Annual Survey of Progress and Achievement - 2020

TRANSFORMING TEACHER EDUCATION AND LEARNING (T-TEL)

T-TEL
Transforming Teacher Education and Learning

2020

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ACRONYMS AND ABBREVIATIONS

B.Ed	Bachelor of Education
CoE	College of Education
DBE	Diploma in Basic Education
EMS	English, mathematics, and science
FGD	Focus Group Discussion
ICT	Information, Communication and Technology
JHS	Junior High School
KII	Key Informant Interview
NAB	National Accreditation Board
NCTE	National Council for Tertiary Education
NTS	National Teachers' Standards
PTTPDMF	Pre-Tertiary Teacher Professional Development and Management Framework
SSFP	Safe Space Focal Person
SEN	Special Education Needs
QA	Quality Assurance
TLM	Teaching and learning materials
T-TEL	Transforming Teacher Education and Learning

The findings as they relate to programme indicators are summarised in Table 1.0

TABLE 1.0: Indicators and results achieved

	Indicator	T-Tel Annual survey (June 2018)	T-Tel Annual Survey (June 2019)	T-Tel Annual Survey (July 2020)
College of education Tutor indicators	**Output indicator 4.3**			
	Percentage of male and female English, science, and mathematics tutors demonstrating student-focused teaching methods	English – Male (74.6%); Female (71.4%) Mathematics – Male (86.3%); Female (78.6%) Science – Male (73.4%); Female (64.7%) Overall (76.9%)	English – Male (80.0%); Female (83.3%) Mathematics – Male (72.6%); Female (84.2%) Science – Male (79.4%); Female (75.0%) Overall (78.0%)	English – Male (72.4%); Female (66.7%) Mathematics – Male (68.2%); Female (73.3%) Science – Male (67.4%); Female (58.8%) Overall (68.3%)
	Output indicator 4.4			
	Percentage of male and female tutors using gender-sensitive instructional methods	English – Male (65.1%); Female (57.1%) Mathematics – Male (75.0%); Female (64.3%) Science – Male (65.8%); Female (76.5%) Overall (68.0%)	English – Male (81.2%); Female (86.1%) Mathematics – Male (76.4%); Female (84.2%) Science – Male (76.5%); Female (85.0%) Overall (79.6%)	English – Male (77.6%); Female (73.3%) Mathematics – Male (78.4%); Female (46.7%) Science – Male (73.7%); Female (70.6%) Overall (74.3%)
	Output indicator 4.2C			
	Percentage of tutors demonstrating an understanding and application of the National Teachers' Standards	*Indicator not measured in 2018*	Male tutors (59.7%) Female tutors (61.3%) Overall (60.1%)	Male tutors (80.5%) Female tutors (79.0%) Overall (80.2%)
CoE Student indicator	**Outcome indicator 1.4**			
	Percentage of student teachers that demonstrate higher levels of expected graduate attributes identified in the curriculum writing guide	*Indicator not measured in 2018*	Year 1 students– (38.0%) Year 2 students – (40.4%) Overall (39.2%)	Year 1 students– (47.3%) Year 2 students – (57.7%) Overall (52.5%)
	Output indicator 4.2B			
	Percentage of student teachers demonstrating an understanding and application of the National Teachers' Standards	*Indicator not measured in 2018*	Male students (35.0%) Female students (28.9%) Overall (31.9%)	Male students (33.1%) Female students (26.4%) Overall (29.8%)
Mentor Mentee indicators	**Output indicator 5.3A**			
	Percentage of mentors in partner schools that reinforce key components of the National Teachers' Standards	*Indicator not measured in 2018*	Male mentors (55.0%) Female mentors (55.8%) Overall (55.4%)	Male mentors (78.6%) Female mentors (65.2%) Overall (73.5%)

	Indicator	T-Tel Annual survey (June 2018)	T-Tel Annual Survey (June 2019)	T-Tel Annual Survey (July 2020)
	Output indicator 5.4			
	Percentage of mentees receiving support from mentors in the delivery of basic education curriculum using pedagogy in line with the National Teachers' Standards and reflective of gender- and student-responsive instruction	*Indicator not measured in 2018*	Male mentees (55.6%) Female mentees (44.8%) Overall (51.0%)	Male mentees (68.2%) Female mentees (57.3%) Overall (64.0%)
Colleges of Education indicators	**Output Indicator 1.1**			
	Percentage of CoE leaders exhibiting a defined set of leadership and management skills	Percentage of CoEs (82.5%)	Percentage of CoEs (84.8%)	Percentage of CoEs (89.1%)
	Output Indicator 1.3			
	Percentage of colleges that ensure an inclusive, gender-sensitive environment for all staff and student teachers.	*Indicator not measured in 2018*	Percentage of CoEs (17.4%)	Percentage of CoEs (37.5%)

1. INTRODUCTION

1.1 BACKGROUND TO THE T-TEL PHASE 2 ANNUAL SURVEY

Transforming Teacher Education and Learning (T-TEL) is a Government of Ghana Programme supported by the UK's Department for International Development (DFID) and managed by Cambridge Education, a member of the Mott-McDonald Group. The programme's goal was to improve learning outcomes for children in primary and junior high school (JHS) across Ghana. This goal was to be realised through the achievement of the following outcome: Beginning teachers demonstrate better skills and practice, applying student-focused and gender-sensitive approaches to teaching and learning.

For the past several years, T-TEL has collected data from its key stakeholders to monitor the progress of T-TEL against its expected outcomes. These stakeholders include principals of all the colleges of education (CoEs), student-teachers and tutors of mathematics, science, and English at the colleges, and beginning teachers and their mentors in kindergarten through JHS in public basic schools throughout Ghana. T-TEL has reached its final phase of its programme in the 2019-20 academic year and has conducted an annual survey to assess the achievement of set targets at the end of its project implementation. As a result, T-TEL commissioned this research to collect data from the stakeholders near the end of the 2019-20 academic year to gather data using the same or comparable instruments and sampling frames used during the previous surveys conducted for the same purposes to ensure that the samples are nationally representative.

1.2 T-TEL'S THEORY OF CHANGE

T-TEL's purpose was aimed at improving the quality of new teachers entering basic schools to improve the academic achievement of students[1]. As T-TEL strives to improve on the quality of teacher education, it is expected that new teachers would teach as they have been taught, basing classroom lessons and instructional methods on the styles and strategies they have experienced in their own schooling or observed in the schools where they are teaching.

FIGURE 1.1: T-TEL's theory of change

OUTCOMES (LONG-TERM GOALS)

Beginning teachers capable of demonstrating four key practices that improve learning in basic schools

Core competencies in Pre-Tertiary Teacher Professional Development and Management Framework (PTTPDMF)

(Outcome Indicator 1)

Application of basic school curriculum

(Outcome Indicator 2)

Gender-sensitive instructional strategies

(Outcome Indicator 3)

Higher levels of expected graduate attributes in the Curriculum Writing Guide

(Outcome Indicator 4)

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[1] Students used in this report refers to CoE student teachers

OUTCOMES (LONG-TERM GOALS)

T-TEL logframe output indicators that relate to key enabling factors

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Strengthened Institutional and Instructional Performance of CoEs

- CoEs effective in meeting National Accreditation Board (NAB's) and National Council for Tertiary Education (NCTE's) standards for tertiary institutions (1.1)
- CoEs meeting annual targets in College Improvement Plans (1.2)
- CoEs ensure an inclusive and gender-sensitive environment for all staff and student teachers (1.3)
- CoEs uses QuickBooks to manage funds and generate financial reports with clean audit trails (1.4)

National educational policy system enables implementation of teacher education reforms

- Annual roadmap of KPI targets in teacher education reform achieved by the Ministry of Education (MoE) with T-TEL support (2.1)
- Targets in transition support fund achieved by CoEs(2.2)
- CoEs with operational Colleges of Education Management Information Systems (2.3)

Strengthened quality assurance and regulatory system in place for CoEs

- Milestones in NCTE, NAB and National Teaching Council (NTC) capacity-building plans achieved by T-TEL
- Equity, inclusive and gender sensitive teaching and learning materials (TLMs) produced by universities CoEs

Curriculum reform implemented through teacher education universities and affiliated CoE

- Demonstration of understanding and application of the National Teachers' Standards (NTS)
- Demonstrating of student-focused teaching methods
- Use gender-sensitive instructional methods
- Achievement of NCTE target

Partner schools aligned with the new curriculum and delivering effective teaching and learning

- Partner schools assessed to be inclusive and gender sensitive
- Partner schools and district education officers that reinforce the teaching materials in NTS
- Student teachers receiving support from mentors in partner schools in the delivery of curriculum using pedagogy in line with NTS
- CoEs demonstrating supported teaching in schools is being implemented effectively in line with NTS

A postulation of the theory of change is that the quality of preservice education is affected by several factors operating at different levels of the educational system. Some of these factors are:

- Gaps and inconsistencies in teacher education policies that do not serve the sector well.
- Capacity of national institutions established to govern (quality assure) teachers' education as part of the tertiary education sector.
- Leadership and management skills of college principals and their teams.
- Teaching skills of tutors in CoEs, particularly in inclusive, student-centred pedagogies.
- Mentoring skills of mentors in the schools where student teachers[2] practice teaching (and particularly gender-responsive mentoring strategies and inclusive, student-centred pedagogies); and
- Diploma in Basic Education (DBE) curriculum used to train student teachers, which is overloaded with upper secondary subject content, exam driven, and not designed to deliver teachers with specialist skills at each level of basic education[3].

In response to this assumption, T-TEL is designed as a complex, multicomponent programme with a wide range of intervention strategies.

A further assumption was that interventions to improve tutors'[4] teaching skills would lead to changes in the teaching skills of student teachers even without any T-TEL interventions targeted at student teachers. This assumption was based on evidence that beginning teachers are strongly influenced by models of good practice that they experienced as pupils in schools and as students in colleges. As a result, T-TEL's outcome targets aimed for improvements in beginning teachers' performance without direct interventions with student teachers. Therefore, the main areas in which T-TEL aimed to catalyse change were:

- Tutors
- College leaders
- National policy, institutions, and curriculum
- Mentors[5] in partner schools[6]

1.3 T-TEL's Implementation Strategies

In order to achieve its set objectives, T-TEL worked closely with all educational stakeholders in Ghana especially the Ministry of Education (MoE) and the NCTE, in consultation with national-level institutions such as the Ghana Education Service, National Teaching Council, NAB, the National Inspectorate Board, five public universities and 46 CoEs. By 2020. T-TEL sought to create the right conditions for a teacher education system that meets the needs of the country and benefits teachers and pupils alike. This was to be realised through the implementation of the following key strategies illustrated in FIGURE 1.2.

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[2] Student teacher refers to first year students pursuing a B.Ed and second year students pursuing a DBE at a CoE.
[3] The levels of basic education are from primary one to JHS three.
[4] Tutors are teachers who teach at the CoEs.
[5] Mentors are experienced basic school teachers in partner schools who provide support and mentoring to third year students pursuing a DBE at a CoE.
[6] Partner schools are basic schools where CoEs send their student teachers for field practicums.

FIGURE 1.2: T-TEL Implementation Strategies

Enabling a positive policy environment around the implementation of the new curriculum and broader changes to national education outlined in the Education Strategic Plan.

Continue supporting all 46 colleges of education to become tertiary institutions delivering excellent teacher education
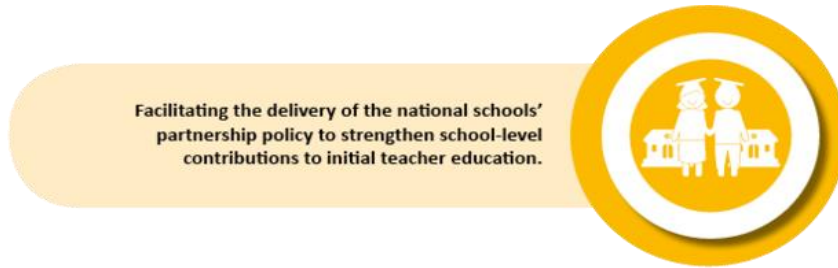
Facilitating the delivery of the national schools' partnership policy to strengthen school-level contributions to initial teacher education.

Supporting national education agencies and regulatory bodies to fulfil their roles in overseeing the teacher education reforms.

Strengthening institutional support to universities so they can better collaborate with CoEs to deliver the B.Ed curriculum.

2. METHODOLOGY

2.1 CHANGE IN METHODOLOGY DUE TO COVID-19 OUTBREAK

Since the inception of the annual survey in 2015, the same sampling methodology and mode of data collection had been applied consistently to ensure comparison of results except for this 2020 annual survey. The COVID-19 pandemic which resulted in the closing down of schools for the academic year in Ghana meant that the approach in collecting data had to change as well. For all basic schools, learners had not been permitted to attend school which implies that beginning teachers were not included in this survey. However, for colleges of education, a virtual online classes approach was adopted to ensure that lessons were still ongoing despite the lockdown of schools.

Given the virtual nature of the lessons, tutor lesson observations were not conducted in-person in the classrooms but the enumerators joined the virtual lessons in real time to observe and score the supervisors based on the previous survey criteria. A telephone interview was done with the tutor whose lesson had been observed and a sample of student teachers who were part of the lessons for triangulation purposes.

The lock down of schools also meant that the mentorship programme for student teachers had to be halted for the academic year. However, mentors and mentees were nevertheless interviewed for the survey with the exception that mentor and mentee lesson observations were not conducted since public basic schools did not adopt virtual lessons.

At the time of data collection, college principals and other college leaders had fully assumed operations and so the key informant interviews were conducted in adherence with all COVID-19 protocols. Partner school indicators were excluded from the survey which also meant that stakeholders in partner schools were not interviewed for the 2020 annual survey.

2.2 SAMPLING DESIGN AND PROCESS

2.2.1 Sampling Process for Tutors and Student Teachers

The sampling approach adopted in the 2020 annual survey in sampling the CoEs was the same as that used in previous surveys. However, the sampling process in selecting Tutors was different. In sampling the CoEs for the survey, a multistage sampling procedure was adopted in the selection of the CoE. In the first stage, the 46 CoEs were stratified according to zones. To facilitate analysis of subgroups, CoEs were further stratified according to the sex composition of students (i.e., female-only CoEs, male-only CoEs, and mixed-sex CoEs). Similar to the methodology adopted for the 2019 annual survey, a deliberate effort was made to select mixed-sex CoEs for the survey. In this regard, 26 mixed-sex colleges and four females-only CoE were randomly selected and included in the sample. The only male-only CoE in the country was also included in the sample (see Annex 1).

Due to the online nature of lessons, enumerators did not have the opportunity to randomly sample CoE Tutors for the survey. The CoE rather added enumerators to ongoing online lesson platforms to be observed.

In each CoE, an average of 12 English, mathematics, and science (EMS) tutors were observed from year one and two classes. Where EMS tutors were not sufficient, observation for other subjects were done. In total 303 tutors were observed teaching EMS and interviewed.

For each observed tutor, a list of six (three males, three females) randomly selected students present during the online lesson delivery were provided to the colleges to obtain their contact numbers to participate in a student survey related to the lesson. Unlike the previous surveys, all the lesson observations and interviews were completed via telephone interview.

2.2.2 Sampling Process for Mentors and Mentees

Mentors were sampled from partner schools in the districts in which the sampled CoE is situated. In each district (where CoE is located), an average of 16 mentors were interviewed given a total of 358 interviews.

A list of all mentors and mentees in the sampled districts were provided by T-Tel for the purposes of sampling. Because the list provided did not indicate which mentor was assigned to a mentee, only mentees who know the names or have the contact numbers of their mentors were interviewed for the district. For the mentor and mentee assessment, only indicators related to KIIs were analysed because lessons were not observed. Sex consideration was factored in the sample selection to ensure the selection of both male and female mentors. Since both mentors and mentees are primary targets per the indicator requirements, one mentor and mentee were observed, and information triangulated with each other.

TABLE 2.1 Summary of sample allocation for quantitative survey

Target stakeholder	Tool	Target	Actual	Assumed Confidence Level (CL) and Margin of Error
Principals	Principal questionnaire	46	46	Not Applicable
College secretaries	CoE Secretary interview Guide	46	46	Not Applicable
Tutors	Tutor lesson observation & KII	368	303	(CL=95%, CI =±4.0%)
Mentors	Mentor KII	368	358	(CL=95%, CI =±4.7%)
Student teachers	Student teacher KII	2100	1501	(CL=95%, CI =±2.0%)

2.2.3 Approach to Qualitative Survey

To supplement the quantitative data, JMK Consulting Ltd collected qualitative data to provide insights into why and how expected changes are or are not occurring. In this regard, the team collected qualitative data through virtual focus group discussions (FGDs). As shown in Table 2.2, virtual FGDs were carried out with the following distinct populations: tutors, mentors, mentees and student teachers. Each FGD consisted of a minimum of eight participants and a maximum of twelve to ensure effective and fruitful deliberation of issues. The sample frame outlines the sample size for the participants in the group discussions (see Table 2.2).

TABLE 2.2: Summary of sample reached

Target stakeholder	Actual
Tutor FGD Participants	48
Student FGD guide	46
Mentor FGD guide	45
Mentee FGD Guide	48

2.2.4 Data Collection Method Per T-Tel Indicators

JMK developed tools the annual survey adopted to address each indicator. Table 2.3 shows the level at which measurement for each outcome and output indicators took place and the instruments deployed for data collection.

TABLE 2.3: Method for measurement of outcomes and intermediate outputs

Target stakeholder	Indicator	Level at which measurement took place	Tool/Mode of data-collection
Output Indicator 1 – Strengthened Institutional and Instructional Performance of Colleges of Education	**Output Indicator 1.3 –** Percentage of colleges that ensure an inclusive, gender-sensitive environment for all staff and student teachers.	-- Colleges of education	-- Principal Key Informant Interviews (KII) -- CoE Quality Assurance KII
Output Indicator 4 – Curriculum reform implemented through teacher education universities and affiliated CoE	**Output Indicator 4.2 -** Percentage of college tutors, beginning teachers demonstrating an understanding and application of the National Teachers' Standards	-- Colleges of education	-- Lesson Observation -- Tutor Interviews -- Tutor KII -- CoE Student Interviews -- CoE Student FGDs
	Output Indicator 4.3 – Percentage of male and female English, science, and mathematics tutors demonstrating student-focused teaching methods	-- Colleges of education	-- Lesson Observation -- Tutor Interviews -- Tutor KII -- COE Student Interviews -- COE Student FGDs
	Output Indicator 4.4 – Percentage of male and female tutors using gender-sensitive instructional methods	-- Colleges of education	-- Lesson Observation -- Tutor Interviews -- Tutor KII -- COE Student Interviews -- COE student FGDs
Output Indicator 5 – Partner schools aligned with the new curriculum and delivering effective teaching and learning	**Output Indicator 5.3 –** Percentage of mentors in partner schools that reinforce key components of the National Teachers' Standards	-- Basic school (Primary & JHS)	-- Mentor lesson observation -- Mentor follow-up interview --Mentor compliance matrix --Mentee follow-up interview --Head teacher interview
	Output Indicator 5.4 – Percentage of mentees receiving support from mentors in the delivery of basic education curriculum using pedagogy in line with the National Teachers' Standards and reflective of gender- and student-responsive instruction	-- Colleges of education	-- Mentor lesson observation -- Mentor follow-up interview -- Mentee lesson observation -- Mentee follow-up interview

2.2.5 College Management Survey

CoE principals and secretaries are the key stakeholders who responded to questions on institutional strengthening and instructional performance of CoEs. In this regard, the survey reached all the 46 CoEs to elicit the requite information to address the indicators in output 1. CoE stakeholders interviewed included: Principals/vice principals and college secretaries. These stakeholders were reached with key informant interviews.

2.3 DATA QUALITY CONTROL

To ensure that enumerators adhere to the protocols of telephone interviews and to ensure that accurate information were being collected, different methods were used to monitor lesson observations and interviews. For tutor lesson observation, supervisors were given access to the records of tutor online materials to conduct inter-rater checks on enumerator scoring. For all other telephone interviews, supervisors listened-in on sampled interviews by enumerators to ensure that questions were being asked in the right manner. The data-management team at JMK cross-checked the observation and interviews conducted by the supervisor with the actual interview records to compute inter-rater reliability values. A Kappa model generated 80.2 percent agreement for the tutor observation. The supervisors and quality assurance team provided technical support to the team if they noticed significant differences between the observation and interview records that the respective enumerator collected.

2.4 DATA MANAGEMENT AND ANALYSIS

The data was analysed using SATA version 15 software. As was done in previous surveys, the Do File[7] feature of the Stata software allowed the 2020 annual survey data to be computed using the same computational procedure used for the previous surveys to ensure comparability of results. It is important to note that some computational procedures for mentors and mentee indicators were recomputed because lesson observations were not conducted. The specific changes made in the computation of the indicators are discussed in the mentor-mentee section of the report. As in the previous surveys, the data were analysed using descriptive statistical analysis to establish disaggregated scores for each data-collection tool. Data analysis and computation of indicator values were informed by scoring rubrics (See Annex 2). These scoring rubrics were developed to determine and make explicit, the *ideal* **scores** needed to be considered 'demonstrating' the specific practices or competencies highlighted in the log frame

For example, the composite score for output indicator 4.3 (Number and percentage of English, mathematics, and science male and female tutors demonstrating student-focused teaching methods) is an average of the three ideal scores that a tutor received for the student-focused components of the lesson observation, follow-up tutor interview, and student interviews. If tutors received the composite score needed to indicate that they had satisfactorily demonstrated student-focused methods, they are counted towards that indicator in the log frame. (See Annex 2 for documents on all the scoring rubrics).

For all key variables, t-tests were used to determine whether differences in the 2019 annual survey and 2020 annual scores were statistically significant at an alpha level ($p \leq 0.05$). Where there were differences among more than two groups, a Bonferroni multiple comparison tests at .05 was used to establish differences. For all differences noted in the report, an asterisk (*) has been used to indicate statistically significant differences

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[7] The Do File feature of Stata allows the saving of computational procedures for validation and future usage given the same variable names and analysis procedures.

between 2019 and 2020 annual survey scores. Also, for instances where there was a significant difference between male and female groups, two daggers (††) have been used to indicate statistical significance. And lastly, where significant differences exist between Year 1 and 2 college students[8], a double dagger (‡) has been used to signify significant differences. Significant difference tests were not conducted for indicators targeting CoEs. A triangle sign (Δ) has been used to denote percentage change from annual survey 2019 to annual survey 2020. For all indicators that were computed in earlier surveys, the annual evaluation survey 2015 to 2019 figures have been provided for reference purposes. For each of the tutor output indicators, a multiple regression analysis was conducted to determine the competencies that were significant in predicting the outcomes. (See Annex 4 for further details on the multiple regression analysis).

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[8] Year 1 students use the B.Ed. curriculum and Year 2 students use the DBE curriculum.

3. KEY FINDINGS

3.1 INTRODUCTION

This section of the report presents the key findings of the 2020 survey. The output indicator results for Tutors, Students, Mentors, Mentees and College Principals have been presented in this section. Qualitative insights explaining the reasons for the observed results have also been presented in this section under each of the subsections. This report begins with a summary description of the demographic characteristics of stakeholders and then provides further analysis of indicator findings by change agents involved. As required by the T-TEL log frame, the data have been disaggregated by sex and the main subjects of interest – English, mathematics, and science.

3.2 DEMOGRAPHIC PROFILE OF KEY RESPONDENTS

3.2.2 Demographic Profile of Tutors

For this 2020 survey, a total of 303 tutors were interviewed. 79.5 percent of the tutors interviewed were male, with 54.8 percent coming from Year 1 level. About a fifth (20.5 percent) of the tutors interviewed were female. Majority of these females interviewed were English tutors. See Table 3.1

TABLE 3.1: Demographic characteristics of Tutors (%)

Subject of Tutors	Male	Female	Overall
English	24.1	48.4	29.0
Mathematics	36.5	24.2	34.0
Science	39.4	27.4	37.0
Level of Tutors	**Male**	**Female**	**Overall**
Year 1	54.8	43.6	52.5
Year 2	45.2	56.5	47.5
Proportion of male and female tutors	79.5	20.5	100.0
Total (N)	**241**	**62**	**303**

NOTE: Detail may not sum to totals due to rounding.

3.2.3 Demographic Profile of CoE Students

For Table 3.2, there was an even spilt in the proportion of male and female students interviewed for the survey. Majority of the male students were from Year 2 level, while most female students were in Year 1.

TABLE 3.2: Demographic characteristics of CoE students (%)

Sex of CoE Students	Male	Female	Overall
Year 1	48.5	55.8	52.1
Year 2	51.5	44.2	47.9
Proportion of male and female tutors	50.6	49.4	100.0
Total (N)	**759**	**742**	**1501**

3.2.4 Demographic Profile of Mentors

Table 3.3 provides details of mentors interviewed for the survey. About three-fifths (61.5) of the mentors interviewed were male while the remaining were female. Majority of male mentors were English teachers and most female mentors interviewed were also English teachers. Also, over half of the male mentors teach in JHS, while the majority of female mentors teach Upper primary classes.

TABLE 3.3: Demographic characteristics of Mentors (%)

Subject of Mentors	Male	Female	Overall
English	50.5	58.7	53.6
Mathematics	30.9	26.8	29.3
Science	18.6	14.5	17.0
Class of Mentors			
Lower Primary	7.3	31.9	16.8
Upper Primary	40.0	42.0	40.8
JHS	52.7	26.1	42.5
Proportion of male and female tutors	61.5	38.6	100.0
Total (N)	220	138	358

NOTE: Detail may not sum to totals due to rounding.

Among mentees interviewed, males represented 56.4 percent, while females make up 43.6 percent. A majority of both male mentees (52.0 percent) and female mentees (54.5 percent) teach English. See Table 3.4.

TABLE 3.4: Demographic characteristics of Mentees (%)

Subject of Mentees	Male	Female	Overall
English	52.0	54.5	53.1
Mathematics	29.7	26.3	28.2
Science	18.3	19.2	18.7
Class of Mentees			
Lower Primary	11.9	29.5	19.6
Upper Primary	38.1	44.9	41.1
JHS	50.0	25.6	39.4
Proportion of male and female tutors	56.4	43.6	100.0
Total (N)	202	156	358

NOTE: Detail may not sum to totals due to rounding.

3.3.1 Demonstration of Student-focused Teaching Methods by College Tutors

> **Output Indicator 4.3 Percentage of male and female English, science, and mathematics tutors demonstrating student-focused teaching methods**
>
> **Annual survey 2020 target for male and female English, mathematics and science tutors is 85 percent**

The use of a student-focused approach in lesson delivery has been proven to be efficient in ensuring students understand what is being taught in the classroom. The shift in the education sphere from classroom to remote online across the world means that it is important to replicate the effectiveness of this method online. The COVID-19 pandemic has forced most educational institutions across the world to take their lessons online. This section of the report investigates how tutors performed in the use of the student-focused teaching method online and the challenges faced in the delivery.

To measure the tutors' application of student-focused teaching strategies, three methods were employed to provide one composite indicator: lesson observations, follow-up interviews with tutors, and interviews with six of the observed tutors' students based on the scoring rubrics (see Annex 2.2). The scoring rubrics benchmark deployed in the analysis is an *ideal* score, which is the score recognised to be the level required to demonstrate competency in the use of student-focused teaching methods.

The results in Table 3.5 presents the output results for Tutors. We observed from the results that from 2015, there was a significant progress in Tutors demonstrating application of student focused teaching methods in 2018 and was maintained in 2019. For male tutors, we note a significant decline in science tutors' demonstration of student-focused teaching methods.

For female tutors, the results show a significant decline in the proportion of tutors demonstrating the use of student-focused teaching methods. The results also show the 2020 target for EMS male and female tutors has not been achieved.

For female tutors, the results show a significant progress from 2015 to 2019 in the demonstration of student-focused teaching methods, however, there has been a significant decline in scores obtained by female tutors in the 2020 annual survey. An analysis of the results from observed competency scores show that 'tutors' use of strategies to organise and execute group or pair work', 'tutors' use of techniques to address mixed abilities' and 'tutors applying teaching methods equally to female and male students.' scored the least among the observed competencies. Sub-section 3.4.2 provides further qualitative insights from tutors and students.

TABLE 3.5: Tutors demonstrating the use of student-focused teaching methods by sex and subject (%)

Subjects	Annual survey (Oct-2015)	Annual survey (Jun- 2018)	Annual survey (Jun-2019)	Annual survey (Jul-2020)	Δ from 2019 to 2020
English	23.3	74.6	80.0	72.4	-7.6
Mathematics	28.6	86.3	72.6	68.2	-4.4
Science	26.0	73.4	79.4	67.4	-12.0*
Total	26.4	78.4	77.1	68.9	-8.2*
Total (N)	**220**	**222**	**293**	*241*	
Subjects	**Annual survey (Oct-2015)**	**Annual survey (Jun- 2018)**	**Annual survey (Jun-2019)**	**Annual survey (Jul-2020)**	**Δ from 2019 to 2020**

English	36.7	71.4	83.3	66.7	-16.6*
Mathematics	22.2	78.6	84.2	73.3	-10.9*
Science	5.9	64.7	75.0	58.8	-16.2*
Total	25.0	71.2	81.3	66.1	-15.2*
Total (N)	**56**	**59**	**75**	*62*	

* p≤0.05

Results in Table 3.6 provide an analysis of the use of student-focused teaching methods based on the year the tutor teaches. The results show both male and female tutors in Year 2 had significantly low scores compared with the 2019 annual survey.

TABLE 3.6: Tutors demonstrating the use of student-focused teaching methods by sex and level (%)

Level	Annual survey (Oct-2015)	Annual survey (Jun- 2018)	Annual survey (Jun-2019)	Annual survey (Jul-2020)	∆ from 2019 to 2020
Year 1	16.8	81.3	80.4	73.5	-6.9
Year 2	17.3	75.7	74.2	63.3	-10.9*
Total	26.4	78.4	77.1	68.9	-8.2*
Total (N)	**220**	**222**	**293**	*241*	
Level	Annual survey (Oct-2015)	Annual survey (Jun- 2018)	Annual survey (Jun-2019)	Annual survey (Jul-2020)	∆ from 2019 to 2020
Year 1	12.1	77.8	82.5	74.1	-8.4
Year 2	13.3	65.6	80.0	60.0	-20.0*
Total	25.0	71.2	81.3	66.1	-15.2*
Total (N)	**56**	**59**	**75**	**62**	

* p≤0.05

A multiple regression analysis was conducted to determine the competencies that are significant in predicting this indicator. For this analysis, the raw output values were used as the dependent variable and tutor observation competencies related to the indicator were used as the predictor variables. The results reveal that overall, five of eight competencies were significant in predicting the outcome of this indicator. Also, about 83 percent (R-squared[9]) of the variability in the outcome is explained by the competencies. The specific competencies that significantly predicted the dependent variable are 'Tutor uses different interactive methods', 'Tutor asks a range of questions to gauge understanding', 'Tutor gives group/pair work', 'Tutor uses assessment strategies' and 'Tutor uses Leadership for Learning strategies'. Please see Table 4.1 in Annex 4 for the output including specific competencies that were significant in predicting the outcome of this indicator.

3.3.2 Qualitative insights on tutor application of student-focused teaching methods

The COVID-19 has resulted in schools shut in Ghana and across the world. As a result, teaching methods have changed dramatically, with the distinctive rise of virtual learning, whereby teaching is undertaken remotely and

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[9] Detailed explanation of the key terminologies have been provided in Annex 4

on digital platforms. Interviews with tutors indicate that lessons were carried out using virtual tools such as Zoom meetings, Google classroom, WhatsApp and Telegram. The qualitative survey sought to determine whether tutors understand and apply student-centred teaching methods. Qualitative data showed that most tutors interviewed have a good understanding and application of student-centred teaching methods and demonstrate its application during lesson delivery. Some tutors explained that they apply student-focused teaching methods by giving out group tasks to student teachers and pose questions to individuals in each group. Some tutors also stated that they demonstrate student-focused teaching methods by posing questions and randomly calling out to student teachers to check their attentiveness and level of understanding during lesson delivery. Some tutor quotes are outlined below:

- *"You see, to get the learners involved during teaching, you can adopt the use of leading questions. For instance, you can pose a question and wait to hear whatever response that they have before you the teacher will come up with the appropriate answer. So, that is one way that we can engage student teachers in a learner-centred approach. That is what some of us use as far as this virtual teaching is concerned."*
- *"In my case, I give out group assignments to the student teachers and teach them how to collaborate in the group to present. After their presentation, I quiz them to ensure that they all understood why they came out with a particular finding. I do mention names in a class for participation. I make them read and encourage them to ask questions instead of me doing everything for them."*
- *"Student teachers were assigned tasks to research and present their findings in the virtual classroom session. That is how we demonstrated the student-centred teaching method virtually."*
- *"I ensure that we do conference calls in our group discussions, especially on Mondays, because it is free. During the conference calls, I ask them questions individually to make sure that they all participate. I ask of their views on how to improvise some concepts and they can bring their views through presentations. We do download during midnight and do free calls by using "jara" i.e. calling the whole day with only 50 pesewas, which made things easier for us to do conference calls."*
- *"What we also did was that sometimes, I put them into groups to interact with each other. Then they appoint a secretary from each group to present a summary of their discussion. When we are all back into one group, then the leaders of each group will now do a presentation. If there are questions, then student teachers are asked to answer. Acting as a facilitator, I do about 10% talking, then about 90% of the talking is done by the student teachers themselves. So, it was similar to how we teach in the classrooms."*

The qualitative survey further sought to determine whether virtual teaching has had any effect on the application of student-centred teaching. For most tutors, the transition from the face-to-face classroom teaching and learning to learning remotely using these virtual tools was challenging. Most of the tutors indicated that, one of the main challenges with the virtual or online teaching method is student teachers' accessibility of teaching and learning materials (TLMs). They explained that the use of teaching and learning materials (TLMs) in the classroom helps student teachers to easily understand what is being taught and to make references when needed. However, the use of virtual tools makes it difficult for some student teachers, especially the less information technology (IT) inclined, to make references to TLMs while online lessons are ongoing. Also, some tutors indicated that they found it challenging to monitor participation and student teachers' engagements during group work and activity-oriented lessons. Here, the tutors interviewed explained that due to the absence of physical interaction in the classroom, they find it difficult to check whether every student teacher is actively participating in activity-based

tasks or group assignments. Another key challenge for most tutors was unstable internet connection to smoothly deliver online lessons. Some of the tutors indicated that they had to move to the campuses to use the internet services there to be able to efficiently conduct the online classes. Some quotations from tutors are outlined below:

- *"Normally when we teach, we use teaching and learning materials. But because we are teaching virtually, at times, when you tell the student teachers to get some of these TLMs so that the lesson will be practical, they would not get them. When you also ask them to use their TLMs at home to demonstrate for you to see, it's always a challenge."* **Male Tutor**
- *"During virtual lesson delivery, you will try to implement student-centred instructional method as much as possible but when you ask student teachers to mute their mics, you will realize that some of them will be making noise and you won't be able to control them. You will set rules but some student teachers will not follow. So, you will be forced to mute all of them. From time to time, when you ask a question, there are some student teachers when you call them to contribute, they will not even respond."* **Male Tutor**
- *"For me, poor network really affected me. Some of us had to move from our homes to the campus to get access to better internet connection."* **Male tutor**
- *"We were faced with so much inconsistencies due to bad internet network. Despite spending a lot on internet data, there was an instance where I faced disruptions for about 2 hours which is very frustrating. You are not able to get full class attendance too. Most people are also not able to use the technology effectively."* **Male tutor**
- *"In implementing student-centred methods, it was difficult getting student teachers ready for presentation. During questions and answer time, you could see some student teachers leaving the class session and going offline, especially when they realise you will invite them to engage to the class. In fact, there is the need to sensitise our student teachers to participate fully when it comes to class engagements."* **Female Tutor**
- *"One of the challenges is that, you cannot really monitor student teachers' participation when you are having a virtual class. You will not be able to know whether they are following or not following so it is very difficult to monitor. With the audio, it is difficult to monitor and that is a big challenge."* **Male Tutor**

According to a section of tutors, some student teachers complained that it was difficult to understand what was being taught without illustrations as some of the lessons were taught in audio format. A key cohort among these were mathematics tutors. According to the tutors, the mathematics subject as an example requires physical presence to provide illustrations or work examples on a writing board and explain mathematical concepts but it was difficult doing it virtually. Here are some qualitative quotations from tutors:

- *Applying student-focused teaching method as a mathematics tutor can be challenging. This is because the student teachers need to see how you are solving a mathematical problem. If we are in the classroom, we do not have a problem here but doing it with online teaching is the problem. Although we try to help the student teachers to understand, it is a problem.*
- *"In the mathematics perspective to make online lessons learner-centred, you have to use appropriate virtual tools. Tools that you must let the student teachers lay hand on them and practice so that they will understand the concept themselves. In mathematics there is a very good tool called GeoGebra. With this tool, when in-service training is given to mathematics tutors on its usage, we will be able to teach and be more practical. It has a lot that you can use it and see the interaction. Because when you use it, you can let some of the student teachers to also lay their hands on it and try it. It will make teaching practical and student teachers-focused."*

Some tutors further opined that some student teachers do not respond to questions during online lessons when they pose questions to them to gauge their understanding. This forced them to continue or go on to next topics without being certain that all student teachers really understand the concept. Follow-up questions were directed to student teachers to understand why they sometimes do not respond. A few student teachers admitted that sometimes some student teachers do not respond to questions because they do not know the correct answers or responses. In addition, some student teachers revealed that poor network connection was a key factor during online lessons. According to them, sometimes, due to poor network, they are serious breakages when tutors are talking so they in turn do not hear clearly what is being taught.

Further qualitative insights gained from the student teachers showed significant challenges with network connectivity. Some student-teachers complained that they did not receive some of affordable but quality mobile devices sold in colleges in order to successfully access virtual lessons. It was noted during interviews that T-TEL made provision for student teachers to purchase smart devices at comparably cheaper prices. However, some student teachers revealed in group discussions that they could not have the opportunity to buy as the devices ran out. Some student teachers appeared to suggest that they had difficulty understanding some lessons because they had challenges downloading videos and audios posted by tutors due to poor networks. Those student teachers further indicated that they sometimes rely on their colleagues to help them understand by providing explanations when they are unable to follow some parts of the lessons. Some quotes from qualitative interviews are noted below:

"We were informed that with the help of T-TEL, the college will sell to us quality smartphones but cheap to help with the e-learning. But some of us did not get some to buy because they were not enough. This really affected me because I had to go and borrow money to buy a more expensive phone because of this pandemic."

"My challenge is that I could get some of the T-TEL phones to buy. So, I had no choice but to rely on my old phone which is not very good."

"The key challenge was network problem. Aside the challenge of spending so much money to buy data upon data, the internet connection was a problem. Sometimes, you will not even hear anything."

"The internet connection was very bad for us. Our tutors sometimes send video and audio materials to us on telegram or WhatsApp to download. But because of bad network, some of us could not download to help us to understand."

With the 2020 Annual survey results showing that male tutors performed better in demonstrating student-centred teaching methods as compared to their female counterparts, the qualitative survey sought to find out from student teachers how male and female tutors fare in terms of application of student-focused teaching pedagogy. Data from focus group discussions with student teachers generally indicate that both male and female tutors apply student-focused teaching methods. However, some discrepancies were noted when it comes to virtual teaching. Some students indicated that male tutors seemed to fare better with virtual teaching as compared to their female counterparts. They explained that male tutors seemed more comfortable with the use of the virtual tools than the female tutors. Some also explained that male tutors appeared to be conscious of the locations where they can receive better internet connection. Thus, when the connection becomes poor, the male tutors will relocate for better service in order to continue with the lecture. It was also noted that tutors who reside on

campuses seemed to have better network connectivity for smooth online teaching whiles some of the tutors who lived elsewhere had challenges with poor network. Here are some quotes from student teachers:

- *"To me the male tutors are bolder when teaching that than the female tutors."*
- *"During virtual learning, the male tutors do come to class always to teach us on time but that of the female tutors do not do that always, they don't come due to IT skills which they don't have." –*
- *"During virtual lessons, most of our male tutors try to relocate themselves to the area that will be convenient for both the students and they themselves, but as for the female tutors, they always give us excuses that the network is poor so next time."*
- *"The male tutors who taught us with the virtual learning were very effective. They made us have group presentations even when we were not together just as we used to do on campus. Even though, the female tutors also asked questions during lessons, it was not as the male tutors did." –Year 2 student*
- *"Network was a problem but not as consistent for those who utilize the lecture rooms."*
- *In terms of putting discussions in the discussion box, the male tutors were very effective, I am not saying this because of the ratio of male tutors to that of the females, but it's based on my experience.*
- *"I think that the knowledge on modern technology may be one influencing factor. It could be network or improper manipulation of the gadgets used in the virtual learning."*

Nonetheless, responses from a smaller proportion of student teachers suggested otherwise. Their opinions appeared to oppose the assertion that male tutors perform better with virtual teaching that female tutors. They stated that in their case, female tutors were more patient when teaching.

- *Most of the female tutors do exercise patience while delivering lessons and they make sure that we understand the concept before they proceed.*
- *The female tutors normally are the ones that apply student-centred in their style of teaching compared to the men. In regards to the virtual learning the female teachers were more concerned about students in my view than the males. For instance, female tutors made more provisions for students who had challenges understanding or accessing notes than the males by calling students and sending notes to them personally.*
- *What I can also say is that the female tutors have patience more than the male tutors. This is because when a female tutor is in class, she takes the role as a mother in the class and considers all the students in the class as hers and treat them patiently unlike the male tutors who give instructions and expect the students to provide the answers at the expected time.*
- *Men generally have less patience, so, they find it hard to tolerate students when they start going off track in class. On the other hand, the female tutors give instances to people to bring them back on track when they go off track.*

Output Indicator 4.4 Percentage of male and female tutors using gender-sensitive instructional methods
Annual survey 2020 target for male and female English, mathematics and science tutors is 85 percent

3.3.3 Demonstration of Gender-Sensitive Instructional Methods by Tutors

Tutors' use of gender-sensitive instructional method is a key theme in the T-Tel project. The instructional method is to ensure that there is no discrimination based on gender by tutors in the delivery of lessons. The annual survey assessed tutors' use of gender-responsive instructional methods based on the following criteria:

- *The extent of equal treatment of female and male students (about questions, discussion, participation, encouragement, classroom leadership, etc.)*
- *The usage of gender-responsive strategies (regarding challenging traditional gender roles in TLMs, examples, activities, etc.)*

Just like the previous indicator, tutor lesson observation, tutor interview and student interviews and composited to compute the indicator. The scoring rubric deployed in the analysis is the **ideal score**, which is the score recognised to be the level required to demonstrate gender-sensitive instructional methods. The minimum composite score for a tutor to be counted towards the log frame indicator is 16 points for tutor observation, 7 points for tutor interview, and 24 points for students of the tutor interviewed.

Based on the results of the indicator in Table 3.7, there was no significant decline in the proportion of male tutors who use gender-sensitive instructional methods. Across subjects, male English and science tutors obtained slightly lower scores. The proportion of female tutors demonstrating gender-sensitivity significantly declined significantly between 2019 and 2020 especially so for mathematics female tutors.

TABLE 3.7: Tutors demonstrating gender-sensitive instructional methods by sex and subject (%)

Subjects	Annual survey (Oct-2015)	Annual survey (Jun- 2018)	Annual survey (Jun-2019)	Annual survey (Jul-2020)	Δ from 2019 to 2020
English	4.7	65.1	81.2	77.6	-3.6
Mathematics	2.6	75.0	76.4	78.4	2.0
Science	0.0	65.8	76.5	73.7	-2.8
Total	1.8	68.9	77.8	76.4	-1.4
Total (N)	**220**	**222**	**293**	*241*	
Subjects	Annual survey (Oct-2015)	Annual survey (Jun- 2018)	Annual survey (Jun-2019)	Annual survey (Jul-2020)	Δ from 2019 to 2020
English	0.0	57.1	86.1	73.3	-12.8*
Mathematics	11.1	64.3	84.2	46.7	-37.5*
Science	5.9	76.5	85.0	70.6	-14.4*
Total	3.6	64.4	85.3	66.1	-19.2*
Total (N)	**56**	**59**	**75**	*62*	

* p≤0.05

As shown in Table 3.8, both female tutors in Year 1 and Year 2 demonstrating gender-sensitivity declined significantly from 2019 to 2020.

TABLE 3.8: Tutors demonstrating the use of gender-sensitive instructional methods by sex and level (%)

Level	Annual survey (Oct-2015)	Annual survey (Jun- 2018)	Annual survey (Jun-2019)	Annual survey (Jul-2020)	Δ from 2019 to 2020
Year 1	2.7	72.0	74.6	75.8	1.2
Year 2	0.0	66.1	80.7	77.1	-3.6
Total	1.8	68.9	77.8	76.4	-1.4
Total (N)	**220**	**222**	**293**	*241*	

Level	Annual survey (Oct-2015)	Annual survey (Jun- 2018)	Annual survey (Jun-2019)	Annual survey (Jul-2020)	Δ from 2019 to 2020
Year 1	0.0	63.0	87.5	66.7	-20.8*
Year 2	13.0	65.6	82.9	65.7	-17.2*
Total	3.6	64.4	85.3	66.1	-19.2*
Total (N)	**56**	**59**	**75**	**62**	

* $p \leq 0.05$

A multiple regression analysis was conducted to determine the competencies that are significant in predicting indicator 4.4. For this analysis, the raw output values were used as the dependent variable and tutor observation competencies related to the indicator were used as the predictor variables. For this indicator, two predictors were evaluated namely 'Tutor treats both male and female students equal' and 'Tutor uses gender responsive strategies'. The results reveal that all the two competencies were significant in predicting the outcome of this indicator with as R-squared of 79 percent. Please see Table 4.2 in Annex 4 for the results.

3.3.4 Qualitative insights on Gender-sensitive teaching methods by tutors

Majority of tutors interviewed revealed that they have a good understanding of gender-sensitive teaching methods and how to apply it. Some tutors indicated that they apply gender-sensitive methods by equally distributing questions to student teachers, intentionally appointing female student teachers as group leaders and ensuring that female student teachers take part during group presentations. Further, some tutors stated that they demonstrate gender-sensitiveness by mentioning the names of female student teachers to ask questions or contribute during lessons. Below are some qualitative insights from tutors on how the demonstrate gender-sensitive methods:

- *"One way I applied gender-sensitive teaching method was the groupings. It was done in such a way that every group will have a female and then I will ask them that at least if the group leader is a male then the secretary should be a female or other way round so that cater for the gender responsive activities. I teach science and this is the area where many females don't want to go but we made it a policy to ensure that when one male talks, then the next person who is supposed to talk is a female and it's worked perfectly for us."*
- *"In my class, majority are females with few men. I give equivalent problems to both males and females after which each party will score the other. I demonstrated gender sensitive pedagogy by calling the ladies at random to answer certain questions."*
- *"I used to intentionally mention ladies to answer questions that I post. Questions that I must post, I just look at the participants list and if there is a female then I try to pose the question. I tell the guys to also*

take note, try as much as possible to get ready so that you don't feel like at the end you are only trying to concentrate on only the ladies."

- *"For me not to be bias or to implement gender-sensitive methods, I mostly make sure that questions are equally distributed. And by that sometimes I mention the name of a lady, pose the question to her. After she has responded, I will intend go to the males so that at the end of the day nobody is left out. This is what I do while teaching."*

- *"Since when you are in the synchronous session, you can access the name of participants. I really pose questions to the ladies and mention their names to respond. Sometimes in presenting the student will be reading out so I tell the ladies to continue. I also give them prior notice that they will be reading for the class so they prepare ahead."*

While some tutors indicated that they easily implemented gender-sensitive methods during virtual lessons, some tutors, on the other hand, highlighted some challenges that impeded the application of gender-sensitive teaching methods. Some tutors indicated that mixing student teachers of both sexes during group formation was a challenge and time wasting since they could not easily identify the sex of participants during virtual lessons. They explained that some student teachers log onto the zoom platform without using their real names on their profile. They explained that sometimes, in the participants list, some student teachers have names such as Itel, Tecno, Samsung Galaxy as their profile names and that makes it challenging to identify the actual student teachers. According to some tutors, this made it was quite challenging to monitoring the performance of female student teachers since they could not determine who the female and male student teachers were. It was further disclosed that there was low participation of female student teachers during virtual lessons. According to one tutor, upon his investigation, he was informed by some of the female student teachers who usually miss class session that since they are at home, most domestic and household chores are assigned to them by their parents and relatives and at times, they help to sell at the market to support their households. Below are some qualitative insights from tutors:

- *It is always challenging when student teachers do not log in using their real names. We had instances where you will see a profile name like Tecno Camel 11Pro, Itel. In that case, if the student's video is disabled, how would you determine if this is a male or a female?* **Male tutor**

- *You know when you are forming groups for activity-oriented lessons, we form mix groups, but because it was virtual, it was difficult to do groupings, to form this groups in virtual. So that is where I saw that it was a challenge.* **Male Tutor**

- *Virtual teaching affected the implementation of gender-sensitive methods. It affected the females because it was not possible for me to monitor the student teachers, especially, female participation during group tasks. This is because they do not use their real names to sign in onto the zoom meeting.* **Female tutor**

- *The ladies seem unwilling to do complex activities, so they were shying away though they have very powerful phones. They did not know much about what the phone can do so we had to encourage that they have to equally perform tasks on their phone. The ladies even think it is their fault if their networks go off but the males will quickly switch SIMS and get connected again. They do apologize and complain about that because they do not really fidget phones or gadgets unlike the guys. They just take photos, videos, fashions but are unable to even connect to YouTube and download apps. At the beginning stages, we let the guys help them in doing that. Switching from one application to another is even irritating to them.* **Male tutor**

- *I have many of the females in my course area but implementing the gender sensitive pedagogy during the virtual learning is challenging because, sometimes, most of the females do not turn up for the session. So later, they will come in with their questions.* **Female tutor**
- *The challenge that I had was low participation of female student teachers in my lessons. When I inquired, I was told that as the female student teachers have left campus and are at home, all household chores have been put on them. I found out that they do all the cooking, sweeping and do everything that their parents or siblings were doing before they went home. Some female student teachers were assisting their parents in shops and on the market, so, they were always occupied and their participation in class became very limited and I think that was a real challenge.”* **Male tutor**

3.3.5 Demonstration of Application of the National Teachers' Standards

Output Indicator 4.2C Percentage of tutors demonstrating an understanding and application of the NTS

Annual survey 2020 target for male and female English, mathematics and science tutors is 70 percent

The NTS is the 6th theme of the T-Tel project which serves as a guide for tutors' professional development. The relevance of the NTS component is to enable tutors exhibit professional values and attitudes in their line of work. It also provides a guide on how tutors engage with stakeholders as part of the community of practice and provide guidance on the role of tutors as agents of change in their communities. In computing this indicator, tutors were asked specific questions reflected in the NTS guide. Students were also asked questions to gauge the extent to which the tutors adhere to the NTS for purposes of triangulation.

As illustrated in Table 3.9, about 8 out of 10 of both male and female tutors demonstrated knowledge and application of the NTS in their work. There was a significant increase by an average of 20 percentage points for male tutors and 17 percentage points for female tutors. The results further indicate that the end of project target for the indicator has been met.

TABLE 3.9: Tutors demonstrating the application of NTS by sex and subject (%)

Level	Annual survey (Jun-2019)	Annual survey (Jul-2020)	Δ from 2019 to 2020
English	57.7	81.0	23.3*
Mathematics	59.4	80.7	21.3*
Science	61.8	80.0	18.2*
Total	59.7	80.5	20.8*
Total (N)	**293**	*241*	

Level	Annual survey (Jun-2019)	Annual survey (Jul-2020)	Δ from 2019 to 2020
English	72.2	76.7	4.5
Mathematics	52.6	73.3	20.7*
Science	50.0	88.2	38.2*
Total	61.3	79.0	17.7*
Total (N)	**75**	**62**	

* p≤0.05

Table 3.10 provides scores of NTS-related observations used in the computation of the indicator. We observe from the results that the key drivers for the indicator are 'tutor creates a safe, encouraging learning environment', 'Tutor listens to students and give constructive feedback', and 'Tutor employs a variety to strategies to encourage participation and critical thinking'. We also observe from the results that tutors scored least on the 'Produces and uses a variety of teaching and learning resources that enhance learning, including information, communication and Technology (ICT)'

TABLE 3.10: Observation scores for tutors demonstrating NTS by sex (%)

Tutor Competencies	Male	Female	Overall
Creates a safe, encouraging learning environment	97.6	97.3	97.6
Teacher listens to students and gives constructive feedback	93.5	96.0	94.0
Employs a variety of instructional strategies that encourage student participation and critical thinking	90.4	89.3	90.2
Teacher exhibits ethical teacher codes of conduct during the lesson delivery	78.8	78.7	78.8
Pays attention to all students, especially girls and students with Special educational needs (SEN), ensuring their progress	42.3	56.0	45.1
Explains concepts clearly using examples familiar to students	41.6	42.7	41.9
Uses a variety of assessment modes during teaching to support learning	38.2	50.7	40.8
Teacher demonstrates effective, growing leadership qualities in the classroom	28.3	41.3	31.0
Produces and uses a variety of teaching and learning resources that enhance learning, including information, communication and Technology (ICT)	30.0	32.0	30.4

3.3.6 Qualitative insights on Application of National Teachers' Standards by tutors

One of the output indicators of the T-TEL programme is for tutors to demonstrate an understanding of the National Teachers' Standards. Input from qualitative interviews revealed that tutors had a good understanding of the teachers' standards and made effort to apply them. Most tutors explained that the NTS is a quality benchmark of which all teachers in Ghana must emulate. The qualitative survey sought to find out from tutors the challenges faced in applying the NTS. The main challenges stated by tutors are inadequate time per period and overloaded content of the syllabus. During focus group discussions, tutors indicated that they do not have the luxury of time to go into details of applying all the requirements of the NTS especially since they needed to finish the syllabus before it gets to examination period. Further, a few tutors engaged in focus groups appeared to suggest that although they have a general understanding of the NTS, they have inadequate understanding of the three domains of the NTS and how they are applied[10]. As a result, they need further capacity building and refresher training programmes on the NTS to improve its application. Examining whether virtual teaching has affected the application of the NTS, majority of tutors seemed to suggest that virtual teaching has somewhat had some impact on the application of the NTS. Some tutors revealed that they are challenged by inadequate TLMs and active participation of student teachers in practical sessions. These tutors explained that the usage of appropriate TLMs

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[10] The three domains of the NTS are Professional Values and Attitudes, Professional Knowledge, and Professional Practice.

during lesson delivery would make teaching more practical and enhance students' learning and understanding. Also, since lessons were carried out online, they were unable to carry out the practical aspect of what was being taught. Here are some qualitative verbatims from tutors' focus group discussion:

- *"One of the main challenges with application of NTS is that some of the standards involve active participation of student teachers. So, since we are doing online teaching instead of face to face, the practical aspect becomes challenging. So, most of the practical aspect that we were supposed to involve the student teachers in, were not achieved."* **Male tutor**
- *"I don't have any much of a challenge. However, a challenge could be when both the tutor and the student teachers don't have a hardcopy or softcopy of the NTS handbook, it becomes difficult to refer to the standards, thereby posing a challenge in implementing it."* **Female tutor**
- *Even though the NTS is a good document, I think T-TEL should continue taking us through periodic refresher trainings and workshops to provide further explanation of the three components of the NTS and some of the technical terminologies."* **Female tutor**
- *"The understanding of the three domains and how to apply them in our lesson notes is a challenge."* **Male tutor**
- *"My understanding of the NTS is not bad but I think it's not good enough because I want to easily know what I am expected to do without always having to refer to the handbook. The NTS contains something known as professional value, professional knowledge, and professional practice ... sometimes when you try your best to apply them in your lesson, it becomes very difficult because you don't really understand it well."* **Male tutor**
- *"One challenge that affects our application of the NTS is teaching and learning materials. Since we are doing online learning, guiding student teachers on the use of TLMs is not easy as compared to if we were in school and doing face-to-face teaching."* **Male tutor**
- *"My challenge is based on making references to the NTS handbook whilst teaching. It should serve as a reference to us whiles we are teaching. However, since this is the beginning of using this standard, we are not used to it. I believe with time we will adjust to that."* **Female tutor**
- *"An aspect of the standards requires us to take the student teachers through some form of practical lessons but due to the virtual learning, we are unable to do so."* **Male tutor**

3.4.1 Demonstration of Higher Levels of Expected Graduate Attributes identified in the Curriculum Writing Guide

Outcome Indicator 1.4 Percentage of student teachers that demonstrate higher levels of expected graduate attributes identified in the curriculum writing guide

(2020 target yet to be set)

The indicator measures the proportion of student teachers that demonstrate expected graduate attributes identified in the curriculum writing guide as defined in Box 3.6.

Box 3.1: Graduate attributes domains
- Enthusiastic, good teachers with the professional skills, knowledge, and understanding that enable them to achieve the NTS.
- Independent learners with academic skills such as clarity of expression (written and spoken) and the ability to support their arguments with effective use of reading.
- Innovative practitioners who understand the curriculum and are able motivate those they teach.
- Reflective practitioners who develop their teaching through planning for learning, recognizing and addressing issues related to inclusion and equity, using classroom and school-based action research and enquiry, integrating technology, core and transferable skills into their teaching, responding effectively to challenges including education policy and curriculum change demonstrating initiative and resilience.
- Teachers who demonstrate: thorough understanding of equity and inclusivity in education, responding appropriately to the needs of all pupils; the ability to build a strong network of relationships with their pupils, other professionals and parents and caregivers; the manipulative skills necessary to teach practical subjects ; the ability to support and manage the learning and well-being of all pupils whatever the context of the school and its community; effective, growing leadership qualities in the classroom and in the wider school community, guided by the legal and ethical codes of conduct required by a professional teacher.

The 2015 and 2018 surveys did not measure student expected graduate attributes but was measured in the 2019 and 2020 annual surveys. As shown in Table 3.11, there was a significant increase overall on students who demonstrated attributes in the curriculum writing guide. Over half of all male students in both Year 1 and Year 2 demonstrated the attributes which is significantly high compared with the 2019 results. Female students in both Year 1 and 2 showed increased demonstration but more significantly for females in Year 2. The most dominant attributes demonstrated by students were 'Exhibition of skills necessary to teach practical subjects. This attribute was demonstrated by 87 percent of students.

TABLE 3.11: Student teachers demonstrating higher levels of expected graduate attributes in the curriculum writing guide by sex and year (%)

Level	Annual survey (Jun-2019)	Annual survey (Jul-2020)	Δ from 2019 to 2020
Year 1	41.4	52.7	11.3*
Year 2	41.6	59.1	17.5*
Total	41.5	55.9	14.4*

* p≤0.05

Level	Annual survey (Jun-2019)	Annual survey (Jul-2020)	Δ from 2019 to 2020
Year 1	34.7	42.5	7.8
Year 2	39.1	56.1	17.0*
Total	36.9	49.3	12.4*

* $p \leq 0.05$

3.4.2 Qualitative insights on student teachers' demonstration of higher levels of expected graduate attributes identified in the curriculum writing guide.

During focus group discussions, student teachers were asked whether they are familiar with the new curriculum writing guide and how they demonstrated the attributes identified in the new curriculum writing guide. The results showed that majority of student teachers interviewed claimed to be familiar with the curriculum writing guide. Some student teachers indicated that visiting partner schools for field practice and observations has helped them to design their own TLMs by learning from experienced teachers. Some student teachers appeared to suggest that the new curriculum writing guide has helped them to understand inclusion in learning. Thus, they have learned how to attend to the individual learning of pupils, especially persons with disability and special needs.

- *"I have learnt how to design and prepare TLMs and how to demonstrate to learners using these TLMs for better understanding."*
- *"Let us take the field experience as an example. It has helped us to learn how to attend to the individual needs of pupils especially those with special needs."*
- *For example, when you are going to teach pupils about sanitation, you must take the children out of the classroom and then demonstrate to them. Maybe in your surroundings, if they are some bushes, you can teach them the importance of keeping their environment clean and then the consequences of not keeping it clean. So, this is more of practical than theory which is a traditional way of teaching.*
- *"In order to demonstrate the higher levels of expected graduate attributes in the writing guide, we were sent out of school to be observed during our first and second year."*
- *"One challenge is that some of the schools that we are posted to is too far. We spend a lot of money on transportation. We are wasting money on food as well."*

3.4.3 Demonstration of Application of the National Teachers' Standards

Output Indicator 4.2b Percentage of student teachers demonstrating an understanding and application of the NTS

Annual survey 2020 target for male and female student teachers is 50 percent

Students output 4.2 measures the percentage of student teachers demonstrating an understanding and application of the NTS. As explained in the tutor NTS subsection, student teachers are also supposed to exhibit professional values and attitudes in their learning to be professional teachers and to engage with stakeholders as part of the community of practice. The standards are divided into three main domains, each with its own subdivisions (See Box 3.7)

Box 3.2: 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

The analysis on students' demonstration of NTS in Table 3.12 shows that the 2020 annual survey results are like the 2019 results. About a third (33.1 percent) of male students exhibited the attributes compared with 35.0 percent in 2019. The results of female students were also like the 2019 results with no significant differences

TABLE 3.12: CoE students demonstrating the application of NTS by sex and year (%)

Level	Annual survey (Jun-2019)	Annual survey (Jul-2020)	∆ from 2019 to 2020
Year 1	34.0	34.5	0.5
Year 2	35.8	31.7	-4.1
Total	35.0	33.1	-1.9

Level	Annual survey (Jun-2019)	Annual survey (Jul-2020)	∆ from 2019 to 2020
Year 1	26	23.2	-2.8
Year 2	31.9	29.6	-2.3
Total	28.9	26.4	-2.5

Evaluating the raw scores on the NTS attributes, we noted that students obtained higher scores on 'Clarity of expression' and 'What kinds of materials should the teacher use to enhance learning' .The NTS attribute where both male and female students scored least were 'How should a teacher identify students who have learning difficulties and address their needs?'.

3.4.4 Qualitative insights on student teachers' application of the NTS

Insight from interviews and focus group discussions with student teachers indicate that some proportion of student teachers have a good understanding of the NTS. Student teachers who claimed to have a good understanding of the NTS stated that the NTS seeks to guide teachers to become professional. In addition, some student teachers revealed that the NTS refers to ethics and code of conduct for teachers in the school environment. They explained that in demonstrating the NTS, teachers must have cordial and professional relationship with learners and be morally upright in behaviour especially around the pupils. Despite student teachers showing understanding of the NTS, the qualitative survey sought to determine whether student teachers have challenges in applying the NTS. The qualitative data indicated that majority of student teachers are of the view that as part of the requirements of the NTS, they are required to go for practicals and observation in practice schools. However, they were unable to do so since they did online learning for the semester due to COVID-19. A few students also mentioned that they lacked a better understanding of the NTS since it was new to them. Here are some quotes from student teachers:

Qualitative insight from student teachers on their understanding of NTS	Qualitative insight from student teachers on why they had challenges applying the NTS
- "It is a guide that is aiming at training teachers to become professional in all standards, regardless of his or her environment. This guide exposes you to most of the learners and their behaviours. Following the standards, you will be able to handle these student teachers regardless of the behaviour they portray." - "The NTS basically talks about the ethics and code of conduct for the pre-service teachers. How we do our things, knowing how to do these things and the process through which we do them. I will always use these competencies in the course of my delivery as that will be the best way to handle situations in class." - "It is a guide that is aiming at training the teacher to become professional in all standards, regardless of his or her environment. This guide exposes you to most of the learners and their behaviours. You will be able to handle these student teachers regardless of the behaviour they portray." - "In demonstrating the NTS, as a teacher, you must ensure that there is a cordial relationship between you and the pupils, one that student teachers can approach when he/she is facing some difficulties either education, financially or academically. You must ensure that your classroom management is also very important." - "As a teacher, you must not engage in any immoral act with a student like touching the buttocks, so you must be self-discipline and maintain some standards between you and the student."	- "We understand the NTS but how do we apply some of them if we are at home? So, that was my main challenge to apply the standards because we normally go for STS to learn from the mentors. But because we did online learning, we couldn't do the STS." - "You know we normally go for observations in some basic schools to understudy or observe the more experienced teachers but this time around we could not go for obvious reasons – the pandemic." - "The main challenge was our inability to go for our observations in the primary schools." - "I think the application of the standards is possible if basic schools are in session. But, during this period, all the school pupils are at home and schools have been shut." - "It was new to us so applying it was a bit difficult. When the tutors teach, they will mention the reference number for where the standard is but these letter numbers were plenty, so, sometimes you get confused and don't know what you should do."

| - *"The NTS also talks about the educational competency. As a teacher, you need to be competent, creative, and you must also be someone that the student teachers can feel free to approach."* | |

To fully understand why student teachers have achieved low results on its application, the qualitative survey asked tutors on why student teachers are struggling to demonstrate the application of the NTS. According to the tutors, some of the contributing factors include inadequate copies of the NTS handbook to year one student teachers, tutors' inability to monitor student teachers when they go for supported teaching in school, poor language skills to write clear and concise reports on their experiences and observations during their supporting teaching in schools.

- *"If T TEL can support us so that we get the tutors can go to the field every time to see what they have been observing. How are they participating in the delivery of lessons and how are they doing it? Are they really implementing what we teach them in the colleges? Or they are even not able to do it? we need provision to be made so that we can have the means to monitor our student teachers and guide them."*
- *"To be honest with you, the current crop of students that we have, have poor language skills. Look, one of the guiding principles of the NTS is to develop their literacy and language skills but because of their poor language skills it becomes problematic.*
- *"Because of their poor language skills, they cannot write good reports. When the student teachers bring their STS reports, you will see most of them are more or less copied work. So, it becomes problematic for them to discuss the issues they go to observe on the field. When they go, they are expected to perhaps engage pupils in a class, but they have poor communication skills. In fact, coming from a senior high school and you cannot communicate in basic sentences is quite worrying."*
- *"In my college, every Wednesday, student teachers go for supported teaching in schools. As a tutor, I teach them how they should teach school pupils comprehension, grammar and essay writing. But we only assess them based on the reports that they bring from the STS. These reports, most of them are not able to write, so, they just copy what their friends have done and submit. And that is because of poor language skills. We don't have the means to move to the communities where the student teachers do their STS to actually monitor when they're applying what we taught them in the college."*

Output Indicator 5.3a Percentage of mentors that reinforce key components of the National Teachers' Standards

Annual survey 2020 target for male and female student teachers is 40 percent

The annual survey assessment of mentors' use of NTS to guide teacher preparation and practice in basic schools is based on four key criteria, namely:

- Mentor Lesson Observation
- Mentor Interview
- Mentor Compliance Matrix[11]
- Mentee NTS triangulation

These four criteria were used in the computation of the indicator in the 2019 annual survey. However, due to the close of basic schools as at the time of the 2020 assessment, only two criteria (Mentor interview and Mentee NTS triangulation) were used for the computation. To ensure a proper assessment and comparison, the results shown in this report compare the 2019 assessment using only the two criteria (Mentor interview and Mentee NTS triangulation) with the 2020 results. The 2020 target was achieved

The annual survey assessed whether mentors are reinforcing NTS to guide teacher preparation and practice in their schools. As illustrated in Figure 3.1, there was a significant increase in the proportion of both male and female mentors who demonstrated competence in NTS from 2019 to 2020 by about 20 percentage points. The results show a significantly higher scores for male mentors compared with female mentors

FIGURE 3.1: Mentors demonstrating the application of NTS by sex
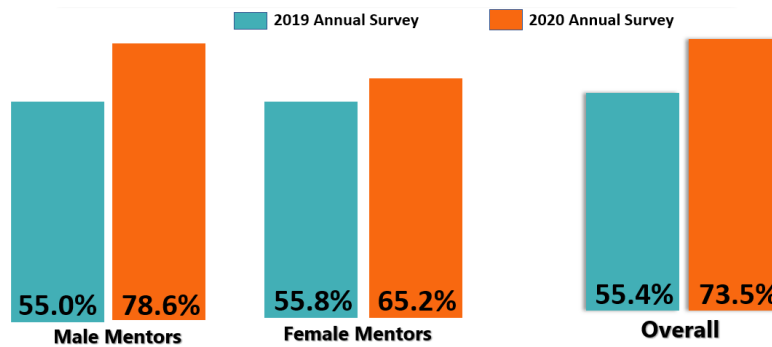
Analysis of the specific NTS competency mentors showed significant improvement were 'Creates a safe, encouraging learning Environment (98 percent)', 'Teacher listens to students and gives constructive feedback (95.8 percent), 'Employs a variety of instructional strategies that encourage student participation and critical thinking (92.9 percent)'.

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[11] To assess the compliance matrix, Mentors' lesson notebooks, study notes, attendance books and headteacher references are collected and reviewed by the enumerator and scored based on NTS criteria.

3.5.1 Qualitative insights on mentors' application of the NTS

Insight from focus group discussion with mentors in partner schools revealed that majority of mentors have a good understanding of the National Teachers' Standards. Some of the mentors interviewed indicated that the NTS is the minimum professional standard expected in the work of a teacher. Majority of mentors who revealed to have some understanding about the NTS attributed their knowledge to their participation in T-TEL workshops. On how mentors demonstrate application of the NTS, some mentors indicated that they ensure that how they interact with learners and how they interact with their fellow teachers is professional and in conformity with the NTS. Vast majority of mentors revealed that they have gained a better understanding of the NTS due to their engagement with T-TEL through training and workshops. Also, the group discussion with mentors revealed that due to student teachers visiting their schools for observation and teaching practice, they get the opportunity to demonstrate the application of the key components of the NTS to student teachers. Some qualitative verbatims are outlined below for reference:

- *"The National Teachers' Standards are at least the minimum basis with which a teacher will be measured or is supposed to demonstrate his professionalism in the work of a teacher."*
- *"On daily basis in the classroom, your professional output as a teacher you have to show professionalism in the way you interact with your learners, the way you interact with your colleague teachers and the way you interact with the larger community and other stakeholders."*
- *"The NTS also involves the modern teaching methods that a teacher is supposed to exhibit in the classroom or the school environment. So, for instance, during lesson delivery in class, when a pupil gives a wrong answer or asks a question, you don't need to shout on the student to sit down but rather you must encourage the student and say that he/she has done well."*
- *"To me, the NTS is like a continued professional development. It is going to build on teachers so that when they go back to the classroom, they can impart knowledge to the pupils."*
- *"The NTS talks about how you exhibit yourself in the classroom; the way you teach and how you throw questions for pupils to answer, the ethical acts that you should portray in the classroom."*
- *"The application of the NTS has to do with teaching the student teachers the right thing, for example they should have the right attitude towards work, have the fair knowledge of what they are supposed to teach, and understand the teaching environment, how it works."*
- *"Through the T-Tel programme, we have received a lot training on the NTS and its application. Without a shadow of doubt, I wouldn't know anything about NTS if not for T-TEL's capacity building sessions."*
- *"I didn't know anything about the teachers' standards. I can say that, some teachers from schools that were not included in T-TEL's programme do not know much about the NTS."*
- *"The T-TEL programme has taught us how to train and mentor the mentees when they come for their teaching practice. As a result, we have gained more understanding of the NTS because you teach someone something, it gives you the opportunity to really understand it well."*
- *"The training organised for us by T-TEL has really helped us in our profession as teachers. Sometimes, as a teacher in a village like this, frustrations can make you very demoralised. But through T-TEL's regular education on professional development, professional attitude and others, we are constantly reminded on how to behave professionally."*

Despite majority of mentors stating that they have a good understanding of the NTS and how to apply them, a few mentors however indicated that they face some challenges in the application of the NTS. The main challenge mentioned by mentors during focus group is lack of TLMs to enhance practical teaching. A minority of mentors engaged also appeared to suggest that they do not clearly understand the NTS, thereby, resulting in difficulties in its application. It was found that this section of mentors did not participate in T-TEL's training for mentors.

Some mentors also seemed to suggest that they have challenges in understanding and applying the NTS because they do not have copies of the handbook. Here are some quotes from mentors on their challenges:

- *"One of the challenges is obvious; lack of teaching and learning resources in our schools."*
- *"You know before you are able to do a proper lesson delivery in the classroom, you need to have the relevant teaching and learning resources to be able to impart knowledge appropriately. But here we are in a situation where these resources are not available. Teachers also face the challenge of using their own resources to get some of the TLMs. No matter how knowledgeable you are, if these resources are not available you will still have the challenge in applying these standards in your classroom."*
- *"Modern teaching and learning materials are not readily available for us to use like a professional. For instance, you might need a laptop to use in a class for example ICT but in areas where we are, a student will only see a laptop from the teacher because we don't have an ICT lab where student teachers can practice. So, these are the few challenges that we encounter whilst implementing the NTS."*
- *My understanding of the NTS is not too clear... to my understanding, the NTS is about what is expected of trainee teachers after they have gone through their training.*
- *"...since the NTS is new, the trainee teachers and some of us are also new to the standards. So, when we want to do anything that is required by the standards, sometimes you do not find it to be smooth.*
- *"The little challenge I have about the new standard is the lack of TLMs and then sometimes too time management. Look at the case of children or learners in the lower primary, you know per their learning ability, they need more time to go about their learning or whatever that we are supposed to teach them, but even looking at the 35 or 40 minutes allocated for a period is a challenge because you know some of them are slow learners so using this limited time to get something into their brain is something else."*
- *"I must confess that I don't have a thorough understanding of the NTS. The components and sub-components are plenty but because sometimes I'm unable to attend the training sessions by T-TEL, there are some things that I still need to understand."*
- *"We are aware of some aspects of the standards but not into details. The NTS document is in someone's office. Teachers don't have access to the handbooks so most of us don't have good understanding and how to apply the NTS."*
- *"We have heard of the NTS, but we don't have a good understanding of them. We don't have copies of the handbook, so it is difficult to have a good understanding of something you don't have access to."*
"My challenge is that some of us don't even have the books. How are we going to effectively apply the NTS? We apply the usual ethics that we know."

Output Indicator 5.4 Percentage of mentees receiving support from mentors in the delivery of basic education curriculum using pedagogy in line with the National Teachers' Standards and reflective of gender- and student-responsive instruction

Annual survey 2020 target for male and female student teachers is 50 percent

Like mentors, mentee use of NTS to guide teacher preparation and practice in basic schools is based on four key criteria, namely:

- Mentee Lesson Observation
- Mentee Interview
- Mentee Compliance Matrix
- Mentor NTS triangulation

As earlier stated in the mentor section, only two of the criteria was used in the 2020 annual assessment (Mentee interview and Mentor NTS triangulation). To ensure a proper assessment and comparison, the results shown in this report will compare the 2019 and 2020 assessments using only the two criteria.

The results in Figure 3.2 shows a significant improvement in both male and female mentees demonstrating knowledge and application of NTS from 2019 to 2020. The 2020 target was achieved.

FIGURE 3.2: Mentees demonstrating knowledge and application of NTS by sex
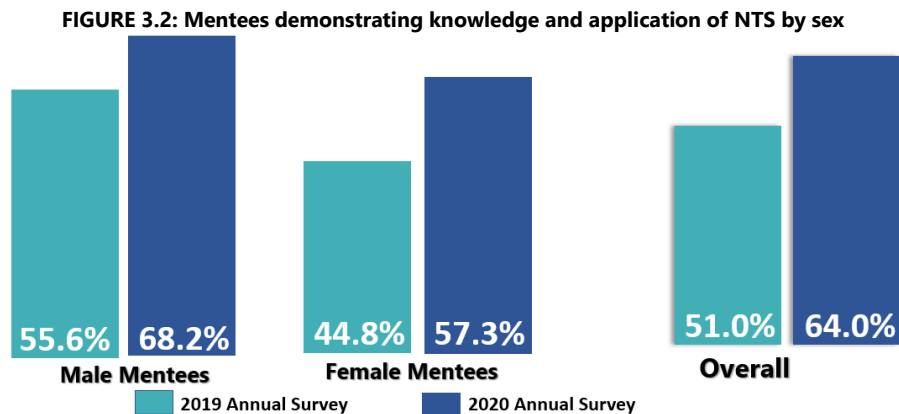
An analysis of the competencies indicates that mentees scored highest on 'Creates a safe, encouraging learning environment (97.8 percent)', and 'Teacher listens to students and gives constructive feedback (95.6 percent)'. From the analysis of the competencies, the results further show that mentees scored least on the attributes 'Employs instructional strategies appropriate for mixed ability, Multi-lingual and multi-age classes' and 'The mentee uses of age and grade(s) appropriate strategies to enact in the lesson'.

3.6.1 Qualitative insights on mentees receiving support from mentors in the delivery of basic education curriculum using pedagogy in line with the NTS and reflective of gender-and student-responsive instruction.

Information gathered from mentees' focus group discussions shows that majority of mentees interviewed have received a lot support from their mentors. Most of the support received from mentors were in line with the delivery of basic education curriculum and in line with the NTS. In sum, mentees revealed that mentors provided support including lesson preparation supervision, constructive feedback on their performance, class control and management, ethical conduct of teachers, among others. Further analysis of qualitative data from mentees' focus group discussions seemed

to suggest that capacity building and orientation organised for mentors by T-TEL on how to coach, teach and manage mentees when they arrive for teaching practice played a strong role in contributing to this. Thus, it appears that the training workshops organised for the mentors gave mentors adequate preparation and knowledge on how to successfully handle and support teaching practice mentees. Here are some qualitative insights from mentees:

- *"We get support from our mentors as far as the National Teachers Standard is concerned. They help us in knowing how to control large class to deliver a lesson. They help us to take notice or pay attention to special student teachers in the class and help us in how to start a new lesson and how to end it. So, I think we have received a lot of support from our mentors as far as lesson delivery in line with the National Teachers Standard is concerned."* **Female Mentee**
- *"Some of us were taken through the preparation of the lesson plan, how it is done and how to bring up a starter for the lesson."* **Male Mentee**
- *"Despite the fact that when we were at campus we were being taught on the code of ethics as far as the GES is concerned but when some of us went into teaching as mentees, our mentors went further to explain to us how the code of ethics in Ghana's education sector. So, if you don't go by any one of them, then you can be redrawn out of the system, so it helps."* **Male Mentee**
- *"We were also educated by our mentors on how to teach in our classroom, ways and means to get them and how to make register and how to get through some difficulties during teaching as a mentee. For instance, if you get locked up at some point in time during teaching, they come in and guide you on what to do."* **Female mentee**
- *"We were also taught as mentees on how to identify pupils with special needs and how to help them during lesson delivery. We were also taught on how to react when pupils give wrong answer in class. Thus, when a student answers a question and it is wrong, you must not reply harshly to that student, like, "it's wrong, sit down". Rather you must be polite and encourage the pupil for trying."* **Female mentor**
- *"In my school, you are also taken through the rules and regulations of the school, the communication channels and the school settings."* **Male mentee**
- *"My mentor was really supportive. He takes his time to always inspect my lesson plans and gives me feedback when I do not do something well after I deliver a lesson."* **Male Mentee**
- *"The support I personally received from my mentor is on professional conduct. For instance, when you ask a question in class and the student gives a wrong answer, you don't have to just say wrong but rather probe further from the learner he might be able to give you the right answer."* **Male mentee**
- *"On the issue of gender-sensitivity, my mentor always advises me to try and assign female learners as leaders during group tasks and to try and encourage females to be more participatory. In my class for instance, some of the girls feel shy to be active participants in activity-based learning so when the boys raise their hands, my mentor will tell me to focus on the shy ones to help them understand what is being taught."* **Male mentee**
- *"The support I had from my mentor with regards to the NTS is using the professional values and attitude which is to be a good role model for my students."* **Female mentor**

3.7.1 Demonstration of Application of Inclusive and Gender-sensitive Environment

> **Output Indicator 1.3 Percentage of colleges that ensure an inclusive, gender-sensitive environment for all staff and student teachers.**

The indicator is measured by calculating the percentage of CoEs that meet or exceed 15 points on a composite scale based on three instruments: (a) the CoE Principal Interview Guide; (b) the Tutor Lesson Observation Tool; and, (c) the CoE Student Questionnaire. See Box 3.9 for criteria for measuring the indicator.

The results show a significant increase in CoE that ensure an inclusive, gender-sensitive environment by 20.1 percentage points from 17.4 percent in 2019 to 37.5 percent in the 2020 annual survey.

Box 3.3 Criteria for measurement

❖ **CoE Principal Interview Guide:**
- College provides evidence that it provides dedicated spaces and admission for students from disadvantaged backgrounds
- College provides evidence that it has a transparent reporting system for harassment
- College provides evidence that it provides recourse and reprimand for harassment of any kind

❖ **Tutor Lesson Observation Tool:**
- The tutor uses gender-responsive strategies to challenge gender roles and gender norms.

❖ **CoE student Questionnaire:**
- My tutor makes female students feel like they can do well in this subject.

3.7.2 CoE leaders exhibiting a defined set of leadership and management skills

> **Outcome 1.1: Percentage of CoE leaders exhibiting a defined set of leadership and management skills**

The survey measured the proportion of CoE leaders exhibiting a defined set of leadership and management skills. As illustrated in Table 3.13, there was an improvement in the proportion of male and female principals achieving a defined set of leadership and management skills between 2019 and 2020.

TABLE 3.13: Proportion of principals achieving a defined set of management skills (%)

Colleges of Education	Annual survey (Jun- 2018)	Annual survey (Jun-2019)	Annual Survey (July-2020)	Δ from 2019 to 2020
Male Principals	86.2	84.4	86.1	1.7
Female Principals	72.7	85.7	100.0	14.3
Overall	82.5	84.8	89.1	4.3

3.7.3 CoE have a dedicated and effective Safe Space Focal Person System, staffed by trained SSFPs

> **Colleges of Education have a dedicated and effective Safe Space Focal Person System, staffed by trained SSFPs, which student teachers believe enables and empowers the college community to report sexual**

In computing this indicator, both principals and Safe Space Focal Persons (SSFPs) were asked the same questions and their responses triangulated with responses from students[12]. The results from Table 1 below shows that all CoEs have sexual harassment policies in place; have aligned the policy with the NCTE sexual harassment policy guideline for tertiary institutions; have developed channels for reporting sexual harassment and have appointed safe space focal persons. *Based on the computation of the indicator, (82.6 percent) of the colleges have a dedicated and effective safe space focal person system, staff trained by SSFPs with student teachers believing these systems is enabling and empowering the college community to report sexual harassment issues in a confidential and safe environment.*

As shown in Table 3.14, about 98 percent of the colleges have also disseminated and oriented the policy to the college community and have put in place grievance committees as at the time of interview. About 8 out of 10 of the colleges have a dedicated meeting place for reporting sexual harassment.

For CoEs that do not have dedicated meeting place or offices assigned, they indicated that measures are in place to appoint a dedicated office for reporting complaints. Other CoEs also indicated that a special office is setup after a sexual harassment complaint is made by a community member to address the issue.

TABLE 3.14: Results of responses from Principals and SSFPs

Principal and SSFP scores	Overall
% of colleges with sexual harassment policies in place	100%
% of colleges with dedicated meeting place for reporting sexual harassment	82.6%
% of colleges with sexual harassment policy aligned with NTSC	100%
% of colleges that have disseminated the policy widely to the college community	97.8%
% of colleges with channels for reporting sexual harassment	100%
% of colleges with Safe space focal persons	100%
% of colleges with safe space focal persons formally appointed by CoE	100%
% of colleges with grievance committees in place	97.8%
Colleges of Education have a dedicated and effective Safe Space Focal Person System, staffed by trained SSFPs, which student teachers believe enables and empowers the college community to report	**82.6%**

As shown in Table 3.15, about 95 percent of students interviewed are aware of the sexual harassment policies at their college of education. About 96 percent also indicated that they have been oriented on the college's sexual harassment policy. A majority of the students (87 percent) also indicated that they are aware of the channels for reporting. Most students mentioned that the contact numbers of safe space focal persons have been shared to them on notice boards to report any cases of sexual harassment. Others also mentioned that a mailbox has been dedicated for students to drop-in their complaints while others also mentioned that an option to report to the college councilor has been provided.

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[12] Please see Annex 2 for scoring rubric.

Despite a majority of students having knowledge of the SSFP in their schools, only a few could readily recall their names spontaneously. They were however able to mention where the SSFP can be located on their campuses.

Students were also asked to assess the effectiveness of their colleges sexual harassment system. About 9 out of 10 of the students indicated that their CoEs' response system is effective and provides them with exhaustive options to report sexual harassment complaints. Majority also mentioned that the response system is effective because it assures them of confidentiality.

TABLE 3.15: Results of responses from college students

Student Teacher scores	Female students	Male students	Overall
Awareness of CoEs sexual harassment policy	(690) 94.9%	(700) 94.3%	(1,390) 94.6%
CoE organised any dissemination/orientation on the college's sexual harassment policy	(673) 97.5%	(663) 94.7%	(1,336) 96.1%
Are you aware of channels for reporting sexual harassment?	(614) 89.0%	(598) 85.4%	(1,212) 87.2%
Do you know who your SSFP is?	(487) 70.6%	(450) 64.3%	(937) 67.4%
In your opinion, do you believe that your college has an effective sexual harassment response system	(624) 90.4%	(637) 91.0%	(1,390) 90.7%

3.8 ASSESSMENT OF T-TEL'S CONTRIBUTION BY COLLEGE PRINCIPALS, SECRETARIES AND TUTORS

Since the inception of the T-Tel project, colleges in Ghana have benefitted both directly and indirectly from the Project. The project has enhanced the professional capacities of all stake holders including, college principals, Secretaries, Tutors, students and other members of the college community for the purpose of improving the educational needs of all Ghanaians. The benefit from T-Tel's interventions has trickled to all teachers at the basic level and enhanced teaching and learning at the basic level. This is evident from the results from the report beginning 2015. As part of this concluding survey, principals of the colleges, college secretaries and Tutors were asked to assess the performance of the T-Tel Project. In the assessment criteria, four Likert scale answer options (Strongly Agree, Agree, Disagree and Strongly Disagree) were provided to respondents to select the option that would best describe the project in their opinion. The criteria for the assessment are noted below:

- T-TEL has provided value for money for my college.

- The quality of education provided to student teachers has improved significantly

- What my college has accomplished has exceeded my expectations;

- The instructional changes introduced at my college will be sustained for many years

- As a result of my college's partnership with T-TEL, I am a better tutor

The results of the assessment recoded 'Strongly Agree' and 'Agree' as one variable and presented in Table 3.16. The results show that all Principals and college secretaries interviewed agree that the T-Tel project has provided Value for Money to their colleges and has significantly improved the quality of education provided to students. Across all the other criteria measured, an overwhelming number of stakeholders believe the T-Tel project has been beneficial to college education in Ghana.

TABLE 3.16: College stakeholders who Strongly Agree/Agree on T-Tel's contribution to their colleges

	Principals	CoE Secretaries	CoE Tutors	Overall
T-TEL has provided value for money for my college.	100.0	100.0	99.6	99.7
The quality of education provided to student teachers has improved significantly	100.0	100.0	99.6	99.7
What my college has accomplished has exceeded my expectations	97.4	100	95.6	96.2
The instructional changes introduced at my college will be sustained for many years	100	96.6	98.0	98.1
As a result of my college's partnership with T-TEL, I am a better tutor	-	-	99.6	99.6
Total (N)	38	29	252	

3.8.1 Assessment of the T-Tel project from Qualitative findings

The focus group discussions explored the impact of the T-Tel project on tutors, students, mentors and mentees. The purpose is to determine what the T-Tel project did right, where the project fell short and possible recommendations for improvement.

Beginning with tutors, all tutors during the discussion were satisfied with the support of T-Tel not just on their colleges but also on their personal career development. Specifically, almost all tutors cited the PD sessions as having significant on their personal development in their teaching field. Some tutors further indicated that through T-Tel, they have joined conferences such as T4 and XVIA which has afforded them opportunities to join PHD seminars to improve their teaching and learning. Some tutors further noted that the weekly PDS sessions introduced by T-Tel has helped them to teach certain subjects and topics more efficiently and to break down lessons to the level of students. Of note among most tutors is the reflective practice activities which they indicated has enabled students to do reflective activities by themselves to assess whether lessons delivered were successful or unsuccessful.

Some tutors further noted that the T-Tel project has sponsored them to be part of the Master trainers programme on the New Curriculum and in other professional development programmes. In relation to the professional development initiative by T-Tel, some tutors have been appointed as portfolio assessors at the regional and district levels. Further to the points made, all tutors mentioned that the provision of TLMs, PD guides and NTS materials has given them the opportunity to be better tutors than they were before the interventions by T-Tel. Some tutors went further to state that they have become cautious in addressing students based on their gender to avoided insensitivity; they stated that because of the T-Tel project training, the use the term 'his or her' and 'he or she' in their examples.

Despite the positive feedback, a minor section of the tutors indicated that they wish T-Tel had provided them with smart phones or laptops to aide their virtual teaching because they had challenges with the devices they were using to access the internet. Some quotations from Tutors are highlighted below. Please note that quotes in orange font are negative feedback from tutors.

- *"T-TEL has helped us a lot. We benefited a lot from T-TEL and it is because of T-TEL that is why we have this four-year B.Ed Programme. And the new curriculum that has been inverted too, based on that you would be prepared for you to deliver your lessons well and it is because of T-TEL that we have this opportunity to air all our views."* **Tutor**
- *T-TEL has really helped a lot especially with the support for the PD programs. Professional development programs in our various schools as well as me as a person T TEL sponsored me to be part of the master trainer's workshop of the new curriculum. And in fact, when you were there you could see that tutors for colleges of education really had a lot to in the implementation of the new curriculum. Because we had our minutes for the PD sections that we carried there to help to help in understanding concepts that were in the new curriculum. And we served as master trainers and in fact since then I personally have become a star in the teaching section. Yesterday I was appointed as one of the portfolio assessors. I do not know whether they will take me as a regional assessor or a district assessor but then I attended a training. So generally, T TEL has helped a lot building us professionally and when you are even handling a lesson in the in the class children are aware that this guy knows how we are going about things. Besides other NGO's have come to assist in using certain pedagogical tools at the basic level to enhance teaching learning for which St. Vincent is fortunate to be with Raise. So fortunately, when they came, I was appointed to coordinate that program in our school. In fact, we are doing a lot for them as well in certain districts in the northern Ghana. So, T TEL in general has done a lot as well as the conferences I attended with certificate which has even motivated us to go for more education especially sponsoring other tutors to do their MPHIL and PHD's. So generally, for me T TEL has done a lot for Ghana and GES as well. Thank you."* **–Tutor**
- *"I have benefited a lot from the T TEL program. The orientation program on teaching and learning, the PD section and materials for PDS and every teaching and learning material has gone a long way to help me to become a better teacher. It helps me improve my research skills and knowledge in different modes of teaching."* **Tutor**
- *"I think it has helped us to improve upon our personal practices in the classrooms. It has helped us to reduce teacher talk time, and it has helped us to direct our student as to how to learn."* **Tutor**
- *".... team teaching is a massive delivery, much emphasis on the reflective practice are the benefit I had gotten from T-TEL program."* **Tutor**
- *"...So, T TEL in general has done a lot as well as the conferences I attended with certificate which has even motivated us to go for more education especially sponsoring other tutors to do their MPHIL and PHD's. So generally, for me T TEL has done a lot for Ghana and GES as well"* **Tutor**
- *"And I believe that like my colleagues all intimated we have opened to a new style of teaching, a new style of learning and that will leave an indelible mark in our lives. It has transformed us and has put us in a new position. And I think I am in a new position to always deliver my lessons to always engage my learners and to assess my learners"* **Tutor**

- *"I cannot downplay the fact that T TEL actually introduced this particular scheme, STS, so I am able to assess my learners their progress in terms of how they engage with their pupils in the classrooms and how I can design teaching and learning materials to meet their needs if they pass out one day to become professional teachers"* **Tutor**

- *"I am now professionally capable of bringing out people with practical experiences in their lessons delivery and no longer the content-based type of product that we use to churn out. So obviously if T TEL should leave today, their achievements and impact on us will never leave. So we say bravo to T TEL and we say they should not leave us"* **Tutor**

- *"I have benefited a lot from the T TEL program. The orientation program on teaching and learning, the PD section and materials for PDS and every teaching and learning material has gone a long way to help me to become a better teacher. It helps me improve my research skills and knowledge in different modes of teaching."* **Tutor**

- *".....If for nothing, I've learnt how to pay attention to students based on gender."* **Tutor**

- *"I now can diagnose individual student's difficulties and how to strategize to cater for them all."*
- *"It has equipped me professionally with knowledge on how to get students to learn the content of a course and how to effectively assess them formatively and summative."* **Tutor**
- *"I also make use of the words his/her, he or she, himself or herself since using only one constitute gender insensitiveness"* **Tutor**

- *" I know T-Tel has done a lot for our college and me personally in terms of my development as a Tutor, but I wish they had given us some of the mobile devices they gave to the students or even a laptop because I struggled a little using my device"* **Tutor**

- *"...... for me it is not a really big issue but I think after the virtual training, they should have added a mobile device for us to use for teaching. I know it's the responsibility of the school but I was hoping T-Tel would do that"* **Tutor**

Qualitative insights from student teachers also shows a general appreciation of T-Tel's intervention in their schools and personal development as student teachers and ultimately, professional teacher. The specific areas cited regularly by student teachers with regards to the benefits from T-Tel includes the distribution of STS handbooks and STA journals. They indicated that the resources have helped them to know exactly what they are supposed to do in the field. Some students pointed out that the NTS materials have served as a guide to know what and whatnot to do in the classroom. A few of the students also attributed the four-year degree programme to the T-Tel programmes intervention.

Further, some students appreciated T-Tel's regular check-ups on their activities which they indicated serves as a reminder to do better as teachers. Many of the students showed satisfaction with T-Tel's effort to provide mobile devices to them, however, they also complained about their inability to have access to the mobile devices

distributed to student teachers. They explained that they were only informed to apply for the mobile devices but were not told the procedure to apply for the phones so they could not apply. Others also indicated that they were asked to fill a questionnaire on the challenges they had with virtual learning but were not informed that those who had challenges with accessing devices would be given one. Some feedbacks from the Qualitative analysis are cited below. Please note that positive feedbacks are highlighted in blue and negative feedbacks are in orange font.

- *"I will say that I have benefitted from the program. Taking the handbooks we used on the field for example, it guided us in almost all areas of concern on the field. The only issue I have is that we were told to fill the questionnaire about hindrances to virtual learning but we did not know whether we were to only state our problems or we getting them solved. In case there will be an intervention [distribution of mobile devices] of this sort in the future, the questionnaire should be made very clear and straight forward so that we know that"* **Student teachers**
- *" We have benefitted because T-Tel has provided us with the STAs journals to be used for STAs and they keep reminding us of this National Teachers Standards and other things too. But we would like to ask that if you are really interested in helping teacher trainees, then every teacher trainee should have been considered and given a phone"* **Student teachers**
- *"We are grateful for the STS handout that was given to us. It helped us to know what exactly we are to do on the field. And concerning the phone, in my school, we didn't really know, they just asked us to apply for a phone if we needed it and we didn't even know the procedures involved, whether it is for free or not. It was when we got to school that we heard of the payment plan. So, if the phones were not for free, why the need to call on some students and not make it a general thing for all students to join the program?"* **Student teachers**
- *"I think the program talks more about the NTS and I think it guides me as a professional to know what to do and how to do it when I'm in the classroom setting. It has been an achievement for me."* **Student teachers**
- *"T-TEL has helped us a lot. We benefited a lot from T-TEL as you were saying it is because of T-TEL that is why we have this four-year program. And the new curriculum that has been inverted too, based on that you would be prepared for you to deliver your lessons well and it is because of T-TEL that we have this opportunity to air all our views."* **Student teachers**
- *"I think as my colleague said, it has been able to help some of us a lot as in these hard times it has been able to give some of us phones. I think it is also a channel for communication between the teachers and the students."* **Student teachers**
- *"Through their interventions, some of my colleagues have been able to get phones for their lessons. It is also a channel of communication where some of us can send our problems for them to help us solve them."* **Student teachers**
- *"It serves as a check on all teachers. At least it is reminding us that we are in the account of ourselves and we are accountable to others. We have a body that from time to time it always checks on us. We should be educated on things in the educational sector."* **Student teachers**

Analysis of responses from mentees' also point to satisfaction with the way the T-Tel project has been implemented in the CoE. Some mentees indicated that they have observed significant improvements in the way their tutors have been engaging in developmental studies to improve themselves and thereby impacting them. A few of the mentees also pointed out that T-Tel had provided funding support to run some programmes in

colleges such as gender-sensitivity issues. Some mentees further noted that they have learnt to be creative in using other means to develop TLMs when resources are unavailable. Most of the mentees pointed out again that T-Tel's introduction of the NTS has enhanced their knowledge and responsibilities as teachers. A few of the mentees also pointed out that sometimes they are asked to teach at workshops which offers them an opportunity to be guided and corrected when they make errors. A few of the mentees further stated that T-Tel has enhanced inclusiveness in teaching practices; they further explained that because of T-Tel, learners with learning disabilities are being admitted to schools because means to teach them have been taught in their colleges. None of the mentees mentioned any shortfalls of T-Tel, however, they indicated that they wish the programme does not end because new students who will be enrolled might not have the opportunities they have had. Some quotations from mentees are noted below:

- *"Earlier before we came here, we lacked the confidence to teach. Through T-TEL I have gained the confidence and also learnt how to treat the student equally."* **Mentee**

- *"Through the introduction of T-TEL, the practical aspect of my teaching and learning have been incorporated unlike previously. We have also learnt how to handle students in the classroom i.e. class management. We learnt about treating students fairly, we have also been to observe that we have to know the background of the student so we know what to do to help them understand lessons very well."* **Mentee**

- *"The T-TEL is really transforming our lives with the introduction the NTS. We are able to master our standards and also know the code of ethics as a student teacher. It teaches you as what to do and what not to do. This is very important because we are role models to the students."* **Mentee**

- *"I think this program has provided a lot for us the trainees. One of the key ways is providing special developmental studies for our tutors in our various colleges. You could see our tutors being engage in several programs to upgrade themselves. So, during that time they were able to teach us well to go to the field and apply what is needed and required of us. And I think financial too, I was told by our principal several times that there are funds that T-TEL was giving to the school in order to enhance gender sensitivity."* **Mentee**

- *"T-TEL, I will say most of the teacher are now able to develop within themselves how to get the necessary TLMs by improvising. The real materials are not there but they can do something themselves to replace what is needed. And on the part of ICT, in my village there was this KG madam during a PTA meeting she asked the parent to bring unused radio, TV's, phones etc, so the parents asked why, she said this is coming from T-TEL, I'm not using it for myself but to impact knowledge onto your children. So, T-TEL has helped a lot, they have made the teachers professionals."* **Mentee**

- *"Creativity has been one of the benefits teachers have derived from this T-TEL program. How to develop your own TLMs and all that."* **Mentee**

- *"Through the NTS we've been able to conduct ourselves as teachers and what we are supposed to do thus our responsibilities. I am not yet a teacher, I am a pre-service teacher and not an in-service but it has help me know my responsibilities. Through T-TEL, NTS has helped us to know the 3 domains and how to relate it to our teachings and even planning our lesson notes and now the pre-service teacher is able to go for field experience before completing school. T-TEL has brought benefit for us the pre-service and in-service teachers. Thank you and God bless you T-TEL."* **Mentee**
- *"We have benefited, with me for instance, at my school, we have been given the National Teachers Standard for Ghana book and I think it's through the support of T-TEL that we had those books."* **Mentee**
- *"One thing that I think we have benefited from that which is not direct is our teachers always have Monday morning for some T-TEL activities and I think as they learn from that place they come to class to teach us for us to also get some of the knowledge they have gained."* **Mentee**
- *"With my school on Wednesdays, they also have meetings with T-TEL people for training. And when we were also going out for our teaching practice, they gave us some red book TB Journal so we learn about the educational standard, methods of teaching, how to use the methods. They were about 18 methods of teaching. If you use this method and the students are not getting it you can switch to this and lesson note preparations and a lot in that book."* **Mentee**
- *"As teaching professionals, we have been able to know the Do's and the Don'ts so I have really benefitted well. This will help to prepare you well and raise your standards."* **Mentee**
- *"My benefitted is that I've learnt about the gender equality in the class. Previously, in school the concentration was more on the boys. Through T-TEL I have recognized that questions must be distributed evenly for both genders. My challenge is that they should have allowed us to practice well so it would become a part of us."* Mentee
- *"I've learnt a lot because I was given an opportunity to teach during one of our workshops. My lesson was reviewed and I was advised on how to handle lessons well and this has improved upon my teaching."* **Mentee**
- *"It has helped me to bring inclusiveness in my teaching practice which wasn't a focus previously. Also, some schools do not treat people with psychological and disability problems let alone to talk of giving them admissions but now they are giving them admissions and giving them fair chances too. T-TEL has helped to improve every individual."* **Mentee**

The deadly and infectious disease COVID-19 has deeply affected the education sector. The COVID-19 pandemic outbreak forced many schools and colleges to be closed temporarily. However, tertiary education including Colleges of Education resumed operations using virtual learning. Virtual learning in colleges of education was carried out using virtual tools such as Zoom, Google Classroom, Telegram, WhatsApp. The qualitative survey therefore sought to ascertain the opinion of student teachers, tutors, mentors and mentees on virtual learning.

3.9.1 Tutors' opinion about virtual learning

Generally, qualitative information obtained from tutors appeared to suggest that virtual learning has been good and helpful despite the difficulties brought about by the COVID-19 pandemic that has plagued the whole world. Some tutors stated that the use of virtual such as Zoom, Google Classroom, Telegram and WhatsApp ensured continuity of teaching and learning during the pandemic. Some tutors revealed that virtual learning has helped them to learn from their colleague tutors through recorded online lessons and develop new skills in information technology through training and support from T-TEL.

- *"You see now we are in a global world and for that matter IT is very important. And because of this virtual teaching, I think we tutors born before computer were able to at least gain some skills of presenting our lessons through the virtual means. For that matter the use of the IT is very necessary and very important for everybody which we use and we previously were not abreast with that time. So that is the success story I have about virtual learning."* **Male tutor**
- *"The virtual learning gave me the opportunity to have access to the lessons of my colleague tutors because they do record them. I do learn from their experiences; I review their lessons and pick some skills from them. This has helped me improved professionally."* **Female tutor**
- *"Through the virtual learning my personal development has improved because I realized that I have to prepare adequately before starting a class."* **Male tutor**
- *"Although we have some difficulties, it is good for us to use technology for virtual learning during this pandemic. At least it has enabled us to continue our teaching profession and get our salaries."* **Male tutor**
- *"Virtual learning has enabled us to gain new skills and knowledge in information technology. Virtual learning has shown that even the normal WhatsApp and Telegram has more advantages other than just keeping in touch with friends and family."* **Female tutor**

On whether tutors were faced by challenges during virtual learning, some tutors suggested that issues including lack of quality gadgets (i.e. laptops and smartphones), distractions in teaching and learning due to poor and unstable internet connection, and difficulties in monitoring and conducting individual student teachers' assessment were hindrances to effective teaching. Some tutors appeared to suggest that both tutors and student teachers are challenged by poor internet connection. Below are some verbatims from tutors focus group discussion:

- *"The problems are very obvious and they are not far from us. Everyone has virtually already outlined those problems. For me, I think that the inability of student teachers to join online lessons due to network challenges or some data challenges have been the major setback and those were the issues that I believe everyone would encounter."* **Male tutor**
- *"Sometimes we have poor participation because of the few number of student teachers who successfully come online. If you have a class size of about 100 plus and you register 26 participants, it is not encouraging. Sometimes some will come in a few minutes they exit. So, you have virtually about 10 or 15 student teachers at the end of your lesson and that is a thing that everyone observed. And I think that we both need to work*

on that and T-TEL would have to help us work on that. The student teachers could not attend most of the lessons because of poor network and data challenges. So, it affected participation." **Male tutor**

- "The major issue that most of them complained was about their inability to acquire devices to enable them join the google classroom. I realized that in my College, later on, T TEL brought some phones and the phones were restricted to only student teachers who had registered for them. So, student teachers who wanted to buy the phones, but did not have their names captured as part of the list were not qualified. So, I think if there is a support like that it should be opened so that as many student teachers as possible who can buy those phones at affordable prices, they will be able to buy them and participate effectively." **Male tutor**
- "Some of the key challenges to virtual teaching and learning are network connectivity, virtual room, virtual learning devices and data to connect online? Most student teachers could not join some lessons due to lack of gadget and poor network which affected their performance. Some of the student teachers were not ready for the change which also affected them." **Female tutor**

3.9.2 Student teachers' opinion about virtual learning

Information obtained from focus-group discussions with student teachers on their opinion about virtual learning indicate that virtual learning has helped to keep learning and education ongoing. According to some student teachers, virtual learning has been good because it has helped them improve upon their skills in information technology. Aside these positive views on virtual learning, some student teachers believed virtual learning seemed to increase their financial burden through high expenditure on internet data bundles. Some student teachers also voiced their frustration on distractions due to poor internet connectivity and how it affected their ability to understand online lessons. Few students suggested that due to poor and unstable internet connectivity in their communities, they were unable to partake in online examinations. It was explained that although they complained of instability with internet connectivity, online examination was timed and inability to submit before the deadline resulted in closure of the online portal. Some student teachers suggested that if virtual learning should continue in future, serious considerations should be made on deadlines for submissions of examination papers. Generally, student teachers suggested that they prefer classroom teaching and learning to virtual learning. However, majority of student teachers suggested that they are ready to continue with virtual learning if the situation with COVID-19 continues. Some student teachers suggested that that they are ready to teach virtually if they are deployed as beginning teachers provided resources such as laptops, smartphones and provision for internet bundle is made. Some student teachers also indicated that they will require support through provision of refresher training on virtual teaching in order to be able to teach effectively. Some qualitative insight from student teachers is provided below:

Positive student teachers' opinion on virtual learning	Challenges student teachers face with virtual learning
- "For me, the virtual learning has helped some of us to learn some new things. For example, we have been able to learn how to type, use google, research and others." - "It has helped us become abreast with technology, most importantly, it has also equipped us with the ability to research for information on the internet. Then those teachers who did not previously have knowledge about technology used this opportunity to upgrade themselves." - "Due to the COVID-19 in Ghana, virtual learning has helped by downloading some of the apps	- "Before the COVID-19 pandemic, we were familiar with face-to-face interaction in the classroom, but now that we are in the house, we are forced to learn virtually. This has caused us to incur extra cost on smartphones, laptops and above all internet bundle" - "The key challenge with the virtual learning is the network problem, which even impeded those who have the smart phones and were even able to purchase some data bundle for themselves, they couldn't access the virtual learning platforms. Then mostly in my school, we did the virtual learning on Zoom platform which goes off

that can assist us in the e-learning such as telegram, Google classroom where the teachers can teach and interact with you by using video, audio and PDF materials.

- Although now have COVID-19 breakout in Ghana and the world at large and we are unable to meet the teachers face-to-face, virtual teaching has helped us to continue our education through the use of Google classroom, zoom, telegram and other virtual tools."

- "It has made us to be independent. Before the pandemic some of us did not know about other uses of the smartphone apart from making calls, WhatsApp, SMS, and the normal social media. Some of the teachers took the pain to take some of us through other uses of the phone to acquire knowledge." So, virtual learning has broadened our knowledge and skills in information technology

- "Basically, in my school, tutors use the Zoom platform to make learning interactive. So, it is just like the normal learning where most of us log on to Zoom and then we take part in the discussion."

- Before some of us were able to go through the online studies successfully. Some of us spent on mobile phones, laptops and above all network bundle. So, if you have access to those resources, a tutor will teach, sometimes through Zoom meeting or Google classroom. The teachers can also interact with us through audios so they will come and put the materials on either WhatsApp platform or telegram then we will discuss. Sometimes the teacher will come in a presentation form so if you are not familiar or if you did not get any or some of the concepts clear, then you ask questions. Sometimes the teacher posts it there and later then he will come and discuss it later. So, if you are having any difficulty in it you can consult your friend for help, but if there is no help from the friend, then we do contact the teachers for help. I think with the help of those things we can come out successfully.

after every 40 minutes and we must reconnect after every 40 minutes. This challenge affected most of my colleagues. And thus, learning was impeded drastically."

- "Our tutors used WhatsApp and Telegram for the virtual learning. It got to a point in time when we heard that UCC had a portal where they send PDFs and reference materials for us to download and learn, but they also said there is a code you have to enter before you get those PDF materials. However, nobody was ready to give us the code and nobody knew the code or anything about that code so we weren't able to access that portal."

- "Some of us did not have good smart phones to be able to have an effective virtual learning. We were told that some cheap but quality smartphones are being sold at the college. But the problem was that not everyone was able to get some."

3.9.3 Mentees' opinion about virtual learning

Similar to the opinion of student teachers, focus group discussions with teaching practice mentees are generally of the view that virtual learning is helpful. They explained that virtual learning has enabled education to be resumed as well as helping them to learn new skills in information technology. The qualitative survey sought to find out from mentees whether they will be able to teach virtually if they are deployed as beginning teachers. Majority of mentees suggested that they are willing and ready to teach virtually. However, they suggested that since virtual learning is new, sufficient support is needed for it to be a success, especially if it being rolled out to all basic schools. Here are some qualitative quotes from mentees:

- *"Now our education is going virtual and with the training I have received, I think I will be able to teach virtually and as a teacher you must be able to follow how the education trend is going."* **Mentee**
- *"I think we're okay to teach virtually but for me as a beginning teacher, it will come with several big challenges in terms of the logistics that we need in other to execute it. We need computers, internet service and some training as well."* **Mentee**
- *"Although virtual learning is good, how do you get the learners in villages to get access to a smartphone, internet connectivity and all that? If there are no logistics or materials available for virtual learning, there will be a problem."* **Mentee**
- *"As a beginning teacher, I am ever ready to be able to carry my students through so far as those things I mentioned earlier like the mobile phone and even the financial aspect is taken care of by the government. Another concern will be whether all the pupils in my school will be able to get access to the needed technological materials for them to part take in the virtual learning."* **Mentee**
- *"I can teach virtually provided there is internet connectivity and the TLMs are available for me to use and ICT resources as well."* **Mentee**
- *"With the provision of resources, I will be able to teach virtually for instance, if I am to teach mathematics, I have to solve it for the student to see, so I will need the projector and laptop."* **Mentee**
- *"From the training that we've had from the college and everything they have taught us I think I would say yes. Our mentors have been able to train and guide us well hence we are equipped."* **Mentee**
- *"Yes, once I have access to the virtual platform, I can do it because I am well equipped in the use of ICT tools."* **Mentee**
- *"We can do it but before that, unless the government put measures in place."* **Mentee**
- *"I am not well equipped in ICT so, I think if I am trained in that area, I will be able to teach effectively."* **Mentee**
- *"Adequate training on ICT will help us because most of us don't have enough knowledge about that."* **Mentee**
- *"I'm willing but some of us will need training support. For instance, the Zoom app that we are using, most of us don't know how to operate it hence training on how to use that app will be better. One of tutors used zoom to teach us how to use Microsoft Word but we didn't get the concept because we don't have knowledge about that."* **Mentee**

4. CONCLUSIONS

4.1 CONCLUSIONS

The 2020 annual survey marks the end of the T-Tel project since its inception in 2015. Over the succeeding years, the project has implemented relevant interventions in promoting teaching and learning in colleges of education. Principals have been given training in enhancing their leadership and management skills, promoting the achievement of yearly set targets and promoting a gender inclusive atmosphere in the college community. In the most recent intervention, T-Tel has provided support for colleges to setup safe space focal points to prevent sexual harassment in the college community.

Within a space of a year, the number of colleges that ensure an inclusive gender-sensitive environment for all staff and student teachers doubled given the indication of progress for all colleges. A significant number of colleges have also setup and enhanced sexual harassment policy measures which attests to this progress. It is important however for colleges not to relent in its quest and effort to bridge the gender gap in its staff and student recruitments as well as its attention to all students irrespective of background in the classroom.

Tutors have achieved significant feat in the use of student-focused teaching methods and gender-sensitive instructional methods over the project period. However, the transformation from classroom to virtual online tuition has exposed certain weaknesses in tutors' effort to adhere to these teaching methods resulting in an inability to achieve targets. This shortcoming, coupled with students' online adaptation challenges especially in their use of TLMs and execution of group assignments has proven the need for reform at colleges in developing a more efficient virtual learning system, materials (laptops, smartphones, etc.) and instructional guides for teaching and learning. For student teachers and learners at basic schools, a national effort to improve network access and data subsidization to all locations and the provision of adequate devices for virtual learning is paramount.

Focus group discussion with mentors and mentees also gave insight in the preparedness of basic schools to adopt virtual learning. It is conclusive from the report that basic schools are not adequately prepared due to unavailable technological devices, online resource instructional materials and lack of knowledge in complying with virtual teaching and learning instructions. This has been worsened by network challenges which is the primary requirement for virtual learning. Despite these challenges, both mentors and mentees have shown improvement in their knowledge and application of teaching standards from previous years/

It is conclusive from interviews with educational stakeholders that the T-Tel project has been successful especially in providing value for money to colleges. An overwhelming number of stakeholders further agree that the quality of teaching and learning in colleges has improved significantly for students. Tutors have also agreed that they have become better tutors because of the T-Tel project. College stakeholders have shown willingness to sustain the achievement of the T-Tel project to ensure continuity of progress in the teaching and learning sphere in the college community.

ANNEXES

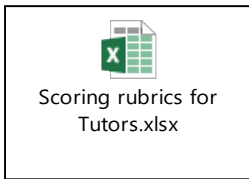| Zones	NAME of CoE	DISTRICT & REGION	SEX COMPOSITION of CoE M = Mixed-sex CoE SF = Female-only CoE SM = Male-only CoE	POPULATION
ZONE 1 **NORTHERN / UPPER EAST & WEST**	1. Bagabaga College of Education**	Tamale Metropolitan District / Northern Region	M	970
	2. Bimbila Evangelical Presbyterian College of Education**	Nanumba North District / Northern Region	M	1,088
	3. Gbewaa College of Education	Bawku District / Upper East Region	M	1,124
	4. Nusrat Jahan Ahmadiyya College of Education**	Wa Municipal District / Upper West Region	M	769
	5. St John Bosco College**	Navrongo, (Kassena-Nankana District) / Upper East Region	M	1,155
	6. Tamale College of Education	Tamale Metropolitan District / Northern Region	M	1,185
	7. Tumu College of Education**	Tumu (Sissala East District) / Upper West	M	715
	8. Gambaga College of Education	Gambaga District/ Northern region	M	878
	9. St. Vincent College of Education	Yendi, Northern Region	M	247
	10. McCoy College of Education**	Nadowli, U/W	M	234
ZONE 2 **ASHANTI / BRONG AHAFO**	1. Akrokerri College of Education**	Adansi North District / Ashanti Region	M	1,201
	2. Atebubu College of Education	Atebubu-Amantin District / Brong Ahafo Region	M	1,140
	3. Agogo Presbyterian College of Education**	Asante Akim North District / Ashanti Region	SF	732
	4. Berekum College of Education**	Berekum Municipal District / Brong Ahafo Region	M	1,247
	5. Mampong Technical College of Education**	Mampong Municipal District / Ashanti Region	SM	1,194
	6. Ofinso College of Education	Offinso Municipal District / Ashanti Region	M	1,103
	7. St. Joseph College of Education**	Bechem, (Tano South District) / Brong Ahafo Region	M	869
	8. St. Louis College of Education	Kumasi Metropolitan / Ashanti Region	SF	1,017
	9. St. Monica's College of Education**	Mampong Municipal District / Ashanti Region	SF	1,078
	10. St. Ambrose College of Education**	Dormaa Municipal /Brong Ahafo Region	M	435
	11 Wesley College of Education**	Kumasi Metropolitan / Ashanti Region	M	1,026
	12.Al Faruq College of Education	Wench, Brong Ahafo	M	422

Zones	NAME of CoE	DISTRICT & REGION	SEX COMPOSITION of CoE M = Mixed-sex CoE SF = Female-only CoE SM = Male-only CoE	POPULATION
	13.Seventh Day Adventist College of Education, Agona**	Agona, Ashanti Region	M	690
ZONE 3 VOLTA	1. Akatsi College of Education**	Akatsi South District / Volta Region	M	1,126
	2. Dambai College of Education**	Krachi East District / Volta Region	M	702
	3. Evangelical Presbyterian College of Education	Amedzofe, (Ho Municipal) / Volta Region	M	599
	4. Jasikan College of Education**	Jasikan District / Volta Region	M	1046
	5. Peki College of Education**	Peki, (South Dayi District) / Volta Region	M	631
	6. St. Francis' College of Education**	Hohoe Municipal District / Volta Region	M	1,013
	7. St. Teresa's College of Education**	Hohoe Municipal District / Volta Region	SF	630
ZONE 4 CENTRAL & WESTERN	1. Enchi College of Education**	Aowin District / Western Region	M	841
	2. Foso College of Education**	Assin North District / Central Region	M	1,008
	3. Holy Child College of Education	Takoradi Metropolitan / Western Region	SF	734
	4. Komenda College of Education**	Komenda-Edina-Eguafo-Abrem District / Central Region	M	970
	5. Ola College of Education**	Cape Coast Metropolitan / Central Region	SF	1,057
	6. Wiawso College of Education**	Sefwi-Wiawso District / Western Region	M	1,077
	7. Bia Lamp Lighter College of Education	Sefwi Essam Debiso	M	274
ZONE 5 EASTERN / GREATER ACCRA	1. Abetifi Presbyterian College of Education**	Kwahu East District / Eastern Region	M	1009
	2. Ada College of Education	Dangme East District / Greater Accra Region	M	838
	3. Accra College of Education	Accra Metropolitan / Greater Accra Region	M	911
	4. Kibi Presbyterian College of Education**	East Akim Municipal District / Eastern Region	M	776
	5. Mount Mary College of Education	Somanya, (Yilo Krobo District) / Eastern Region	M	1244
	6. Presbyterian College of Education**	Akropong, (Akuapim North District) / Eastern Region	M	1,439
	7. Presbyterian Women's College of Education	Aburi, (Akuapim South Municipal District) / Eastern Region)	SF	665
	8. Seventh Day Adventist College of Education**	Asokore-Koforidua, (New-Juaben Municipal District) / Eastern Region	M	1,076

Zones	NAME of CoE	DISTRICT & REGION	SEX COMPOSITION of CoE M = Mixed-sex CoE SF = Female-only CoE SM = Male-only CoE	POPULATION
	9. Methodist College of Education, Akim Asene-Aboabo, Oda**	Akim Asene-Aboabo, Oda Eastern Region	M	278

** Colleges in which classroom observations were conducted.

ANNEX 2: SCORING RUBRICS

Annex 2.1 CoE Tutor Rubrics

Scoring rubrics for Tutors.xlsx

Annex 2.2 CoE student Rubrics

Scoring Rubrics for College Students.xlsx
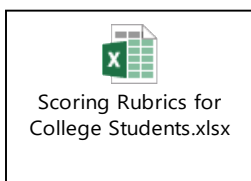
Annex 2.3 Mentor Mentee Rubrics

Scoring rubrics for Mentors and Mentees
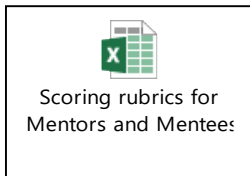
Annex 2.4 CoE Principal Rubrics

Scoring Rubric College Principals.xlsx
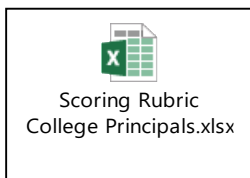
Annex 2.5 Safe Space Focal Persons

Effective Sexual Harrassment Respons

Annex 3.1: Tutor Observation Competency Scores

Output Indicator 4.2C Percentage of college tutors demonstrating an understanding and application of the NTS

Tutor observation competency scores from 2019 for outcome indicator 4.2C (%)

Tutor Competencies	Male	Female	Overall
Creates a safe, encouraging learning environment	97.6	97.3	97.6
Teacher listens to students and gives constructive feedback	93.5	96.0	94.0
Employs a variety of instructional strategies that encourage student participation and critical thinking	90.4	89.3	90.2
Teacher exhibits ethical teacher codes of conduct during the lesson delivery	78.8	78.7	78.8
Pays attention to all students, especially girls and students with Special educational needs (SEN), ensuring their progress	42.3	56.0	45.1
Explains concepts clearly using examples familiar to students	41.6	42.7	41.9
Uses a variety of assessment modes during teaching to support learning	38.2	50.7	40.8
Teacher demonstrates effective, growing leadership qualities in the classroom	28.3	41.3	31.0
Produces and uses a variety of teaching and learning resources that enhance learning, including information, communication and Technology (ICT)	30.0	32.0	30.4

Output Indicator 4.3 Percentage of male and female English, science, and mathematics tutors demonstrating student-focused teaching methods

Tutor observation competency scores from 2019 for outcome indicator 4.3 (%)

Tutor Competencies	Male	Female	Overall
The tutor uses different interactive methods/ activities to facilitate learning.	60.0	58.5	59.7
The tutor asks students a range of questions during the lesson.	91.5	87.7	90.8
The tutor promotes and manages the whole-class discussion.	80.4	76.9	79.7
The tutor uses strategies to organise and execute group or pair work.	44.6	43.1	44.3
The tutor uses strategies to assess student understanding.	74.6	75.4	74.8
The tutor gives constructive feedback on the student's answers, work, or effort.	92.3	92.3	92.3
The tutor uses techniques to address mixed abilities.	56.2	53.9	55.7
The tutor applies all teaching methods equally to female and male students.	48.5	47.7	48.3

Annex 3.2: Student Teacher Observation Competency Scores

Outcome Indicator 1.4 Percentage of student teachers' that demonstrate higher levels of expected graduate attributes identified in the curriculum writing guide

Student teachers' competency scores from 2020 for outcome indicator 1.4 (%)

Teacher Competencies	Year 1 students	Year 2 students	Overall
Teachers exhibit skills necessary to teach practical subjects	87.1	87.2	87.1
Teachers who demonstrate: the ability to build a strong network of relationships with their pupils, other professionals and parents, and careers	66.5	70.8	68.6
Innovative practitioners who understand the curriculum and are able to motivate those they teach	63.9	72.6	68.1
Independent learners with academic skills such as clarity of expression (written and spoken) and the ability to support their arguments with effective use of reading	60.4	74.6	67.2
Teachers who demonstrate: the ability to support and manage the learning and well-being of all pupils whatever the context of the school and its community	66.2	65.8	66.0
Teachers who demonstrate a thorough understanding of equity and inclusivity in education, responding appropriately to the needs of all pupils	61.5	70.1	65.6
Teachers who demonstrate effective, growing leadership qualities in the classroom and in the wider school community, guided by the legal and ethical codes of conduct required by a professional teacher	32.0	36.3	34.0

Output Indicator 4.2b Percentage of student teachers' demonstrating an understanding and application of the National Teachers' Standards

Student teachers' competency scores from 2020 for outcome indicator 4.2b (%)

Student Competencies	Year 1 students	Year 2 students	Overall
Clarity of expression of student	88.6	93.3	90.9
What kinds of materials should the teacher use to enhance learning	87.1	87.2	87.1
Qualities of a good teacher	79.3	84.0	81.6
What should the teacher do to conduct research to improve teaching?	66.5	70.8	68.6
How should a teacher explain concepts using familiar examples to students	66.2	65.8	66.0
How should a teacher pay attention to all learners, especially girls and learners with special educational needs	61.5	70.1	65.6
How should a teacher give constructive feedback to students?	59.3	65.1	62.1
What should a teacher do to improve on his/her personal and professional development as a teacher	59.6	62.3	60.9
How should a teacher identify students who have learning difficulties and address their needs?	49.9	54.7	52.2

Student Competencies	Year 1 students	Year 2 students	Overall
How should a teacher portray himself/herself as a role model to students	45.3	53.4	49.2
What should a teacher do to portray himself/herself as an agent of change in the school, community or country as a whole	41.9	44.9	43.4
How should a teacher encourage learner collaboration which leads to purposeful learning in a class	42.5	41.2	41.8
What strategies should a teacher use to deliver lessons to pupils at different age and ability groups	41.2	41.9	41.5
How should a teacher engage with his/her students' parents and the community	38.6	44.0	41.2
What are some of the codes of conduct	32.0	36.3	34.0
How should a teacher take into consideration learners' backgrounds in his/her planning and teaching?	23.8	27.3	25.5

Annex 3.3: Mentors' Competency Scores

Output Indicator 5.3a Percentage of mentors and head teachers in partner schools that reinforce key components of the National Teachers' Standards

Mentors' competency scores from 2020 for outcome indicator 5.3a (%)

Mentor Competencies	Male	Female	Overall
Creates a safe, encouraging learning Environment	98.6	97.5	98.0
Teacher listens to students and gives constructive feedback.	96.7	95.0	95.8
Employs a variety of instructional strategies that encourage student participation and critical thinking	95.2	90.5	92.9
The mentor exhibits ethical mentor Codes of conduct during the lesson delivery.	88.5	82.9	85.8
Plans and delivers varied and challenging lessons, showing a clear grasp of the intended outcomes of their Teaching.	84.2	75.4	79.9
Explains concepts clearly using examples familiar to students.	51.7	51.3	51.5
Manages behaviour and learning with small and large classes	46.4	46.7	46.6
Uses a variety of assessment modes during teaching to support learning	46.9	42.2	44.6
The mentor demonstrates effective, growing leadership qualities in the classroom	35.4	33.2	34.3
Pays attention to all students, especially girls and students with SEN, ensuring their progress.	35.4	26.1	30.9
The mentor understands how children develop and learn in diverse contexts and applies this in their teaching.	33.0	22.1	27.7
The mentor use of age and grade(s) appropriate strategies to enact in the lesson	24.9	27.6	26.2
Consideration of Learners' cultural, linguistic Socio-economic and educational backgrounds in planning and teaching	23.9	23.6	23.8
Produces and uses a variety of teaching and learning resources that enhance learning, including ICT.	23.9	22.6	23.3
Employs instructional strategies appropriate for mixed ability, Multi-lingual and multi-age classes	24.4	16.1	20.3

Mentor Competencies	Male	Female	Overall
Sets meaningful tasks that encourage learner collaboration and leads to purposeful learning.	21.1	17.6	19.4

Mentors' competency scores from 2020 for outcome indicator 5.3a (%)

Teacher Competencies	Male	Female	Overall
Professional development	46.4	39.2	42.9
Community practice	99.5	97.5	98.5
Knowledge of educational framework	84.2	84.4	84.3
Knowledge of students	54.1	56.3	55.2
Managing the learning environment	46.9	44.7	45.8
Teaching and learning	95.7	97.0	96.3
Assessment	87.1	84.9	86.0

Annex 3.4: Mentees' Competency Scores

Output Indicator 5.4 Percentage of mentees receiving support from mentors in the delivery of basic education curriculum using pedagogy in line with the National Teachers' Standards and reflective of gender- and student-responsive instruction

Mentees' competency scores from 2020 for outcome indicator 5.4 (%)

Competencies	Male	Female	Overall
Creates a safe, encouraging learning environment	98.7	96.6	97.8
Teacher listens to students and gives constructive feedback.	42.9	93.7	95.6
Employs a variety of instructional strategies that encourage student participation and critical thinking	90.6	87.4	89.2
The mentee exhibits ethical mentor codes of conduct during the lesson delivery.	91.5	82.2	87.5
Plans and delivers varied and challenging lessons, showing a clear grasp of the intended outcomes of their teaching.	87.6	71.8	80.9
Explains concepts clearly using examples familiar to students.	58.6	51.7	55.6
Manages behaviour and learning with small and large classes	43.2	49.4	45.8
Uses a variety of assessment modes during teaching to support learning	43.2	42.5	42.9
The mentee demonstrates effective, growing leadership qualities in the classroom	30.8	29.3	30.2
Pays attention to all students, especially girls and students with Special educational needs (SEN), ensuring their progress.	29.1	29.3	29.2
Produces and uses a variety of teaching and learning resources that enhance learning, including ICT.	23.9	27.0	25.3
The mentee understands how children develop and learn in diverse contexts and applies this in their teaching.	24.4	17.8	21.6
Consideration of Learners' cultural, linguistic socio-economic and educational backgrounds in planning and teaching	21.4	21.3	21.3
The mentee uses of age and grade(s) appropriate strategies to enact in the lesson	22.2	19.5	21.1
Employs instructional strategies appropriate for mixed ability, Multi-lingual and multi-age classes	23.5	13.8	19.4

A multiple regression is used when we want to predict the value of a variable (dependent) based on the values of two or more other variables (predictors). It is also used to determine if the predictors have any effect or significance in influencing the results of the dependent variable. In the context of this study, the outcome indicators for tutors were used as dependent variables and the competencies that relate to the indicators were used as the predictors to determine the effect or influence, they may have on the outcome indicators. The information below explains the key terminologies in the results of the analysis.

Parameter

Parameters are the distinct number of predictor variables (competencies) that were used in the model to predict the outcome.

Root Mean Square Error (RMSE)

The RMSE is the standard deviation of the prediction error. In other words, it provides information on the measure of the error in the prediction. Typically, the closer the RMSE is to zero, the better the prediction.

R-Squared

The R-squared (measured in percentages), also known as the coefficient of determination is a measure of how well the predictor variables (competencies) explain the variabilities in the outcome. Usually the larger the R-squared value, the better the regression model fits the observation.

F and P-Values

The F-test statistic and p-value is a method for testing the overall significance of the regression model. In summary, if the p-value is less than 0.05 (as it is in all the outputs for this study), it means the predictors are significant in predicting the outcome or dependent variable. Assuming we had observed a p-value of more than 0.05 for this study, it would mean the regression model is not useful.

Coefficients

Coefficients are changes that result in the outcome variable for unit changes in the predictor variables.

Standard Error

The standard error provides a measure of how wrong the regression model is on average using the units of the outcome variable. Smaller values are better because it indicates that the observations are closer to the fitted model.

t and P>|t|

This are results of a t-test which measures the significance of each of the competency items being measured. Usually, if the P>|t| value is less than 0.05, it means that the competency significantly contributes to the model. If the P>|t| value is greater than 0.05, it means the competency has no significant effect on the outcome.

TABLE 4.1: Output of multiple regression for tutor output indicator 4.3

Parameters	RMSE	"R-Square"	F-Value	P-Value		
8	18.492	0.8298	179.18	0.0000		
Competencies			**Coefficient**	**Standard Error**	**t**	**P>|t|**
Classroom observation						
Tutor uses different interactive methods**			1.491141	0.3124773	4.77	0.000
Tutor asks a range of questions to gauge understanding**			1.204605	0.2670504	4.51	0.000
Tutor promotes whole group discussion			0.3038684	0.3262552	0.93	0.352
Tutor gives group/pair work**			1.609755	0.2652046	6.07	0.000
Tutor uses assessment strategies**			1.612458	0.2488036	6.48	0.000
Tutor gives constructive feedback			0.479294	0.3552076	1.35	0.178
Tutor uses strategies for mixed abilities			-0.0510265	0.4044503	-0.13	0.900
Tutor uses Leadership for Learning strategies**			1.680297	0.2371609	7.09	0.000
Constant Term**			54.35948	4.191692	12.97	0.000

NOTE: Competencies with (**) contributed significantly to the outcome indicator

TABLE 4.2: Output of multiple regression for tutor output indicator 4.4

Parameters	RMSE	"R-Square"	F-Value	P-Value		
2	31.338	0.7882	558.12	0.0000		
Competencies			**Coefficient**	**Standard Error**	**t**	**P>|t|**
Classroom observation						
Tutor treats both male and female students equal**			7.543976	0.3475597	21.71	0.000
Tutor uses gender responsive strategies**			4.442755	0.2812657	15.8	0.000
Constant Term**			36.77888	3.665038	10.04	0.000

NOTE: Competencies with (**) contributed significantly to the outcome indicator