	51.2
Kwegyir Aggrey Senior High	83.3	67.5	60.1	51.7	29.2	59.7	44.4	75.0	49.0
Mando Senior High/Tech.	91.7	74.1	65.9	57.2	25.0	66.1	48.1	82.1	54.4
Nyakrom Senior High Tech	92.9	59.3	44.7	45.2	21.4	47.7	36.5	61.9	41.2
Wesley Girls Senior High, Cape Coast	100.0	94.7	82.6	82.8	58.3	85.2	68.5	99.2	79.9
Winneba Senior High	100.0	76.9	63.8	72.2	50.0	66.7	62.0	77.8	69.6
Aburi Girls Senior High	91.7	89.5	78.3	77.8	75.0	81.2	66.7	91.7	77.0
Asewewa Senior High School	91.7	67.5	59.1	53.9	25.0	59.9	36.1	72.6	49.5
Benkum Senior High School, Larteh	100.0	73.3	60.5	64.4	54.2	64.0	56.5	74.2	63.7
Boso Senior High Technical	75.0	72.9	64.1	62.8	41.7	65.1	48.1	79.4	59.8
H'Mount Sinai Senior High	100.0	78.4	64.9	61.1	58.3	65.3	59.3	81.0	58.8
Kwahu Ridge Senior High School, Obo-Kwa	83.3	66.5	59.1	53.3	37.5	59.4	41.7	70.6	53.9
Manya Krobo Senior High	91.7	69.2	57.2	56.7	29.2	60.5	44.4	70.6	53.4
Nkawkaw Senior High	58.3	69.0	59.1	52.8	37.5	60.8	40.7	77.0	51.0
Presby Senior High/Tech, Aburi	100.0	69.0	57.6	52.2	20.8	59.1	43.5	73.0	48.5
Presby Senior High/Tech, Larteh	75.0	58.5	47.1	47.2	16.7	49.7	36.1	61.1	43.6
St. Paul's Senior High, Asakraka Kwahu	83.3	68.4	58.7	53.3	25.0	60.5	37.0	74.6	49.0
St. Peter Senior High	100.0	81.4	68.1	68.9	50.0	72.3	59.3	85.3	66.7

Wbm Zion SH, Old Tafo	75.0	65.0	56.2	51.7	29.2	57.3	41.7	69.8	50.0
Yilo Krobo Senior High/Com	50.0	64.3	52.9	58.3	29.2	56.5	40.7	64.3	55.4
Accra Academy	100.0	86.8	74.3	76.1	58.3	76.3	66.7	91.3	71.6
Christian Methodist Senior High	100.0	64.7	56.5	53.9	29.2	57.3	40.7	68.7	51.0
Ghanata Senior High	100.0	68.2	61.3	56.7	35.0	63.9	42.2	72.9	55.9
Kaneshie Senior High/Tech.	100.0	75.4	63.8	63.3	37.5	64.5	55.6	74.6	62.3
Ngleshie Amanfro Senior High	91.7	71.8	62.0	51.1	29.2	64.8	35.2	81.3	47.1
Nungua Senior High	83.3	73.1	58.0	62.2	54.2	61.6	57.4	75.4	59.8
St. John's Grammar Senior High	83.3	76.7	67.0	63.9	37.5	70.4	47.2	81.3	60.8
Navrongo Senior High Senior High	83.3	68.8	59.1	52.2	16.7	61.3	38.0	73.8	48.5
Bimbila Senior High	41.7	53.2	40.2	44.4	41.7	41.7	41.7	52.8	43.1
Dagbon State Senior High/Tech	58.3	54.3	40.9	41.7	37.5	43.5	34.3	56.0	41.2
Ghanasco Senior High School	41.7	51.9	41.3	39.4	16.7	42.7	33.3	57.9	36.3
Northern School of Business	66.7	45.3	36.6	32.2	29.2	36.6	27.8	47.2	32.8
Pong Tamale Senior High	75.0	65.4	51.4	58.3	41.7	57.8	40.7	65.5	53.9
Savelugu Senior High	33.3	60.9	50.0	50.6	33.3	50.3	45.4	63.1	51.0
Bueman Senior High School	66.7	66.5	54.0	60.0	25.0	58.1	43.5	65.1	57.4
Kadjebi-Asato Senior High	75.0	59.4	48.6	44.4	37.5	51.1	35.2	63.5	42.6
Business Senior High School	100.0	71.2	64.9	56.7	16.7	67.2	40.7	78.2	53.4
Kalpohin Senior High	41.7	63.5	50.4	47.8	29.2	51.6	39.8	67.5	44.1
Awe Senior High/Tech.	75.0	58.5	50.7	47.8	12.5	52.2	30.6	60.7	44.1
Bolga Girls Senior High	66.7	65.2	53.3	50.0	25.0	55.9	36.1	66.7	47.1
Kusanaba Senior High	33.3	51.7	44.9	33.9	37.5	43.5	33.3	61.1	35.3
Tamale Girls Senior High School	83.3	67.3	59.1	47.8	8.3	60.8	32.4	76.6	42.6
Zuarungu Senior High	100.0	71.8	61.6	64.4	45.8	64.8	50.0	72.2	61.8

Jirapa Senior High School	83.3	65.2	57.2	45.6	20.8	57.8	35.2	73.8	42.6
Sandema Senior High	91.7	64.3	55.8	43.9	33.3	55.4	42.6	73.4	41.7
Sandema Senior High/Tech	83.3	66.2	56.9	56.7	50.0	59.1	49.1	65.5	56.9
Akatsi Senior High/Tech	91.7	70.7	60.1	55.0	33.3	62.9	42.6	74.2	52.9
Anfoega Senior High	81.8	63.6	55.7	43.0	36.4	54.5	38.4	68.4	40.6
Awudome Senior High.	75.0	71.2	58.7	64.4	41.7	62.4	53.7	69.0	62.7
Dzodze Penyi Senior High	75.0	59.6	51.1	38.9	20.8	52.4	25.0	69.4	35.8
E.P.C. Mawuko Girls Senior High	75.0	63.7	51.8	43.3	33.3	53.8	36.1	70.6	40.7
Keta Senior High/Tech.	91.7	80.3	67.8	70.0	29.2	72.3	51.9	84.1	64.7
Kpando Senior High	91.7	79.9	65.6	69.4	33.3	71.0	52.8	81.3	64.2
Kpando Bishop Herman College	100.0	81.6	75.4	64.4	45.8	75.3	50.9	89.7	63.2
Mawuli School, Ho	66.7	88.9	75.7	78.3	75.0	79.6	71.3	92.1	78.9
St. Paul's Senior High, Denu	100.0	78.6	69.2	66.7	41.7	71.2	58.3	85.7	63.7
Three Town Senior High	75.0	61.1	55.1	40.6	33.3	54.3	34.3	68.3	42.2
Zion Senior High	75.0	65.0	53.6	47.2	25.0	54.8	39.8	69.4	45.1
Bompeh Senior High/Tech	91.7	69.7	61.2	54.4	25.0	62.1	46.3	77.0	51.0
Fijai Senior High	91.7	84.0	75.4	70.0	58.3	77.2	54.6	86.9	69.6
Huni Valley Senior High	83.3	73.9	62.0	64.4	50.0	66.1	49.1	78.2	61.8
Shama Senior High	91.7	71.6	64.1	58.9	33.3	65.9	44.4	76.2	57.8
St. Augustine's Senior High, Bogoso	66.7	62.0	48.6	48.3	25.0	51.6	41.7	63.5	46.6
Asawinso Senior High	50.0	45.7	34.4	32.2	29.2	34.7	30.6	52.0	31.4
Juaboso Senior High	91.7	65.4	54.3	55.0	20.8	52.7	50.0	71.8	50.0
Nana Brentu Senior High/Tech	66.7	59.8	52.5	45.0	37.5	52.4	37.0	66.3	45.1

Table A3.14 proficiency level of 21st century skills by region

Region	Highly proficient	Proficient	Approaching proficiency	Developing	Emerging
Ahafo	0.0	4.2	20.8	41.7	33.3
Ashanti	0.9	20.4	43.1	24.1	11.6
Bono	1.6	16.4	55.7	21.3	4.9
Bono East	0.0	6.3	20.8	45.8	27.1
Central	0.0	33.6	44.3	19.1	3.1
Eastern	1.8	23.8	45.8	22.6	6.0
G. Accra	2.4	28.6	48.8	15.5	4.8
Northern	0.0	5.6	39.3	43.9	11.2
Oti	0.0	21.7	47.8	26.1	4.4
U. East	0.0	9.5	47.6	33.3	9.5
U. West	0.0	8.3	16.7	50.0	25.0
Volta	0.7	29.2	47.2	17.4	5.6
Western	1.7	30.0	53.3	11.7	3.3
Western North	0.0	0.0	30.6	33.3	36.1
Total	0.8	20.5	43.7	25.4	9.5

Table A3.15 proficiency level of 21st century skills by school

School	Highly proficient	Proficient	Approaching proficiency	Developing	Emerging
Kukuom Agric Senior High	0.0	8.3	33.3	50.0	8.3
Yamfo Anglican Senior High School	0.0	0.0	8.3	33.3	58.3
Adanwomase Senior High	0.0	0.0	25.0	50.0	25.0
Adu Gyamfi Senior High	0.0	25.0	50.0	25.0	0.0
Amaniampong Senior High	8.3	41.7	50.0	0.0	0.0

School	Highly proficient	Proficient	Approaching proficiency	Developing	Emerging
Anglican Senior High, Kumasi	0.0	75.0	8.3	16.7	0.0
Bodwesango Senior High	0.0	8.3	16.7	25.0	50.0
Dwamena Akenten Senior High	8.3	0.0	50.0	33.3	8.3
Effiduase Senior High/Com	0.0	8.3	41.7	25.0	25.0
Ejisu Senior High/Tech	0.0	41.7	50.0	8.3	0.0
Kumasi High School	0.0	25.0	50.0	16.7	8.3
Kumasi Senior High/Tech	0.0	58.3	41.7	0.0	0.0
New Edubiase Senior High	0.0	16.7	41.7	33.3	8.3
Okomfo Anokye Senior High	0.0	0.0	66.7	16.7	16.7
Oppong Mem. Senior High	0.0	16.7	50.0	16.7	16.7
Owerriman Senior High/Tech	0.0	33.3	58.3	8.3	0.0
S.D.A. Senior High, Bekwai	0.0	8.3	41.7	33.3	16.7
St. Joseph Senior High/Tech, Ahwiren	0.0	0.0	25.0	50.0	25.0
T. I. Ahmadiyya Senior High, Kumasi	0.0	8.3	41.7	50.0	0.0
Wesley Senior High, Konongo.	0.0	0.0	66.7	25.0	8.3
Berekum Senior High	8.3	25.0	50.0	16.7	0.0
Dormaa Senior High	0.0	25.0	50.0	25.0	0.0
Our Lady of Providence Senior High	0.0	16.7	50.0	16.7	16.7
Wamanafo Senior High/Tech	0.0	0.0	46.2	46.2	7.7
Wenchi Meth. Senior High	0.0	16.7	83.3	0.0	0.0
Ameyaw Akumfi Senior High/Tech.	0.0	8.3	25.0	41.7	25.0
Atebubu Senior High	0.0	8.3	33.3	41.7	16.7
Kintampo Senior High	0.0	8.3	25.0	41.7	25.0
Yeji Senior High School	0.0	0.0	0.0	58.3	41.7
Aggrey Mem. A.M.E. Zion Snr. High	0.0	75.0	16.7	8.3	0.0
Assin Manso Senior High	0.0	66.7	25.0	8.3	0.0
Effutu Senior High/Tech	0.0	16.7	41.7	33.3	8.3
Eguafo-Abrem Senior High	0.0	0.0	58.3	33.3	8.3
Ghana National College	0.0	18.2	72.7	9.1	0.0
Swedru School of Business	0.0	30.0	60.0	10.0	0.0
Kwegyir Aggrey Senior High	0.0	33.3	41.7	25.0	0.0
Mando Senior High/Tech.	0.0	23.1	46.2	15.4	15.4
Nyakrom Senior High Tech	0.0	0.0	46.2	53.9	0.0

School	Highly proficient	Proficient	Approaching proficiency	Developing	Emerging
Wesley Girls Senior High, Cape Coast	0.0	83.3	16.7	0.0	0.0
Winneba Senior High	0.0	25.0	66.7	8.3	0.0
Aburi Girls Senior High	0.0	66.7	33.3	0.0	0.0
Asesewa Senior High School	0.0	25.0	41.7	25.0	8.3
Benkum Senior High School, Larteh	7.7	23.1	46.2	23.1	0.0
Boso Senior High Technical	0.0	8.3	41.7	41.7	8.3
H'Mount Sinai Senior High	0.0	0.0	75.0	16.7	8.3
Kwahu Ridge Senior High School, Obo-Kwa	8.3	0.0	66.7	25.0	0.0
Manya Krobo Senior High	0.0	16.7	50.0	16.7	16.7
Nkawkaw Senior High	0.0	0.0	33.3	50.0	16.7
Presby Senior High/Tech, Aburi	0.0	33.3	58.3	0.0	8.3
Presby Senior High/Tech, Larteh	9.1	27.3	27.3	36.4	0.0
St. Paul's Senior High, Asakraka Kwahu	0.0	25.0	58.3	16.7	0.0
St. Peter Senior High	0.0	66.7	33.3	0.0	0.0
Wbm Zion SH, Old Tafo	0.0	41.7	25.0	25.0	8.3
Yilo Krobo Senior High/Com	0.0	0.0	50.0	41.7	8.3
Accra Academy	8.3	66.7	25.0	0.0	0.0
Christian Methodist Senior High	0.0	8.3	66.7	25.0	0.0
Ghanata Senior High	0.0	33.3	58.3	0.0	8.3
Kaneshie Senior High/Tech.	0.0	41.7	25.0	25.0	8.3
Ngleshie Amanfro Senior High	0.0	23.1	46.2	23.1	7.7
Nungua Senior High	8.3	8.3	83.3	0.0	0.0
St. John's Grammar Senior High	0.0	18.2	36.4	36.4	9.1
Navrongo Senior High Senior High	0.0	8.3	66.7	16.7	8.3
Bimbila Senior High	0.0	0.0	16.7	58.3	25.0
Dagbon State Senior High/Tech	0.0	0.0	41.7	50.0	8.3
Ghanasco Senior High School	0.0	0.0	50.0	41.7	8.3
Northern School of Business	0.0	0.0	27.3	54.6	18.2
Pong Tamale Senior High	0.0	16.7	25.0	50.0	8.3
Savelugu Senior High	0.0	0.0	33.3	50.0	16.7
Bueman Senior High School	0.0	25.0	50.0	16.7	8.3
Kadjebi-Asato Senior High	0.0	18.2	45.5	36.4	0.0
Business Senior High School	0.0	16.7	83.3	0.0	0.0

School	Highly proficient	Proficient	Approaching proficiency	Developing	Emerging
Kalpohin Senior High	0.0	16.7	16.7	50.0	16.7
Awe Senior High/Tech.	0.0	8.3	33.3	50.0	8.3
Bolga Girls Senior High	0.0	8.3	50.0	33.3	8.3
Kusanaba Senior High	0.0	16.7	16.7	41.7	25.0
Tamale Girls Senior High School	0.0	0.0	58.3	41.7	0.0
Zuarungu Senior High	0.0	8.3	41.7	50.0	0.0
Jirapa Senior High School	0.0	8.3	16.7	50.0	25.0
Sandema Senior High	0.0	8.3	50.0	33.3	8.3
Sandema Senior High/Tech	0.0	8.3	75.0	8.3	8.3
Akatsi Senior High/Tech	0.0	50.0	41.7	0.0	8.3
Anfoega Senior High	0.0	16.7	41.7	41.7	0.0
Awudome Senior High.	0.0	8.3	66.7	16.7	8.3
Dzodze Penyi Senior High	0.0	0.0	41.7	33.3	25.0
E.P.C. Mawuko Girls Senior High	0.0	41.7	41.7	16.7	0.0
Keta Senior High/Tech.	0.0	41.7	50.0	8.3	0.0
Kpando Senior High	0.0	25.0	66.7	8.3	0.0
Kpando Bishop Herman College	8.3	25.0	50.0	16.7	0.0
Mawuli School, Ho	0.0	66.7	33.3	0.0	0.0
St. Paul's Senior High, Denu	0.0	41.7	58.3	0.0	0.0
Three Town Senior High	0.0	8.3	33.3	33.3	25.0
Zion Senior High	0.0	25.0	41.7	33.3	0.0
Bompeh Senior High/Tech	0.0	33.3	58.3	8.3	0.0
Fijai Senior High	8.3	41.7	41.7	8.3	0.0
Huni Valley Senior High	0.0	33.3	50.0	16.7	0.0
Shama Senior High	0.0	25.0	75.0	0.0	0.0
St. Augustine's Senior High, Bogoso	0.0	16.7	41.7	25.0	16.7
Asawinso Senior High	0.0	0.0	0.0	58.3	41.7
Juaboso Senior High	0.0	0.0	58.3	16.7	25.0
Nana Brentu Senior High/Tech	0.0	0.0	33.3	25.0	41.7

Table A3.16 Item framework of 21st century skills by region

Region	Discipline and Integrity	Responsible citizenship	Cultural identity, civic literacy, and global citizenship	ICT and digital literacy	Self-discipline	Adaptability and resourcefulness	Leadership	Financial literacy and entrepreneurship	Critical thinking and problem-solving
Ahafo	69.8	59.2	45.1	56.9	42.5	58.3	38.9	32.7	28.2
Ashanti	81.4	68.5	59.6	61.7	59.2	63.9	59.6	49.1	34.0
Bono	82.8	70.8	63.6	71.6	66.9	61.2	60.1	44.3	31.9
Bono East	66.7	48.3	51.7	54.2	43.8	50.0	50.7	46.7	27.5
Central	82.6	73.6	67.8	69.0	72.7	62.3	63.4	48.2	33.8
Eastern	79.3	72.6	64.7	65.3	67.7	61.1	60.5	51.4	32.3
G. Accra	84.5	74.3	66.8	64.7	67.9	67.9	62.7	50.5	35.2
Northern	73.1	56.4	54.7	57.9	56.6	51.7	49.5	43.7	32.4
Oti	80.4	70.4	62.5	50.7	67.0	66.7	53.6	50.9	34.8
U. East	78.0	62.4	61.0	51.2	61.0	59.5	54.4	43.9	33.3
U. West	77.1	55.0	48.5	50.0	53.3	47.2	58.3	35.7	24.1
Volta	85.1	75.1	65.9	64.8	69.9	62.7	60.4	49.7	33.8
Western	84.6	78.3	67.3	71.1	67.3	66.1	60.0	52.4	36.7
Western North	66.7	48.9	55.6	60.2	47.2	44.4	50.0	42.9	24.7

Table A3.17 Item framework of 21st century skills by region

school	Discipline and Integrity	Responsible citizenship	Cultural identity, civic literacy, and global citizenship	ICT and digital literacy	Self-discipline	Adaptability and resourcefulness	Leadership	Financial literacy and entrepreneurship	Critical thinking and problem-solving
Kukuom Agric Senior High	81.3	63.3	53.8	72.2	53.3	61.1	41.7	35.7	26.9
Yamfo Anglican Senior Hig	58.3	55.0	36.4	41.7	31.7	55.6	36.1	29.8	29.6
Adanwomase Senior High	72.9	45.0	48.5	41.7	36.7	63.9	55.6	35.7	38.9
Adu Gyamfi Senior High	91.7	71.7	64.4	58.3	63.3	69.4	58.3	50.0	36.1
Amaniampong Senior High	87.5	78.3	75.0	75.0	65.0	66.7	66.7	60.7	38.9
Anglican Senior High, Kum	97.9	90.0	72.0	83.3	81.7	72.2	52.8	56.0	41.7
Bodwesango Senior High	66.7	58.3	44.7	52.8	38.3	50.0	44.4	39.3	31.5
Dwamena Akenten Senior Hi	81.3	70.0	62.1	72.2	61.7	55.6	58.3	46.4	22.2
Effiduase Senior High/Com	79.2	61.7	49.2	50.0	48.3	63.9	55.6	44.0	33.3

school	Discipline and Integrity	Responsible citizenship	Cultural identity, civic literacy, and global citizenship	ICT and digital literacy	Self-discipline	Adaptability and resourcefulness	Leadership	Financial literacy and entrepreneurship	Critical thinking and problem-solving
Ejisu Senior High/Tech	93.8	93.3	68.9	72.2	76.7	66.7	63.9	61.9	39.8
Kumasi High School	81.3	66.7	62.1	66.7	60.0	66.7	52.8	52.4	33.3
Kumasi Senior High/Tech	93.8	88.3	72.7	75.0	71.7	69.4	75.0	59.5	35.2
New Edubiase Senior High	79.2	70.0	58.3	41.7	70.0	69.4	52.8	42.9	32.4
Okomfo Anokye Senior High	70.8	65.0	58.3	52.8	58.3	63.9	52.8	46.4	40.7
Oppong Mem. Senior High	83.3	66.7	50.0	61.1	71.7	72.2	63.9	41.7	36.1
Owerriman Senior High/Tec	83.3	80.0	65.9	75.0	70.0	72.2	66.7	52.4	37.0
S.D.A. Senior High, Bekwa	70.8	51.7	53.0	47.2	40.0	58.3	63.9	57.1	26.9
St. Joseph Senior High/Te	64.6	45.0	53.0	52.8	38.3	44.4	63.9	35.7	30.6
T. I. Ahmadiyya Senior Hi	77.1	71.7	55.3	72.2	63.3	63.9	55.6	48.8	25.9

school	Discipline and Integrity	Responsible citizenship	Cultural identity, civic literacy, and global citizenship	ICT and digital literacy	Self-discipline	Adaptability and resourcefulness	Leadership	Financial literacy and entrepreneurship	Critical thinking and problem-solving
Wesley Senior High, Konon	89.6	60.0	59.8	61.1	50.0	61.1	69.4	53.6	31.5
Berekum Senior High	83.3	71.7	64.4	86.1	65.0	63.9	66.7	52.4	38.9
Dormaa Senior High	81.3	73.3	69.7	75.0	70.0	61.1	63.9	42.9	28.7
Our Lady of Providence Se	87.5	70.0	58.3	52.8	61.7	63.9	61.1	50.0	27.8
Wamanafo Senior High/Tech	80.8	64.6	59.4	74.4	63.1	48.7	51.3	28.6	28.2
Wenchi Meth. Senior High	81.3	75.0	66.7	69.4	75.0	69.4	58.3	48.8	36.1
Ameyaw Akumfi Senior High	64.6	48.3	53.0	58.3	48.3	52.8	55.6	50.0	25.9
Atebubu Senior High	70.8	61.7	56.1	47.2	48.3	41.7	50.0	53.6	30.6
Kintampo Senior High	66.7	50.0	54.5	63.9	43.3	52.8	44.4	45.2	24.1

school	Discipline and Integrity	Responsible citizenship	Cultural identity, civic literacy, and global citizenship	ICT and digital literacy	Self-discipline	Adaptability and resourcefulness	Leadership	Financial literacy and entrepreneurship	Critical thinking and problem-solving
Yeji Senior High School	64.6	33.3	43.2	47.2	35.0	52.8	52.8	38.1	29.6
Aggrey Mem. A.M.E. Zion S	91.7	80.0	79.5	69.4	76.7	75.0	63.9	61.9	37.0
Assin Manso Senior High	87.5	81.7	81.8	69.4	81.7	72.2	61.1	51.2	36.1
Effutu Senior High/Tech	66.7	66.7	62.1	72.2	70.0	61.1	50.0	42.9	33.3
Eguafo-Abrem Senior High	68.8	61.7	51.5	55.6	60.0	58.3	61.1	42.9	27.8
Ghana National College	81.8	76.4	73.6	66.7	67.3	57.6	60.6	44.2	35.4
Swedru School of Business	90.0	78.0	66.4	80.0	68.0	63.3	70.0	41.4	36.7
Kwegyir Aggrey Senior Hig	81.3	75.0	63.6	66.7	76.7	55.6	72.2	50.0	36.1
Mando Senior High/Tech.	82.7	70.8	60.8	66.7	60.0	53.8	59.0	44.0	25.6
Nyakrom Senior High Tech	67.3	56.9	53.8	59.0	67.7	56.4	69.2	50.5	26.5

school	Discipline and Integrity	Responsible citizenship	Cultural identity, civic literacy, and global citizenship	ICT and digital literacy	Self-discipline	Adaptability and resourcefulness	Leadership	Financial literacy and entrepreneurship	Critical thinking and problem-solving
Wesley Girls Senior High,	95.8	91.7	80.3	66.7	88.3	69.4	66.7	61.9	42.6
Winneba Senior High	97.9	73.3	74.2	88.9	83.3	63.9	63.9	38.1	36.1
Aburi Girls Senior High	95.8	85.0	78.0	63.9	81.7	63.9	61.1	58.3	40.7
Asesewa Senior High School	66.7	63.3	72.7	58.3	61.7	50.0	58.3	45.2	36.1
Benkum Senior High School	96.2	76.9	69.9	71.8	81.5	64.1	69.2	48.4	29.9
Boso Senior High Technica	81.3	75.0	61.4	63.9	60.0	58.3	58.3	42.9	23.1
H'Mount Sinai Senior High	83.3	66.7	53.8	72.2	70.0	61.1	50.0	44.0	29.6
Kwahu Ridge Senior High S	79.2	85.0	60.6	50.0	71.7	72.2	58.3	46.4	34.3
Manya Krobo Senior High	72.9	53.3	62.1	61.1	65.0	44.4	47.2	47.6	41.7
Nkawkaw Senior High	79.2	56.7	56.1	50.0	53.3	55.6	55.6	42.9	24.1

school	Discipline and Integrity	Responsible citizenship	Cultural identity, civic literacy, and global citizenship	ICT and digital literacy	Self-discipline	Adaptability and resourcefulness	Leadership	Financial literacy and entrepreneurship	Critical thinking and problem-solving
Presby Senior High/Tech,	75.0	71.7	65.2	66.7	76.7	72.2	58.3	56.0	37.0
Presby Senior High/Tech,	79.5	81.8	57.9	63.6	70.9	63.6	57.6	59.7	39.4
St. Paul's Senior High, A	77.1	75.0	64.4	75.0	63.3	69.4	63.9	56.0	24.1
St. Peter Senior High	87.5	90.0	78.8	80.6	86.7	66.7	61.1	69.0	25.9
Wbm Zion SH, Old Tafo	75.0	71.7	59.8	75.0	50.0	52.8	77.8	51.2	40.7
Yilo Krobo Senior High/Co	60.4	65.0	64.4	61.1	55.0	61.1	69.4	52.4	26.9
Accra Academy	95.8	86.7	81.1	61.1	78.3	75.0	75.0	56.0	48.1
Christian Methodist Senio	85.4	65.0	63.6	69.4	65.0	55.6	63.9	46.4	35.2
Ghanata Senior High	89.6	71.7	69.7	75.0	71.7	66.7	55.6	54.8	38.0
Kaneshie Senior High/Tech	81.3	75.0	68.2	61.1	63.3	69.4	50.0	53.6	33.3

school	Discipline and Integrity	Responsible citizenship	Cultural identity, civic literacy, and global citizenship	ICT and digital literacy	Self-discipline	Adaptability and resourcefulness	Leadership	Financial literacy and entrepreneurship	Critical thinking and problem-solving
Ngleshie Amanfro Senior H	80.8	73.8	55.2	64.1	69.2	69.2	56.4	50.5	32.5
Nungua Senior High	83.3	78.3	67.4	69.4	71.7	75.0	77.8	41.7	32.4
St. John's Grammar Senior	75.0	69.1	62.8	51.5	54.5	63.6	60.6	50.6	26.3
Navrongo Senior High Seni	81.3	65.0	68.9	47.2	60.0	50.0	58.3	41.7	35.2
Bimbila Senior High	60.4	40.0	42.4	55.6	46.7	36.1	44.4	35.7	30.6
Dagbon State Senior High/	58.3	58.3	56.8	63.9	36.7	52.8	58.3	54.8	38.9
Ghanasco Senior High Scho	66.7	55.0	47.0	69.4	70.0	38.9	50.0	46.4	38.0
Northern School of Busine	75.0	50.9	53.7	54.5	58.2	39.4	45.5	35.1	25.3
Pong Tamale Senior High	81.3	60.0	64.4	63.9	50.0	61.1	41.7	47.6	29.6

school	Discipline and Integrity	Responsible citizenship	Cultural identity, civic literacy, and global citizenship	ICT and digital literacy	Self-discipline	Adaptability and resourcefulness	Leadership	Financial literacy and entrepreneurship	Critical thinking and problem-solving
Savelugu Senior High	66.7	40.0	51.5	52.8	55.0	52.8	52.8	32.1	28.7
Bueman Senior High School	79.2	73.3	59.8	50.0	65.0	72.2	50.0	52.4	34.3
Kadjebi-Asato Senior High	81.8	67.3	65.3	51.5	69.1	60.6	57.6	49.4	35.4
Business Senior High Scho	91.7	80.0	61.4	63.9	63.3	66.7	63.9	54.8	40.7
Kalpohin Senior High	79.2	60.0	56.1	47.2	60.0	61.1	50.0	42.9	24.1
Awe Senior High/Tech.	70.8	55.0	55.3	41.7	65.0	58.3	50.0	47.6	33.3
Bolga Girls Senior High	79.2	63.3	58.3	44.4	61.7	55.6	61.1	39.3	31.5
Kusanaba Senior High	81.3	51.7	55.3	47.2	46.7	52.8	50.0	50.0	31.5
Tamale Girls Senior High	79.2	63.3	59.1	50.0	70.0	55.6	38.9	42.9	35.2
Zuarungu Senior High	68.8	61.7	62.1	69.4	65.0	66.7	41.7	46.4	33.3

school	Discipline and Integrity	Responsible citizenship	Cultural identity, civic literacy, and global citizenship	ICT and digital literacy	Self-discipline	Adaptability and resourcefulness	Leadership	Financial literacy and entrepreneurship	Critical thinking and problem-solving
Jirapa Senior High School	77.1	55.0	48.5	50.0	53.3	47.2	58.3	35.7	24.1
Sandema Senior High	77.1	70.0	59.1	50.0	65.0	63.9	47.2	44.0	35.2
Sandema Senior High/Tech	87.5	70.0	68.2	58.3	63.3	69.4	72.2	38.1	33.3
Akatsi Senior High/Tech	85.4	70.0	73.5	66.7	75.0	63.9	63.9	47.6	39.8
Anfoega Senior High	81.3	71.7	61.4	75.0	70.0	50.0	47.2	46.4	29.6
Awudome Senior High.	91.7	71.7	55.3	52.8	75.0	55.6	61.1	44.0	40.7
Dzodze Penyi Senior High	77.1	58.3	52.3	44.4	53.3	61.1	50.0	35.7	29.6
E.P.C. Mawuko Girls Senio	85.4	75.0	69.7	69.4	75.0	72.2	66.7	59.5	38.0
Keta Senior High/Tech.	89.6	78.3	81.1	69.4	75.0	66.7	66.7	52.4	32.4
Kpando Senior High	87.5	90.0	71.2	75.0	75.0	69.4	52.8	51.2	28.7

school	Discipline and Integrity	Responsible citizenship	Cultural identity, civic literacy, and global citizenship	ICT and digital literacy	Self-discipline	Adaptability and resourcefulness	Leadership	Financial literacy and entrepreneurship	Critical thinking and problem-solving
Kpando Bishop Herman Coll	89.6	86.7	68.2	58.3	68.3	61.1	72.2	53.6	28.7
Mawuli School, Ho	93.8	90.0	81.1	75.0	78.3	61.1	58.3	57.1	38.0
St. Paul's Senior High, D	87.5	90.0	69.7	66.7	68.3	69.4	72.2	57.1	32.4
Three Town Senior High	66.7	48.3	55.3	61.1	53.3	61.1	58.3	40.5	33.3
Zion Senior High	85.4	71.7	52.3	63.9	71.7	61.1	55.6	51.2	34.3
Bompeh Senior High/Tech	89.6	86.7	64.4	69.4	66.7	72.2	61.1	51.2	37.0
Fijai Senior High	87.5	80.0	79.5	75.0	66.7	72.2	63.9	52.4	38.0
Huni Valley Senior High	79.2	76.7	64.4	75.0	68.3	75.0	58.3	51.2	38.0
Shama Senior High	91.7	88.3	68.9	63.9	73.3	61.1	61.1	58.3	38.0
St. Augustine's Senior Hi	75.0	60.0	59.1	72.2	61.7	50.0	55.6	48.8	32.4
Asawinso Senior High	60.4	53.3	46.2	61.1	45.0	33.3	36.1	34.5	15.7

school	Discipline and Integrity	Responsible citizenship	Cultural identity, civic literacy, and global citizenship	ICT and digital literacy	Self-discipline	Adaptability and resourcefulness	Leadership	Financial literacy and entrepreneurship	Critical thinking and problem-solving
Juaboso Senior High	62.5	55.0	59.8	69.4	48.3	55.6	61.1	53.6	31.5
Nana Brentu Senior High/T	77.1	38.3	60.6	50.0	48.3	44.4	52.8	40.5	26.9

Figure A3.1 Percentage of preservice student teachers demonstrating knowledge of NTS by sex and level of grade

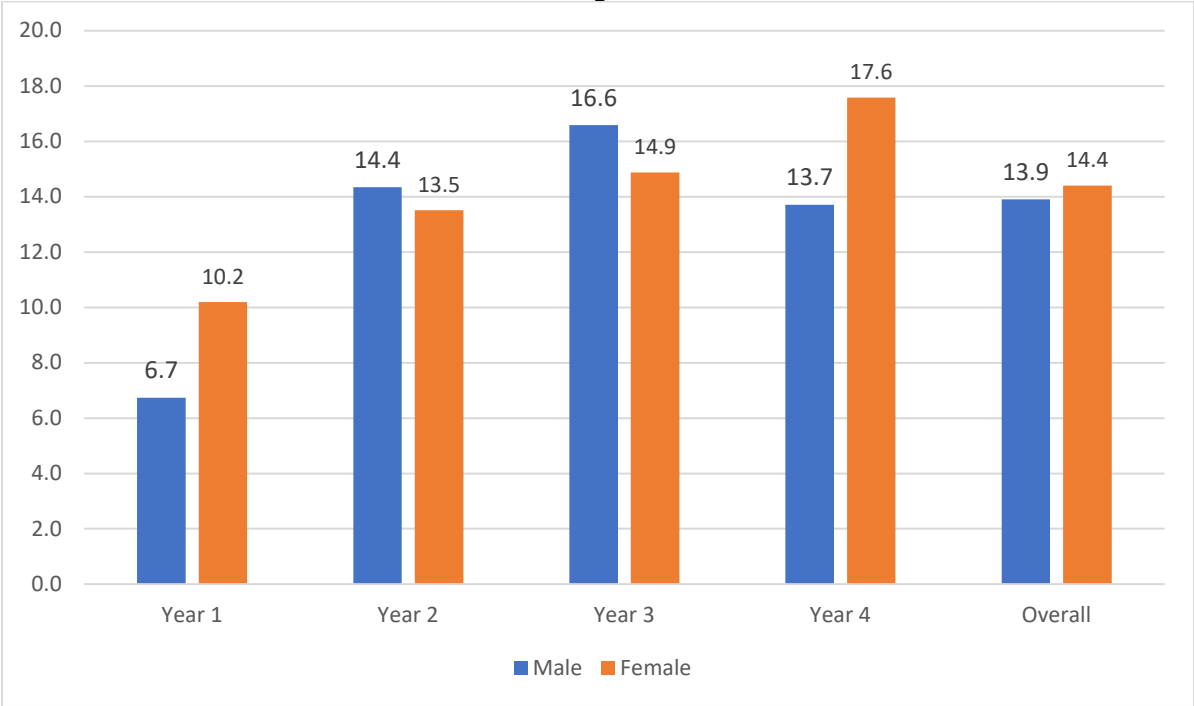


Table A3.18 Student teachers' who satisfied the criteria at each competency level by institution (%)

	KNUST	UG	UEW	UDS	UCC	Total
Knowledge of how teachers should explain concepts using familiar examples to students	47.2	72.5	44.7	57.8	35.1	49.1
Knowledge of qualities of a good teacher	45.7	64.8	45.6	50.9	38.1	47.2
Knowledge of what teachers should do to improve their personal and professional development	44.1	69.0	37.8	52.1	37.5	45.6
Knowledge of strategies teachers should use to encourage learner collaboration that leads to purposeful learning in a class	44.5	55.6	48.4	45.2	31.1	43.9
Knowledge of strategies teachers should use to deliver lessons to pupils at different age and ability groups	45.3	26.8	40.1	27.7	24.1	33.2
Knowledge of how teachers should portray themselves as role models	25.6	45.1	33.0	34.9	13.7	29.1
Knowledge of how teachers should use a variety of teaching and learning materials to enhance learning, including ICT	23.2	43.0	26.4	34.9	19.7	28.1
Knowledge of how teachers should portray themselves as agents of change in the school, community, or country as a whole	22.8	53.5	23.5	34.3	10.4	26.2
Knowledge of teachers' code of conduct	22.4	35.9	17.8	31.6	18.7	24.1
Knowledge of how teachers should conduct research to improve teaching	12.6	22.5	32.1	24.7	22.7	23.7
Knowledge of how teachers should engage with their student's parents and the community	12.6	19.7	20.9	26.5	12.0	18.7
Knowledge of how teachers should encourage student teachers' participation and critical thinking?	9.1	19.7	18.1	22.6	10.0	15.9
Knowledge of how teachers should take into consideration learners' backgrounds in their planning and teaching.	6.3	14.8	13.5	15.1	5.7	11.0
Awareness of NTS	7.5	13.4	15.8	7.2	10.7	10.8
Knowledge of how teachers should give constructive feedback to students	6.7	9.9	19.2	6.3	5.7	9.9
Knowledge on how teachers should pay attention to all learners, especially girls and learners with special educational needs and make sure their progress is assured?	2.0	8.5	10.6	5.4	3.7	6.0
Knowledge on how teachers should identify students who have learning difficulties and address their needs	1.2	7.8	8.0	1.2	8.7	5.2

Table A3.19 Student teachers' who satisfied the criteria at each competency level by grade (%)

	Year 1	Year 2	Year 3	Year 4	Total
Knowledge of how teachers should explain concepts using familiar examples to students	55.3	47.3	47.1	50.9	49.1
Knowledge of qualities of a good teacher	43.7	48.3	45.1	51.6	47.2
Knowledge of what teachers should do to improve their personal and professional development	39.6	49.7	43.4	47.1	45.6
Knowledge of strategies teachers should use to encourage learner collaboration that leads to purposeful learning in a class	39.6	42.7	42.7	50.5	43.9
Knowledge of strategies teachers should use to deliver lessons to pupils at different age and ability groups	21.8	26.0	37.3	45.3	33.2
Knowledge of how teachers should portray themselves as role models	27.9	28.3	27.2	34.3	29.1
Knowledge of how teachers should use a variety of teaching and learning materials to enhance learning, including ICT	26.9	26.5	28.1	31.5	28.1
Knowledge of how teachers should portray themselves as agents of change in the school, community, or country as a whole	21.3	28.1	24.8	29.1	26.2
Knowledge of teachers' code of conduct	25.4	23.4	23.3	25.3	24.1
Knowledge of how teachers should conduct research to improve teaching	27.9	23.7	21.1	24.9	23.7
Knowledge of how teachers should engage with their student's parents and the community	16.2	20.0	16.6	21.8	18.7
Knowledge of how teachers should encourage student teachers' participation and critical thinking?	15.7	16.9	13.7	18.0	15.9
Knowledge of how teachers should take into consideration learners' backgrounds in their planning and teaching.	11.2	11.8	10.5	10.4	11.0
Awareness of NTS	9.6	10.7	12.0	10.0	10.8
Knowledge of how teachers should give constructive feedback to students	10.2	8.6	10.2	11.1	9.9
Knowledge on how teachers should pay attention to all learners, especially girls and learners with special educational needs and make sure their progress is	4.1	7.0	5.7	6.6	6.0

assured?					
Knowledge on how teachers should identify students who have learning difficulties and address their needs	4.6	4.9	5.5	5.9	5.2

Table A3.20 Teachers who are motivated and want to remain in the profession (%)

	Teachers who are motivated	Teachers who would like to remain
Ahafo	10.0	46.7
Ashanti	10.9	46.6
Bono	16.0	48.0
Bono East	16.7	41.7
Central	7.1	45.8
Eastern	11.2	40.7
G. Accra	12.4	53.3
Northern	9.6	51.1
Oti	3.3	53.3
U. East	5.7	53.3
U. West	13.3	73.3
Volta	10.3	44.0
Western	8.5	43.5
Western North	8.9	35.6

Table A3.21 Teachers who are motivated and want to remain in the profession (%)

	Teachers who are motivated	Teachers who would like to remain
Aburi Girls Senior High	20.0	40.0
Accra Academy	13.3	66.7

Adanwomase Senior High	7.7	50.0
Adu Gyamfi Senior High	40.0	53.3
Aggrey Mem. A.M.E. Zion Snr. High	13.3	40.0
Akatsi Senior High/Tech	0.0	13.3
Amaniampong Senior High	6.7	40.0
Ameyaw Akumfi Senior High/Tech.	33.3	66.7
Anfoega Senior High	26.7	46.7
Anglican Senior High, Kumasi	13.3	46.7
Asawinso Senior High	13.3	33.3
Asewewa Senior High School	20.0	33.3
Assin Manso Senior High	9.1	27.3
Atebubu Senior High	13.3	53.3
Awe Senior High/Tech.	0.0	26.7
Awudome Senior High.	33.3	26.7
Benkum Senior High School, Larteh	13.3	40.0
Berekum Senior High	20.0	60.0
Bimbila Senior High	6.7	40.0
Bodwesango Senior High	0.0	20.0
Bolga Girls Senior High	0.0	66.7
Bompeh Senior High. /Tech	7.7	23.1
Boso Senior High Technical	0.0	41.2
Bueman Senior High School	0.0	60.0
Business Senior High School	20.0	53.3
Christian Methodist Senior High	6.7	46.7
Dagbon State Senior High/Tech	20.0	66.7
Dormaa Senior High	13.3	66.7
Dwamena Akenten Senior High	13.3	40.0
Dzodze Penyi Senior High	13.3	40.0
E.P.C. Mawuko Girls Senior High	0.0	53.3
Effiduase Senior High/Com	0.0	42.9
Effutu Senior High/Tech	13.3	66.7
Eguafo-Abrem Senior High	0.0	73.3
Ejisu Senior High/Tech	0.0	80.0
Fijai Senior High	0.0	30.8
Ghana National College	9.1	27.3

Ghanasco Senior High School	13.3	46.7
Ghanata Senior High	6.7	66.7
H'Mount Sinai Senior High	0.0	66.7
Huni Valley Senior High	15.4	69.2
Jirapa Senior High School	13.3	73.3
Juaboso Senior High	6.7	33.3
Kadjebi-Asato Senior High	6.7	46.7
Kalpohin Senior High	6.7	53.3
Kaneshie Senior High/Tech.	33.3	53.3
Keta Senior High/Tech.	9.1	36.4
Kintampo Senior High	6.7	13.3
Kpando Bishop Herman College	20.0	60.0
Kpando Senior High	6.7	40.0
Kukuom Agric Senior High	13.3	73.3
Kumasi High School	13.3	46.7
Kumasi Senior High/Tech	0.0	33.3
Kusanaba Senior High	0.0	46.7
Kwahu Ridge Senior High School, Obo-K..	6.7	60.0
Kwegyir Aggrey Senior High	0.0	40.0
Mando Senior High/Tech.	0.0	26.7
Manya Krobo Senior High	20.0	40.0
Mawuli School, Ho	0.0	80.0
Nana Brentu Senior High/Tech	6.7	40.0
Navrongo Senior High Senior High	20.0	66.7
New Edubiase Senior High	6.7	46.7
Ngleshie Amanfro Senior High	6.7	40.0
Nkawkaw Senior High	13.3	40.0
Northern School of Business	0.0	33.3
Nungua Senior High	20.0	40.0
Nyakrom Senior High Tech	0.0	6.7
Okomfo Anokye Senior High	13.3	60.0
Oppong Mem. Senior High	13.3	46.7
Our Lady of Providence Senior High	20.0	40.0
Owerriman Senior High/Tech	6.7	13.3
Pong Tamale Senior High	20.0	46.7

Presby Senior High/Tech, Larteh	6.7	35.7
Presby Senior High/Tech, Aburi	6.7	26.7
S.D.A. Senior High, Bekwai	20.0	46.7
Sandema Senior High	6.7	66.7
Sandema Senior High/Tech	13.3	46.7
Savelugu Senior High	0.0	46.7
Shama Senior High	6.7	33.3
St. Augustine's Senior High, Bogoso	13.3	60.0
St. John's Grammar Senior High	0.0	60.0
St. Joseph Senior High/Tech, Ahwiren	13.3	60.0
St. Paul's Senior High, Asakraka Kwahu	6.7	26.7
St. Paul's Senior High, Denu	0.0	53.3
St. Peters Senior High School	20.0	33.3
Swedru School of Business	7.1	46.2
T. I. Ahmadiyya Senior High, Kumasi	23.1	53.9
Tamale Girls Senior High School	0.0	73.3
Three Town Senior High	6.7	26.7
Wamanafo Senior High/Tech	20.0	33.3
Wbm Zion SH, Old Tafo	23.5	17.7
Wenchi Meth. Senior High	6.7	40.0
Wesley Girls Senior High, Cape Coast	13.3	60.0
Wesley Senior High, Konongo	6.7	60.0
Winneba Senior High	13.3	80.0
Yamfo Anglican Senior High School	6.7	20.0
Yeji Senior High School	13.3	33.3
Yilo Krobo Senior High/Com	0.0	68.8
Zion Senior High	7.1	50.0
Zuarungu Senior High	0.0	53.3

Table A3.22 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	Uniqueness
Teaching is mentally draining.	-0.113	0.595	-0.119	-0.041	0.020	0.112	0.048	-0.009	0.255	0.536
With the help of my colleagues, we can solve student issues.	0.136	0.111	0.335	-0.001	0.049	0.500	0.123	-0.183	0.016	0.556
I feel exhausted at the end of the school day.	0.056	0.791	0.092	0.005	-0.079	0.024	-0.043	-0.066	-0.029	0.349
My pay as a teacher is insufficient to support my needs	0.253	0.468	0.340	0.018	-0.016	-0.061	-0.143	0.022	-0.280	0.498
I feel fatigued when I get up in the morning and have to face another day at school	0.001	0.710	-0.086	0.012	0.016	0.034	-0.121	0.141	-0.061	0.449
I have the ability to get parents involved in their children's education.	0.039	-0.082	0.134	-0.055	0.422	0.515	0.106	-0.054	0.172	0.485
I ask my colleagues for feedback.	0.053	0.127	-0.002	0.293	0.031	0.606	-0.019	0.181	-0.024	0.493
With the help of my colleagues, we can identify innovative practices.	0.207	0.046	0.207	0.031	0.025	0.643	-0.031	0.042	-0.021	0.494
As a teacher, I am given more responsibilities than I can manage.	-0.106	0.480	-0.065	-0.015	0.194	0.003	-0.012	0.408	0.076	0.544

Some teachers at my school want to transfer to other schools	-0.004	0.067	0.167	-0.189	-0.102	0.108	-0.105	0.639	-0.013	0.490
I do not get paid on time.	-0.131	0.130	-0.067	0.059	0.402	-0.163	-0.052	0.372	0.166	0.601
I can make my classroom a safe space for students, both emotionally and physically.	0.175	-0.079	0.661	0.014	0.032	0.216	0.072	0.115	0.048	0.458
As a teacher, I am contributing positively to the lives of my students.	0.129	0.042	0.724	0.141	-0.007	0.068	-0.093	0.042	0.095	0.413
I feel energized when my class greets me each day	0.281	-0.036	0.244	0.192	0.091	0.027	0.340	0.360	-0.228	0.518
If I had to choose again, I would still want to be a teacher.	0.096	-0.049	-0.060	0.096	0.113	0.028	0.768	0.104	0.027	0.361
My headteacher treat me with respect.	0.098	0.031	0.206	0.653	0.045	-0.071	0.054	-0.218	0.081	0.456
My colleagues at school make it a fun place to be.	0.199	-0.082	-0.031	0.533	-0.055	0.162	0.040	0.069	-0.053	0.630
My headteacher praises me for my efforts in the school.	0.035	0.018	0.184	0.634	0.270	0.100	0.170	-0.050	0.072	0.444
Parents value my work as a teacher.	0.017	-0.102	0.152	0.275	0.385	0.143	0.292	-0.101	0.198	0.587

I plan lessons with a colleague	0.013	0.004	-0.266	0.463	-0.063	0.347	0.029	0.308	0.134	0.476
I feel confident about my abilities as a teacher.	0.305	-0.034	0.327	0.147	-0.119	0.063	-0.017	-0.044	0.466	0.540
If a student does not remember information in a previous lesson, I would know how to help them remember.	0.348	-0.040	0.348	0.089	-0.041	0.035	0.023	-0.019	0.520	0.475
When a student gets a better graded than he or she usually gets, it is because I found a better way.	0.400	0.059	-0.024	0.118	0.204	-0.034	-0.031	0.162	0.449	0.551
If a student in my class is undisciplined, I know some techniques to direct him or her.	0.628	0.031	0.033	0.057	0.106	0.057	0.021	0.049	0.265	0.513
Every teacher can continue to improve their practice throughout their career.	0.591	-0.042	0.124	0.031	-0.136	0.116	-0.002	-0.034	0.153	0.576
I can get through to even the most difficult or unmotivated students.	0.635	0.014	0.090	0.008	0.164	0.038	0.171	0.023	0.101	0.520
I can motivate students who show low interest in school.	0.666	0.023	0.217	0.059	0.109	0.049	0.089	-0.015	-0.064	0.478

I can influence some of the decisions that are made in the school.	0.180	0.007	-0.049	0.072	0.590	0.124	0.047	-0.108	0.047	0.581
I can get students to work in groups or pairs.	0.614	0.002	0.150	0.130	-0.097	0.147	-0.071	-0.049	-0.016	0.545
I ask my supervisor for feedback.	0.376	-0.058	-0.053	0.383	0.282	0.223	-0.086	0.027	-0.154	0.545
I can help students overcome some difficult home and community	0.393	0.012	0.013	0.035	0.452	0.202	-0.012	-0.129	-0.016	0.582
Teachers in my schoolwork closely with the district SISOs (formerly circuit supervisors)	-0.024	-0.059	-0.017	0.210	0.577	-0.027	-0.031	0.151	-0.213	0.550
If I were offered another job outside the teaching profession at about the same or a slightly higher salary, I would accept that offer.	0.044	0.094	0.006	-0.017	0.106	0.002	-0.739	0.196	0.016	0.393
As a teacher, I am contributing positively to the lives of my students.	0.417	0.103	0.365	0.177	-0.106	0.119	-0.172	-0.170	0.137	0.548

Table A3.23 Awareness of NTS by school

Schools	Aware of NTS
Aburi Girls Senior High	80.0
Accra Academy	80.0
Adanwomase Senior High	63.6
Adu Gyamfi Senior High	73.3
Aggrey Mem. A.M.E. Zion Snr. High	73.3
Akatsi Senior High/Tech	40.0
Amaniampong Senior High	33.3
Ameyaw Akumfi Senior High/Tech.	73.3
Anfoega Senior High	100.0
Anglican Senior High, Kumasi	53.3
Asawinso Senior High	100.0
Asesewa Senior High School	73.3
Assin Manso Senior High	63.6
Atebubu Senior High	33.3
Awe Senior High/Tech.	66.7
Awudome Senior High.	53.3
Benkum Senior High School, Larteh	66.7
Berekum Senior High	33.3
Bimbila Senior High	73.3
Bodwesango Senior High	60.0
Bolga Girls Senior High	53.3
Bompeh Senior High. /Tech	23.1
Boso Senior High Technical	52.9
Bueman Senior High School	46.7
Business Senior High School	60.0
Christian Methodist Senior High	46.7
Dagbon State Senior High/Tech	66.7
Dormaa Senior High	60.0
Dwamena Akenten Senior High	86.7
Dzodze Penyi Senior High	40.0
E.P.C. Mawuko Girls Senior High	80.0
Effiduase Senior High/Com	42.9
Effutu Senior High/Tech	60.0

Equafo-Abrem Senior High	86.7
Ejisu Senior High/Tech	80.0
Fijai Senior High	61.5
Ghana National College	81.8
Ghanasco Senior High School	53.3
Ghanata Senior High	66.7
H'Mount Sinai Senior High	73.3
Huni Valley Senior High	76.9
Jirapa Senior High School	93.3
Juaboso Senior High	66.7
Kadjebi-Asato Senior High	73.3
Kalpohin Senior High	53.3
Kaneshie Senior High/Tech.	80.0
Keta Senior High/Tech.	33.3
Kintampo Senior High	26.7
Kpando Bishop Herman College	60.0
Kpando Senior High	66.7
Kukuom Agric Senior High	53.3
Kumasi High School	57.1
Kumasi Senior High/Tech	93.3
Kusanaba Senior High	33.3
Kwahu Ridge Senior High School, Obo-K..	60.0
Kwegyir Aggrey Senior High	53.3
Mando Senior High/Tech.	60.0
Manya Krobo Senior High	53.3
Mawuli School, Ho	26.7
Nana Brentu Senior High/Tech	53.3
Navrongo Senior High Senior High	60.0
New Edubiase Senior High	86.7
Ngleshie Amanfro Senior High	53.3
Nkawkaw Senior High	40.0
Northern School of Business	46.7
Nungua Senior High	73.3
Nyakrom Senior High Tech	86.7
Okomfo Anokye Senior High	73.3
Oppong Mem. Senior High	46.7

Our Lady of Providence Senior High	33.3
Owerriman Senior High/Tech	80.0
Pong Tamale Senior High	75.0
Presby Senior High/Tech, Larteh	61.5
Presby Senior High/Tech, Aburi	80.0
S.D.A. Senior High, Bekwai	40.0
Sandema Senior High	66.7
Sandema Senior High/Tech	46.7
Savelugu Senior High	28.6
Shama Senior High	80.0
St. Augustine's Senior High, Bogoso	53.3
St. John's Grammar Senior High	53.3
St. Joseph Senior High/Tech, Ahwiren	80.0
St. Paul's Senior High, Asakraka Kwahu	40.0
St. Paul's Senior High, Denu	73.3
St. Peters Senior High School	60.0
Swedru School of Business	64.3
T. I. Ahmadiyya Senior High, Kumasi	53.9
Tamale Girls Senior High School	60.0
Three Town Senior High	66.7
Wamanafo Senior High/Tech	80.0
Wbm Zion SH, Old Tafo	35.3
Wenchi Meth. Senior High	40.0
Wesley Girls Senior High, Cape Coast	46.7
Wesley Senior High, Konongo	60.0
Winneba Senior High	80.0
Yamfo Anglican Senior High School	66.7
Yeji Senior High School	60.0
Yilo Krobo Senior High/Com	68.8
Zion Senior High	57.1
Zuarungu Senior High	26.7

Table A3.24 Proportion of teachers demonstrating NTS by school

school	Percentage
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Dzodze Penyi Senior H	87.5
Asawinso Senior High	25.0
Nungua Senior High	16.7
Winneba Senior High	12.5
Bueman Senior High Sc	12.5
Effutu Senior High/Te	11.1
Yamfo Anglican Senior	0.0
Amaniampong Senior Hi	0.0
Anglican Senior High,	0.0
Bodwesango Senior Hig	0.0
Dwamena Akenten Senio	0.0
Kumasi High School	0.0
Kumasi Senior High/Te	0.0
Owerriman Senior High	0.0
S.D.A. Senior High, B	0.0
St. Joseph Senior Hig	0.0
Berekum Senior High	0.0
Dormaa Senior High	0.0
Ameyaw Akumfi Senior	0.0
Yeji Senior High Scho	0.0
Ghana National College	0.0
Mando Senior High/Tec	0.0
Wesley Girls Senior H	0.0
Aburi Girls Senior Hi	0.0
Asesewa Senior High S	0.0
Kwahu Ridge Senior Hi	0.0
Manya Krobo Senior Hi	0.0
Presby Senior High/Te	0.0
St. Peter Senior High	0.0
Wbm Zion SH, Old Tafo	0.0
Christian Methodist S	0.0
Ngleshie Amanfro Seni	0.0
Bimbila Senior High	0.0
Ghanasco Senior High	0.0

Northern School of Bu	0.0
Savelugu Senior High	0.0
Kadjebi-Asato Senior	0.0
Kalpohin Senior High	0.0
Awe Senior High/Tech.	0.0
Zuarungu Senior High	0.0
Jirapa Senior High Sc	0.0
Sandema Senior High	0.0
Akatsi Senior High/Te	0.0
Awudome Senior High.	0.0
Mawuli School, Ho	0.0
St. Paul's Senior Hig	0.0
Bompeh Senior High/Te	0.0
Fijai Senior High	0.0
Shama Senior High	0.0
Juaboso Senior High	0.0

Table A3.25 Proportion of teachers demonstrating GESI, by region

Region	Percentage
U. East	37.5
Volta	31.7
Oti	18.8
Western North	18.8
Central	14.6
Western	13.0
Northern	12.8
G. Accra	9.1
Bono East	6.3
Ahafo	0.0
Ashanti	0.0
Bono	0.0

Eastern	0.0
U. West	0.0

Table A3.26 Proportion of teachers demonstrating GESI, by school

School	Percentage
Dzodze Penyi Senior High	100.0
Awe Senior High/Tech.	62.5
Winneba Senior High	37.5
Savelugu Senior High	37.5
Bueman Senior High School	37.5
Zuarungu Senior High	37.5
Asawinso Senior High	37.5
Nungua Senior High	33.3
Northern School of Business	25.0
Awudome Senior High.	25.0
Mawuli School, Ho	25.0
Fijai Senior High	25.0
Effutu Senior High/Tech	22.2
Ameyaw Akumfi Senior High/Tech.	12.5
Ghana National College	12.5
Sandema Senior High	12.5
Bompeh Senior High/Tech	12.5
Akatsi Senior High/Tech	11.1
Yamfo Anglican Senior High School	0.0
Amaniampong Senior High	0.0
Anglican Senior High, Kumasi	0.0
Bodwesango Senior High	0.0
Dwamena Akenten Senior High	0.0
Kumasi High School	0.0
Kumasi Senior High/Tech	0.0
Owerriman Senior High/Tech	0.0
S.D.A. Senior High, Bekwai	0.0
St. Joseph Senior High/Tech, Ahwiren	0.0
Berekum Senior High	0.0

Dormaa Senior High	0.0
Yeji Senior High School	0.0
Mando Senior High/Tech.	0.0
Wesley Girls Senior High, Cape Coast	0.0
Aburi Girls Senior High	0.0
Asesewa Senior High School	0.0
Kwahu Ridge Senior High School, Obo-Kwa	0.0
Manya Krobo Senior High	0.0
Presby Senior High/Tech, Aburi	0.0
St. Peter Senior High	0.0
Wbm Zion SH, Old Tafo	0.0
Christian Methodist Senior High	0.0
Ngleshie Amanfro Senior High	0.0
Bimbila Senior High	0.0
Ghanasco Senior High School	0.0
Kadjebi-Asato Senior High	0.0
Kalpohin Senior High	0.0
Jirapa Senior High School	0.0
St. Paul's Senior High, Denu	0.0
Shama Senior High	0.0
Juaboso Senior High	0.0

Table A3.27 Teacher competency scores on GESI-responsive pedagogies by region (%)

	Creates a safe, encouraging learning environment	The teacher applies all teaching methods equally to female and male students	Understands how children develop and learn in diverse contexts and applies this in their teaching	Teacher use of age and grade(s) appropriate strategies to enact in the lesson	Identifies and remediates learners' difficulties or misconceptions, referring learners whose needs lie outside the competency of the teacher	The teacher uses gender-responsive strategies to challenge gender roles and gender norms	Pays attention to all students, especially girls and students with SEN, ensuring their progress	Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes
Ahafo	50.0	37.5	25.0	37.5	12.5	0.0	0.0	0.0
Ashanti	55.6	22.2	19.4	2.8	0.0	0.0	0.0	0.0
Bono	100.0	81.3	18.8	18.8	0.0	0.0	0.0	0.0
Bono East	18.8	25.0	6.3	0.0	0.0	6.3	0.0	0.0
Central	51.2	43.9	46.3	31.7	17.1	7.3	7.3	7.3
Eastern	68.4	61.4	47.4	42.1	31.6	8.8	10.5	10.5
Accra	81.8	40.9	22.7	31.8	27.3	18.2	27.3	27.3
Northern	64.1	61.5	30.8	28.2	5.1	10.3	5.1	5.1
Oti	43.8	31.3	31.3	18.8	25.0	31.3	37.5	37.5
U. East	87.5	45.8	20.8	33.3	20.8	4.2	4.2	4.2
U. West	62.5	0.0	12.5	0.0	0.0	0.0	0.0	0.0
Volta	75.6	63.4	29.3	41.5	43.9	22.0	17.1	17.1

Western	60.9	47.8	52.2	21.7	34.8	8.7	13.0	13.0
Western No	93.8	87.5	43.8	12.5	25.0	18.8	18.8	18.8
Total	64.9	47.4	31.3	24.6	18.3	9.3	9.3	9.3

Table A3.28 Teacher competency scores on GESI-responsive pedagogies by school (%)

	Creates a safe, encouraging learning environment	The teacher applies all teaching methods equally to female and male students	Understands how children develop and learn in diverse contexts and applies this in their teaching	Teacher use of age and grade(s) appropriate strategies to enact in the lesson	Identifies and remediates learners' difficulties or misconceptions, referring learners whose needs lie outside the competency of the teacher	The teacher uses gender-responsive strategies to challenge gender roles and gender norms	Pays attention to all students, especially girls and students with SEN, ensuring their progress	Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes
Yamfo Anglican Senior High School	50.0	37.5	25.0	37.5	12.5	0.0	0.0	0.0
Amaniampong Senior High	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Anglican Senior High, Kumasi	87.5	12.5	50.0	0.0	0.0	0.0	0.0	0.0
Bodwesango Senior High	87.5	62.5	0.0	0.0	0.0	0.0	0.0	0.0
Dwamena Akenten Senior High	62.5	25.0	12.5	0.0	0.0	0.0	0.0	0.0

	Creates a safe, encouraging learning environment	The teacher applies all teaching methods equally to female and male students	Understands how children learn in diverse contexts and applies this in their teaching	Teacher use of age and grade(s) appropriate strategies to enact in the lesson	Identifies and remediates learners' difficulties or misconceptions, referring learners whose needs lie outside the competency of the teacher	The teacher uses gender-responsive strategies to challenge gender roles and gender norms	Pays attention to all students, especially girls and students with SEN, ensuring their progress	Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes
Kumasi High School	75.0	50.0	25.0	25.0	0.0	0.0	0.0	0.0
Kumasi Senior High/Tech	50.0	37.5	75.0	0.0	0.0	0.0	0.0	0.0
Owerriman Senior High/Tech	87.5	12.5	12.5	0.0	0.0	0.0	0.0	0.0
S.D.A. Senior High, Bekwai	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Joseph Senior High/Tech, Ahwiren	37.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berekum Senior High	100.0	62.5	0.0	0.0	0.0	0.0	0.0	0.0
Dormaa Senior High	100.0	100.0	37.5	37.5	0.0	0.0	0.0	0.0
Ameyaw Akumfi Senior High/Tech.	12.5	50.0	12.5	0.0	0.0	0.0	0.0	0.0
Yeji Senior High School	25.0	0.0	0.0	0.0	0.0	12.5	0.0	0.0
Effutu Senior High/Tech	66.7	44.4	11.1	44.4	22.2	22.2	33.3	33.3
Ghana National College	12.5	12.5	37.5	12.5	12.5	0.0	0.0	0.0
Mando Senior High/Tech.	87.5	75.0	100.0	75.0	12.5	0.0	0.0	0.0

	Creates a safe, encouraging learning environment	The teacher applies all teaching methods equally to female and male students	Understands how children develop and learn in diverse contexts and applies this in their teaching	Teacher use of age and grade(s) appropriate strategies to enact in the lesson	Identifies and remediates learners' difficulties or misconceptions, referring learners whose needs lie outside the competency of the teacher	The teacher uses gender-responsive strategies to challenge gender roles and gender norms	Pays attention to all students, especially girls and students with SEN, ensuring their progress	Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes
Wesley Girls Senior High, Cape Coast	25.0	75.0	62.5	0.0	0.0	0.0	0.0	0.0
Winneba Senior High	62.5	12.5	25.0	25.0	37.5	12.5	0.0	0.0
Aburi Girls Senior High	100.0	100.0	100.0	50.0	87.5	0.0	0.0	0.0
Asesewa Senior High School	87.5	87.5	12.5	75.0	0.0	0.0	0.0	0.0
Kwahu Ridge Senior High School, Obo-Kwa	87.5	87.5	87.5	75.0	87.5	25.0	0.0	0.0
Manya Krobo Senior High	50.0	87.5	12.5	75.0	0.0	0.0	0.0	0.0
Presby Senior High/Tech, Aburi	75.0	12.5	50.0	0.0	0.0	0.0	0.0	0.0
St. Peter Senior High	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wbm Zion SH, Old Tafo	77.8	55.6	66.7	22.2	44.4	33.3	66.7	66.7
Christian Methodist Senior High	75.0	0.0	0.0	0.0	12.5	0.0	12.5	12.5
Ngleshie Amanfro Senior High	87.5	37.5	0.0	37.5	0.0	0.0	0.0	0.0
Nungua Senior High	83.3	100.0	83.3	66.7	83.3	66.7	83.3	83.3

	Creates a safe, encouraging learning environment	The teacher applies all teaching methods equally to female and male students	Understands how children develop and learn in diverse contexts and applies this in their teaching	Teacher use of age and grade(s) appropriate strategies to enact in the lesson	Identifies and remediates learners' difficulties or misconceptions, referring learners whose needs lie outside the competency of the teacher	The teacher uses gender-responsive strategies to challenge gender roles and gender norms	Pays attention to all students, especially girls and students with SEN, ensuring their progress	Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes
Bimbila Senior High	57.1	0.0	28.6	0.0	0.0	0.0	0.0	0.0
Ghanasco Senior High School	37.5	75.0	0.0	12.5	0.0	0.0	0.0	0.0
Northern School of Business	100.0	100.0	100.0	100.0	0.0	37.5	12.5	12.5
Savelugu Senior High	75.0	75.0	25.0	0.0	25.0	12.5	12.5	12.5
Bueman Senior High School	62.5	62.5	62.5	37.5	50.0	62.5	75.0	75.0
Kadjebi-Asato Senior High	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kalpohin Senior High	50.0	50.0	0.0	25.0	0.0	0.0	0.0	0.0
Awe Senior High/Tech.	100.0	37.5	25.0	37.5	37.5	0.0	12.5	12.5
Zuarungu Senior High	100.0	62.5	25.0	25.0	25.0	12.5	0.0	0.0
Jirapa Senior High School	62.5	0.0	12.5	0.0	0.0	0.0	0.0	0.0
Sandema Senior High	62.5	37.5	12.5	37.5	0.0	0.0	0.0	0.0
Akatsi Senior High/Tech	55.6	88.9	0.0	0.0	22.2	0.0	0.0	0.0
Awudome Senior High.	62.5	62.5	37.5	37.5	62.5	50.0	0.0	0.0
Dzodze Penyi Senior High	100.0	100.0	50.0	87.5	100.0	50.0	37.5	37.5

	Creates a safe, encouraging learning environment	The teacher applies all teaching methods equally to female and male students	Understands how children develop and learn in diverse contexts and applies this in their teaching	Teacher use of age and grade(s) appropriate strategies to enact in the lesson	Identifies and remediates learners' difficulties or misconceptions, referring learners whose needs lie outside the competency of the teacher	The teacher uses gender-responsive strategies to challenge gender roles and gender norms	Pays attention to all students, especially girls and students with SEN, ensuring their progress	Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes
Mawuli School, Ho	62.5	37.5	50.0	87.5	37.5	12.5	50.0	50.0
St. Paul's Senior High, Denu	100.0	25.0	12.5	0.0	0.0	0.0	0.0	0.0
Bompeh Senior High/Tech	62.5	25.0	62.5	12.5	12.5	0.0	12.5	12.5
Fijai Senior High	62.5	62.5	50.0	37.5	37.5	12.5	0.0	0.0
Shama Senior High	57.1	57.1	42.9	14.3	57.1	14.3	28.6	28.6
Asawinso Senior High	87.5	75.0	37.5	25.0	50.0	25.0	37.5	37.5
Juaboso Senior High	100.0	100.0	50.0	0.0	0.0	12.5	0.0	0.0

Table A3.29 Percentage of schools demonstrating inclusive, gender-sensitive environment by region (%)

Region	Percentage of schools demonstrating GESI
Oti	100.0
Western	100.0
G. Accra	66.7
U. East	66.7
Central	60.0
Bono	50.0
Western North	50.0
Northern	40.0
Volta	40.0
Eastern	14.3
Ashanti	11.1
Ahafo	0.0
Bono East	0.0
U. West	0.0

Table A3.30 Schools demonstrating inclusive, gender-sensitive environment by region (%)

Schools	Schools demonstrating GESI
Yamfo Anglican Senior High School	No
Amaniampong Senior High	No
Anglican Senior High, Kumasi	No
Bodwesango Senior High	No
Dwamena Akenten Senior High	No
Kumasi High School	No
Kumasi Senior High/Tech	Yes
Owerriman Senior High/Tech	No
S.D.A. Senior High, Bekwai	No
St. Joseph Senior High/Tech, Ahwiren	No
Berekum Senior High	No
Dormaa Senior High	Yes
Ameyaw Akumfi Senior High/Tech.	No
Yeji Senior High School	No
Effutu Senior High/Tech	Yes
Ghana National College	Yes
Swedru School of Business	Yes
Mando Senior High/Tech.	Yes
Nyakrom Senior High Tech	No
Wesley Girls Senior High, Cape Coast	No
Aburi Girls Senior High	No
Asesewa Senior High School	No
Kwahu Ridge Senior High School, Obo-Kwa	Yes
Manya Krobo Senior High	No
Presby Senior High/Tech, Aburi	No
St. Peter Senior High	No

Wbm Zion SH, Old Tafo	No
Christian Methodist Senior High	No
Ngleshie Amanfro Senior High	Yes
Nungua Senior High	Yes
Bimbila Senior High	Yes
Ghanasco Senior High School	No
Northern School of Business	Yes
Savelugu Senior High	No
Bueman Senior High School	Yes
Kadjebi-Asato Senior High	Yes
Kalpohin Senior High	No
Awe Senior High/Tech.	Yes
Zuarungu Senior High	No
Jirapa Senior High School	No
Sandema Senior High	Yes
Akatsi Senior High/Tech	No
Awudome Senior High.	Yes
Dzodze Penyi Senior High	Yes
Mawuli School, Ho	No
St. Paul's Senior High, Denu	No
Bompeh Senior High/Tech	Yes
Fijai Senior High	Yes
Shama Senior High	Yes
Juaboso Senior High	No

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