



## Midline Survey

TRANSFORMING TEACHER EDUCATION AND LEARNING (T-TEL)

*Transforming Teacher Education and Learning (T-TEL) is a four-year (2014-2018) Government of Ghana initiative funded by the United Kingdom's Department for International Development.*



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## ACRONYMS AND ABBREVIATIONS

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CDP	College Development Plan
CIA	College Improvement Adviser
CIP	College Improvement Plans
CoE <sup>1</sup>	College of Education
DBE	Diploma in Basic Education
GES	Ghana Education Service
JHS	Junior High School
MoE	Ministry of Education
NAB	National Accreditation Board
NCTE	National Council for Tertiary Education
NIB	National Inspectorate Board
ODK	Open Data Knowledge
PD	Professional Development
PDC	Professional Development Coordinators
PDS	Professional Development Sessions
PTPDM	Pre-tertiary Teacher Professional Development and Management
QA	Quality Assurance
TPC	Teaching Practice Coordinators
TPD	Tutor Professional Development
T-TEL	Transforming Teacher Education and Learning

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<sup>1</sup> For the purposes of this report, where 'CoEs' is used in a sentence, it refers to colleges of education

**Background**

Transforming Teacher Education and Learning (T-TEL) is a four-year (2014-2018) Government of Ghana initiative funded by the United Kingdom’s Department for International Development. T-TEL is designed to support the implementation of a new policy framework for pre-tertiary teacher professional development and management (PTPDM). T-TEL seeks to transform the delivery of pre-service teacher education in Ghana by improving the quality of teaching and learning in relevant national bodies, institutions and all 40 colleges of education (CoEs). The intended outcome of the programme is the development of beginning teachers<sup>2</sup> who demonstrate interactive, student-focused instructional methods, who demonstrate gender-sensitive and student-centred instructional strategies, and who know and can apply the school curriculum and assessment<sup>3</sup>. The midline survey was commissioned to monitor the progress of T-TEL against the logframe indicators over the two years of programme implementation.

**Methodology**

The midline survey adopted the same methodology employed at baseline to ensure comparability of data and results. The survey used a combination of different probability sampling strategies to draw a representative sample while maintaining cost effectiveness. The overall strategy can be described as stratified, multistage, systematic random sampling. This sample design permitted all sampling units to have a known nonzero or calculable chance of being selected. Also, to achieve a sample as representative of the population as possible, the random selection of sampling units was done proportionate to size or in line with population distribution patterns. The midline survey was conducted in May 2017. Data were collected to measure the performance of a representative sample of 408 beginning teachers, 293 tutors, 410 mentors and 40 CoE principals in addition to 2,930 CoE students, 4,080 basic school pupils, and 40 management officers of colleges sampled for purposes of triangulation<sup>4</sup>.

**Indicator Findings**

Table 1 summarises the results achieved to date.

**TABLE 1: Indicators and results achieved**

		<b>Indicator</b>	<b>Baseline</b>	<b>Midline</b>
<b>OUTCOME</b>	Better trained and prepared beginning teachers capable of applying student-centred and gender	<b>Outcome indicator 1</b>		
		Number and % of male and female beginning teachers demonstrating interactive student-focused instructional methods disaggregated by subjects - English, mathematics, and science	English – Male (1/81) 1.2% Female (0/32) 0% Mathematics – Male (0/68) 0% Female (0/68) 0% Science – Male (1/61) 1.6% Female (1/60) 1.7%	English – Male (12/48) 25.0% Female (13/85) 15.3% Mathematics – Male (10/67) 14.9% Female (12/75) 16.0% Science – Male (17/71) 23.9% Female (9/62) 14.5%
		<b>Outcome indicator 2</b>		

<sup>2</sup> A beginning teacher has a Diploma in Basic Education (DBE) from one of Ghana’s 40 CoEs. Beginning teachers interviewed in this survey were deployed in September 2016 by the Ghana Education Service, which means that they had been teaching for approximately nine months at the time of the midline survey in May 2017.

<sup>3</sup> Application of assessment describes how a competent teacher uses assessment to help address individual pupils’ learning difficulties. For further information see National Teacher’s Standards and Teacher Education Curriculum Framework for Ghana, Handbook for PD Co-ordinators, Theme 6, p.13; visit <http://www.t-tel.org/files/docs/institutional%20Development/TPD-PDC-ONLINE-V7.pdf>

<sup>4</sup> Triangulation is the use of multiple data sources to confirm the results. For example, to compute the tutor indicators, three data sources (tutor observation, tutor interview, and CoE student interviews) were used based on defined rubrics for the calculations.

		<b>Indicator</b>	<b>Baseline</b>	<b>Midline</b>
	sensitive approaches to teaching and learning	Number and % of male and female beginning English, mathematics, and science teachers demonstrating core competencies in the PTPDM Policy Framework	English – Male (2/81) 2.5% Female (0/32) 0% Mathematics – Male (0/68) 0% Female (0/68) 0% Science – Male (3/61) 4.9% Female (1/60) 1.7%	English – Male (11/48) 22.9% Female (9/85) 10.6% Mathematics – Male (10/67) 14.9% Female (9/75) 12.0% Science – Male (14/71) 19.7% Female (8/62) 12.9%
		<b>Outcome indicator 3</b>		
		Number and % of male and female beginning English, mathematics, and science teachers demonstrating knowledge and application of basic school curriculum and assessment	English – Male (2/81) 2.5% Female (0/32) 0% Mathematics – Male (0/68) 0% Female (0/68) 0% Science – Male (3/61) 4.9% Female (1/60) 1.7%	English – Male (9/48) 18.8%; Female (10/85) 11.8% Mathematics – Male (11/67) 16.4% Female (7/75) 9.3% Science – Male (14/71) 19.7% Female (8/62) 12.9%
		<b>Outcome indicator 4</b>		
		Number and % of male and female beginning English, mathematics, and science teachers demonstrating gender-sensitive and learner-centred instructional strategies.	English – Male (1/81) 1.2% Female (1/322/) 3.1% Mathematics – Male (0/68) 0% Female (0/68) 0% Science- Male (0/61) 0% Female (0/60) 0%	English – Male (4/48) 8.3% Female (7/85) 8.2% Mathematics- Male (4/67) 6.0% Female (9/75) 12.0% Science- Male (11/71) 15.5%; Female (3/62) 4.8%
<b>OUTPUT 1</b>	Improved management and leadership practices in Colleges of Education	<b>Output indicator 1.1</b>		
		CoE principals demonstrating a percent achievement of a defined set of leadership and management skills	Overall (13/38) 34.2%	Overall (24/40) 62.5%
		<b>Output indicator 1.2</b>		
		Number and % of colleges meeting 70% of annual targets, including gender-related targets within their college improvement plans	Overall (0/38) 0%	Overall (3/40) 7.5%
		<b>Output indicator 1.3</b>		
		Number and % of colleges with a defined set of management policies demonstrating a defined set of gender-sensitive criteria	Overall (0/38) 0%	Overall (3/40) 7.5%
		<b>Output indicator 1.4</b>		
		Number and % of colleges submitting completed annual self-assessments and improvement plans to the National Council for Tertiary Education (NCTE) in 2015	Overall (11/38) 28.9%	Overall (27/40) 67.5%
<b>Output 2</b>	Improved quality of pre-service training	<b>Output 2.1</b>		
		Number and % of male and female English, mathematics, and science tutors effectively using T-TEL teaching and learning materials for lessons and tutorials	English – Male (0/43) 0% Female (0/30) 0% Mathematics – Male (0/77) 0% Female (0/9) 0% Science – Male (0/100) 0%; Female (0/17) 0%	English – Male (30/59) 50.8% Female (20/34) 58.8% Mathematics – Male (45/83) 54.2% Female (7/16) 43.8% Science – Male (48/83) 57.8% Female (9/18) 50.0%
		<b>Output 2.2</b>		

		<b>Indicator</b>	<b>Baseline</b>	<b>Midline</b>
		Number and % of male and female English, mathematics, and science tutors demonstrating student-focused teaching methods	English – Male (10/43) 23.3% Female (11/30) 36.7% Mathematics – Male (22/77) 28.6% Female (2/9) 22.2% Science – Male (26/100) 26.0% Female (1/17) 5.9%	English – Male (40/59) 67.8% Female (21/34) 61.8% Mathematics – Male (52/83) 62.7% Female (12/16) 75.0% Science – Male (55/83) 66.3% Female (13/18) 72.2%
		<b>Output 2.3</b>		
		Number and % of male and female mentors using gender-sensitive practicum mentoring strategies introduced by T-TEL	Male (2/157) 1.2% Female (4/197) 2.0%	Male (26/213) 12.2% Female (21/176) 10.7%
		<b>Output 2.4</b>		
		Number and % of male and female English, mathematics, and science tutors demonstrating gender-sensitive instructional methods	English – Male (2/43) 4.7% Female (0/30) 0% Mathematics – Male (2/77) 2.6% Female (1/9) 11.1% Science – Male (0/100) 0% Female (1/17) 5.9%	English – Male (27/59) 45.8% Female (15/34) 44.1% Mathematics – Male (40/83) 48.2% Female (8/16) 50.0% Science – Male (38/83) 45.8% Female (10/18) 55.6%
		<b>Output 3.1</b>		
<b>Output 3</b>	National policies for pre-service teacher education reviewed and operationalised	Number and % of CoEs with effect governing councils		All councils were dissolved in January 2017 as a result of the new government's transition arrangements. This indicator could therefore not be assessed at midline.
		<b>Output 3.2</b>		
		Number of programmes implemented to support national institutions involved in pre-tertiary teacher education as described in Act 847		Not included in midline survey.
		<b>Output 3.3</b>		
		Number and % of colleges meeting institutional accreditation standards defined by the National Accreditation Board (NAB) or equivalent	Overall (3/38) 7.9%	Overall (27/40) 67.5%

# 1. Introduction

## 1.1 BACKGROUND OF T-TEL

Transforming Teacher Education and Learning (T-TEL) is a four-year (2014-2018) Government of Ghana initiative funded by the United Kingdom's Department for International Development<sup>5</sup>. T-TEL is designed to support the implementation of the new policy framework for pre-tertiary teacher professional development and management (PTPDM). T-TEL seeks to transform the delivery of pre-service teacher education in Ghana by improving the quality of teaching and learning in relevant national bodies, institutions and all 40 public colleges of education (CoEs).

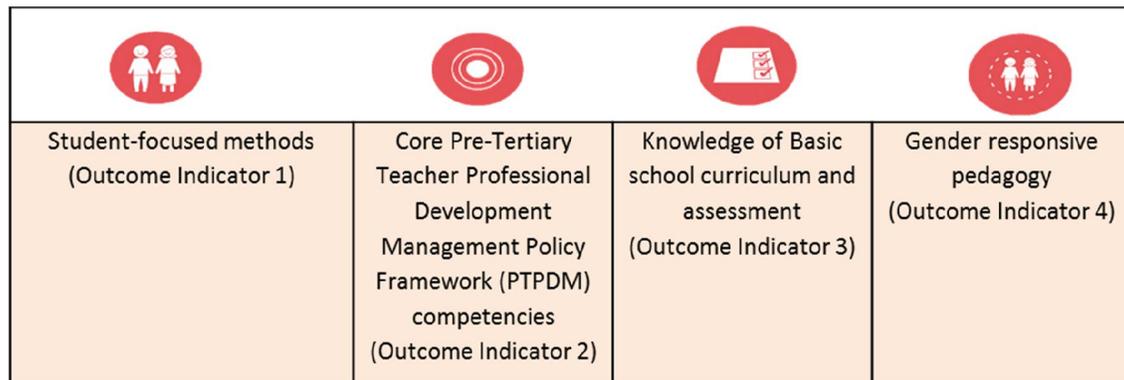
T-TEL comes at a critical moment for education in Ghana. The Government of Ghana is determined to address poor learning outcomes and recognises that teaching is both a barrier and a solution to progress. The current policy environment provides a platform for improving the core and technical skills of teachers, enabling the new policy framework for PTPDM to be implemented.

T-TEL seeks to initiate a reform programme to instigate effective professional learning for college tutors and student teachers with the view to developing professional teachers who are well-equipped with knowledge, skills, and the disposition to learn, and who will guide their pupils to achieve the learning outcomes of the national curriculum in basic education. The intended outcome of the programme is the development of beginning teachers who demonstrate interactive, student-focused instructional methods, who demonstrate gender-sensitive and student-centred instructional strategies, and who know and can apply the school curriculum and assessment. The programme's implementation activities reflect these goals.

## 1.2 T-TEL'S THEORY OF CHANGE

T-TEL's theory of change, shown in Figure 1.1, posits that the poor quality of new teachers entering basic schools in Ghana is due to the outdated, poor quality of teacher education provided by CoEs. As T-TEL strives to improve 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**



<sup>5</sup> T-TEL is part of the department's programme on "Girls – Participatory Approaches to Student Success," which seeks to increase participation and the quality of secondary education by providing disadvantaged girls with secondary level scholarships and Ghana's colleges of education with targeted support to improve teacher education and management.

 Improved CoE management	 Improved quality of pre-service training	 National policies improved and use of evidence
<ul style="list-style-type: none"> <li>• CoE principals demo key leadership and management skills (1.1)</li> <li>• CoEs meet 70% of targets within College Development Plan (1.2)</li> <li>• CoEs have management policies with gender sensitive criteria (1.3)</li> <li>• CoEs submit College improvement plans to NCTE (1.4)</li> <li>• CoEs have effective governing councils (3.1)</li> <li>• CoEs meet accreditation standards defined by NAB (3.3)</li> </ul>	<ul style="list-style-type: none"> <li>• Tutors effectively use T-TEL teaching and learning materials for lessons and tutorials (2.1)</li> <li>• Tutors demonstrate student-focused teaching methods (2.2)</li> <li>• Tutors demonstrate gender-responsive teaching methods (2.4)</li> <li>• Mentors use gender responsive mentoring strategies (2.3)</li> </ul>	<ul style="list-style-type: none"> <li>• No. programmes to support national institutions involved in Act 847 (3.2)</li> <li>• DBE Curriculum reviewed and revised (3.4)</li> <li>• Research studies in teacher education and gender (4.1)</li> <li>• No. scholarships/Challenge Funds disbursed (4.2)</li> <li>• No. communication and dissemination activities implemented (4.3)</li> </ul>

A core assumption underpinning the theory of change is that quality of pre service education is constrained by several factors operating at each level of the system and which all have to be addressed simultaneously. These are:

- Gaps and inconsistencies in teacher education policies, which 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 practice teaching (and particularly gender-responsive mentoring strategies and inclusive, student-centred pedagogies)
- Diploma in Basic Education (DBE) curriculum used to train student teachers, which is overloaded with upper secondary subject content, exam driven, designed to prepare teachers with specialist skills at each level of basic education, and insufficiently focused on children's learning outcomes.

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

A second assumption is that interventions to improve tutors' teaching skills will lead to changes in the behaviour, performance, and teaching skills of student teachers<sup>6</sup>, even without any T-TEL interventions targeted at student teachers. This assumption is 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.

<sup>6</sup> Student teacher refers to students pursuing a Diploma in Basic Education (DBE) at a CoE

As a result, T-TEL's outcome targets aim for improvements in beginning teachers' performance without any direct interventions with student teachers. Therefore, the main areas in which T-TEL aims to catalyse change directly are:

- Tutors
- College leaders
- National policy, institutions and curriculum
- Mentors in partner schools

### 1.3 T-TEL'S IMPLEMENTATION STRATEGIES

By way of implementation, T-TEL is working closely with the Ministry of Education (MoE) and the Ghana Education Service (GES) in consultation with national-level institutions such as the National Teaching Council, the National Council for Tertiary Education (NCTE), the National Accreditation Board (NAB), the National Inspectorate Board (NIB), the University of Cape Coast and University of Education, Winneba, and 40 CoEs. Key implementation strategies in each of the programmes core areas are summarised below:

- i. Tutor Professional Development (TPD) materials are designed to support the implementation of a specific model of professional development. The TPD materials are developed for use in the professional development (PD) sessions and to scaffold classroom implementation. The materials are structured as a series of themes. For each theme, the materials include a Handbook for Professional Development Co-ordinators (PDCs), and a PD Guide for Tutors. As well as supporting tutors' participation during the weekly professional development sessions (PDS)<sup>7</sup>, the PD Guide for Tutors encourages tutors to consider how to apply the strategies in their own teaching in their classrooms, provides examples of the strategy applied from the DBE curriculum, and contains 'Plan and Practise Together' activities during which tutors plan for classroom teaching. A significant part of T-TEL's TPD is the provision of 'PD Guides for Tutors', which cover various themes such as 'Creative Approaches', 'Questioning' and 'Gender-Responsive Pedagogy'. Within each theme, the guides contain six teaching strategies with 'Example-Plan-Teach-Reflect' sequences for English, mathematics and science. These guides were printed and distributed in hard copy and published online, following the sequence of the PD sessions.
- ii. Professional development for all CoE tutors with an emphasis on the use of English, mathematics, and science. So far, the main T-TEL implementation strategy for tutor development is the college-based TPD Programme, which supports colleges to deliver weekly PDS coordinated by PDCs. T-TEL leads the development of learning resources for use in the PDS, trains the PDC (and other facilitators as required), and T-TEL's teaching and learning advisers provide regular coaching support to tutors to implement new strategies in their classrooms. To date, the TPD has prioritised teaching and learning strategies that are gender-responsive, student-centred, and inclusive<sup>8</sup>.
- iii. Professional development for CoE management and leadership. The main T-TEL implementation strategy has been through a training programme for college leaders. This is structured into six units, with one week-long units delivered prior to each new semester (i.e., two per year), and has included the integration of 'gender-responsive management' into every training. T-TEL leads the development of the training programme and accompanying resources including college improvement advisers (CIAs) who provide regular coaching support to college leaders in the areas of management and leadership.
- iv. Professional development for teaching practice coordinators, tutors and teaching practice mentors. The main implementation strategy has been the development of handbooks that provide a structured learning experience for student teachers during their teaching practice experiences in Years 1, 2, and 3 of their teacher training. Matching resources have been developed for tutors in

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<sup>7</sup> PDS are organised for tutors to improve their practice using T-TEL's professional development materials. The sessions are organised by PDCs who have been trained by T-TEL.

<sup>8</sup> The themes completed at the time of the midline survey included Creative Approaches; Questioning; Talk for Learning; Group Work, and Teaching and Learning.

colleges and for mentors in schools. T-TEL's school partnership advisers<sup>9</sup> have trained teaching practice co-ordinators (TPCs) how to use the resources within teaching practice. T-TEL has also supported TPCs to train all tutors responsible for visiting students on teaching practice. Through T-TEL, all colleges ran a three-day training workshop for mentors in partner schools<sup>10</sup>.

- v. A challenge fund awards grants to CoEs to implement innovative projects. Some colleges are working with partner districts and schools; a few colleges have formed partnerships with other colleges.
- vi. A payment-by-results fund provides financial incentives (awards) for CoEs to improve their management through achieving agreed improvement targets within their college improvement plans (CIPs).

T-TEL works with CoEs. From June 2015 to August 2016, T-TEL worked with 38 colleges. In July 2016, the MoE required T-TEL to add two new public colleges. The new colleges were inducted during August 2016, and from September 2016, T-TEL has worked with 40 colleges.

#### 1.4 OBJECTIVE OF MIDLINE SURVEY

The midline survey was carried out as part of the strategy to monitor the progress of T-TEL against the logframe indicators over the four-year implementation period. A baseline survey was completed in October 2014<sup>11</sup>. A final survey is currently planned for May 2018, to measure the results achieved by the end of T-TEL. The results of the midline survey reported here portray T-TEL's progress against its logframe indicators at the midpoint in the programme, May 2017. The survey team also sought to assess whether attainment of T-TEL's overall purpose in terms of the logical framework is still likely.

The midline survey measured most but not all indicators provided in Table 1.1<sup>12</sup>.

**TABLE 1.1: T-TEL's outcome and output indicators**

Outcome/Output	Indicators
Outcome – Better trained and prepared beginning teachers capable of applying student-centred and gender-sensitive approaches to teaching and learning	Indicator 1: Number and % of male and female beginning teachers demonstrating interactive student-focused instructional methods disaggregated by subjects - English, mathematics and science
	Indicator 2: Number and % of male and female beginning English, mathematics, and science teachers demonstrating core competencies in the PTPDM Policy Framework.
	Indicator 3: Number and % of male and female beginning English, mathematics, and science teachers demonstrating knowledge and application of basic school curriculum and assessment.
	Indicator 4: Number and % of male and female beginning English, mathematics, and science teachers demonstrating gender-sensitive and student-centred instructional strategies.
Output 1- Improved management and leadership practices in CoEs	1.1 College principals demonstrating a % achievement of a defined set of leadership and management skills
	1.2 Number and % of colleges meeting 70% of annual targets, including gender-related targets within their college improvement plans
	1.3 Number and % of colleges with a defined set of management policies demonstrating a defined set of gender-sensitive criteria
	1.4 Number and % of colleges submitting completed annual self-assessments and improvement plans to NCTE
Output 2 – Improved quality of pre-service training	2.1 Number and % of male and female English, mathematics, and science tutors effectively using T-TEL teaching and learning materials for lessons and tutorials

<sup>9</sup> The school partnership adviser works with CoEs and partner schools to support trainees and mentors during the 'teaching practice' components of the DBE. The advisers also provide training to teaching practice coordinators, school principals, circuit supervisors, girls' education officers, and district education officers in the use of the mentoring managers' materials.

<sup>10</sup> Partner schools are basic schools where CoEs send their student teachers for field practicums.

<sup>11</sup> T-TEL (2015) Baseline Survey Final Report, September 2015. Available at [www.t-tel.org](http://www.t-tel.org)

<sup>12</sup> The indicators shaded grey were not measured during the midline survey.

	2.2 Number and % of male and female English, mathematics, and science tutors demonstrating student -focused teaching methods
	2.3 Number and % of male and female mentors using gender-sensitive practicum mentoring strategies introduced by T-TEL
	2.4 Number and % of male and female English, mathematics, and science tutors demonstrating gender-sensitive instructional methods
Output 3 – National policies for pre-service teacher education reviewed and operationalised	3.1 Number and % of CoEs with effective governing councils
	3.2 Number of programs implemented to support national institutions involved in pre-tertiary teacher education as described in Act 847
	3.3 Number and % of colleges meeting institutional accreditation standards defined by the NAB or equivalent
	3.4 DBE curriculum reviewed and revised**
Output 4 – Increased use of evidence to drive improvement of pre-service teacher education and greater awareness of gender issues in CoEs	4.1 Number of research studies in teacher education and gender used to inform practice**
	4.2 Percentage of Challenge Fund results framework milestones achieved**
	4.3 Number of communication and dissemination activities developed and implemented**

\* All councils were dissolved in January 2017 as a result of the new government's transition arrangements. This indicator could therefore not be assessed at midline.

\*\* These indicators reflect T-TEL's activities and responsibilities and, therefore, were not part of the midline survey of stakeholders.

## 2. Midline Survey Methodology

### 2.1 SAMPLING

The midline survey adopted the same methodology employed at baseline to ensure comparability of data and results. The survey adopted a combination of different probability sampling strategies to draw a useful sample while maintaining cost effectiveness. The overall strategy can be described as stratified, multi-stage, systematic random sampling. This sample designs permitted all sampling units to have a known non zero or calculable chance of being selected. Also, to achieve a sample as representative of the population, the random selection of sampling units was done proportionate to size or in line with population distribution patterns.

#### 2.1.1 SAMPLING METHOD

Similar to the baseline survey, the sample size assumed a sampling error of +/- 5 percent. A confidence level of 95 percent was adopted for tutors, beginning teachers, mentors, and mentees and 3 percent for student teachers and basic school pupils.<sup>13</sup> To ensure a conservative sample size, a highly heterogeneous population with a maximum degree of variability of 50 percent was assumed. The implication is that if the survey were to be repeated randomly selecting respondents from the same populations, but selected in line with the sampling method, we would be 95 percent certain that observations made by other surveys would be within a range or interval of +/-5 percent of observations made in this survey (i.e., for tutors, beginning teachers, mentors and mentees). Employing the above criteria and formula, the following sample sizes were estimated (Table 2.1)

The sample size  $n$  and margin of error  $E$  are given by  
 $x = Z(c/100)2r(100-r)$   
 $n = N x / ((N-1)E^2 + x)$   
 $E = \text{Sqrt}[(N - n) \times r / (n(N-1))]$   
 where  $N$  is the population size,  $r$  is the fraction of responses in which we are interested, and  $Z(c/100)$  is the critical value for the confidence

**TABLE 2.1: Sample size by target population and assumed confidence level**

	Population	Estimated population at midline	Expected sample size per beneficiary category	Actual sample sizes		Assumed confidence level (CL) and confidence interval (CI) or margin of error <sup>14</sup>
				Baseline	Midline	
1	Principals/vice principals	40	40	38 <sup>15</sup>	40	Not applicable
2	Student teachers	37,107	2,256	2720	2,930	(CL=95%, CI = +/-3%)
3	Tutors (English, mathematics, and science)	929	272	272	293	(CL=95%, CI = +/-5%)
4	Beginning teachers	7,491	366	368	408	(CL=95%, CI = +/-5%)
5	Basic school pupils <sup>16</sup>	224,730	2,376	2,720	4,080	(CL=95%, CI = +/-3%)
6	Mentors	7,491	366	368	410	(CL=95%, CI = +/-5%)
7	Mentees	7,491	366	368	410	(CL=95%, CI = +/-5%)

#### 2.1.2 SAMPLING PROCESS

From among the 40 colleges, half were chosen for classroom observations of tutors. The colleges were stratified according to five T-TEL geographical-based zones. To facilitate the 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). As the survey sought to assess the gender dynamics within CoEs, a deliberate effort was

<sup>13</sup> To validate the responses from the key target stakeholders, student teachers, pupils and mentees were sampled for triangulation purposes only.

<sup>14</sup> The margin of error relates to the expected sample size per beneficiary category.

<sup>15</sup> The number of CoEs at baseline was 38. Two additional colleges became public CoEs after the baseline survey. All 40 CoEs were visited for the midline survey.

<sup>16</sup> The population of basic school pupil was estimated based on the population of beginning teachers and assumed average class size of 30 pupils where these teachers are teaching. Thus, 7,491 times 30 = 224,730.

made to select mixed-sex CoEs for the survey. In total, 2 female-only CoEs, and 18 mixed-sex CoEs were sampled for the survey. For principals, vice principals and secretaries, the study targeted respondents across all CoEs. For the list of CoEs sampled for the midline survey see Table A.1 in Annex 1.

#### *Tutor sample*

Within each of the 20 colleges chosen for the observation of tutors, 14 tutors were randomly sampled based on subjects (English, mathematics and science) and level of study. Similar to the baseline methodology, the method of selection of tutors was stratified using random sampling in which tutors were first categorized by subjects and then level (year 1 and 2) after which they were randomly selected.

Ten student teachers (five males and five females) were randomly selected from a class in which a tutor has been observed to triangulate the results. A self-administered questionnaire was distributed to randomly selected student teachers for administration.

#### *Mentor sample*

During teaching practice, student teachers are placed under the guidance of qualified professionals called mentors who introduce them to teaching and its routines to develop in them the required professional skills and competencies and a positive attitude towards the teaching profession. These mentors, who teach in public basic schools, were sampled from districts in which the CoEs are located. This is explained by the fact that mentees are posted to nearby schools in the district to facilitate supervision by their mentors in the CoEs. In each district, an average of 20 mentors were interviewed. In selecting the sample, a list of mentees was collected and the names of basic schools in which they had been posted for practicums from the respective CoEs. A cross-section of schools was randomly selected for mentors' interviews. The information collected from mentors was further triangulated with mentees of the sampled mentors. The sex of respondents was factored into the selection process to ensure adequate capture of both male and female mentors.

#### *Beginning teacher sample*

Beginning teachers were also selected from the district where a CoE is located. This did not always work for colleges in urban districts, as beginning teachers are mostly posted to deprived districts and communities where teachers are in short supply. When a sample of beginning teachers could not be generated in an urban district, the sample was completed with beginning teachers from the adjoining/nearer rural district in the same zone. This was the case in six CoEs namely Akrokerri, Nusrat Jahan, Berekum, Bimbilla, Tamale, and St. John Bosco. In selecting beginning teachers, the lists of new teachers were collected from district education offices after which the teachers were stratified by sex. An average of 19 beginning teachers were randomly sampled for classroom observation and interview per district. Having observed and interviewed beginning teachers, ten of their pupils (five males and five females) were randomly selected as was done at the baseline.

### *2.1.3 METHODOLOGICAL LIMITATIONS*

Surveys of a large number of respondents typically encounter at least some sampling and non-sampling errors, and the midline survey is no exception. Representative sampling, such as used in the midline survey, can provide only estimates of true population values, thus margins of sampling error are important in interpreting the results discussed in his report. If the samples are not truly representative of the population, then the margins of sampling error will be larger than the range of sampling errors noted above. A sampling error can occur when an enumerator does not adhere to the selection protocol, has chosen respondents because of their availability, or because they volunteered to participate. Based on the sampling procedures used for the midline survey, sampling errors – if they did occur – are likely to be few in number.

Non-sampling errors are difficult to detect and their frequency difficult to quantify. These errors may be due to inadequately trained enumerators who err in recording responses or who fail to record responses, flawed questions that respondents do not understand or misinterpret, and errors in transferring responses from individual surveys to the database that contains all responses. As might be expected, the larger the sample size the greater the probability of non-sampling errors. In an effort to minimise non-sampling errors, all enumerators and observers for the midline survey were trained, but this did not guarantee that they applied what they had learned about data collection and observation. Moreover, when people are observed they typically change their behaviour, so what was observed and recorded for this report may not provide an

indication of regular and unobserved teaching behaviours. In addition, using different observers increases the possibility that they will have different expectations and opinions about what they have observed. Annexes 3 and 4 provide further discussion on data collection and the challenges encountered.

## 2.2 DATA ANALYSIS

Upon completion of data collection, each data collection tool was reviewed to ensure its completeness before assigning it for analysis. The tools were designed to allow for the quantification of qualitative data. All of the quantitative data were analysed using basic descriptive statistical analysis to establish disaggregated scores for each tool. Data analysis and computation of indicator values were informed by scoring rubrics (See Table 2.2 for an example). 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 logframe. For example, the composite score for outcome indicator 1 (Number and % of English, mathematics, and science male and female beginning teachers demonstrating interactive student-focused instructional methods) is an average of the scores that a teacher received for three tools: the student-focused components of the lesson observation, the follow-up interview, and an interview with a sample of the beginning teachers' pupils. Each tool contained a series of items or questions. Depending on the responses, beginning teachers were 'awarded' points. A minimum number of points were required for beginning teacher to be judged as demonstrating the competency assessed.

If beginning teachers received the composite score needed to indicate that they had satisfactorily demonstrated student-focused methods, they would be counted toward that indicator in the logframe. It should be noted that the requisite composite scores reflect what is ideal and required to substantively affect student learning (as opposed to a basic or minimum standard). Each of the scoring rubrics, along with the rationale for the ideal composite scores, were shared with T-TEL's key advisers for technical validation (see Annex 2 for documents on all the scoring rubrics). For example, for the first item in Table 2.2, points could be 'awarded' when a beginning teachers used a chalk board effectively, real-life objects as part of the observed lesson, or supplementary books or reference materials. Teachers using few teaching and learning materials did not achieve the minimum score required to be deemed competent. The scoring on the other two tools was based on the same methodological approach.

**TABLE 2.2: Sample scoring rubric (for outcome indicator 1)**

<b>Classroom Observation</b>	
<b>Competency</b>	<b>Beginning teacher (minimum score)</b>
The teacher uses different teaching and learning materials to facilitate learning	6+
The teacher uses different interactive methods/ activities to facilitate learning	8+
The teacher asks pupils/ students a range of questions during the lesson	8+
The teacher promotes and manages whole class discussion	8+
The teacher uses strategies to organise and execute group or pair work	8+
The teacher uses strategies to assess pupil/student understanding	8+
The teacher gives constructive feedback on student's answers, work or effort	8+
The teacher uses techniques to address mixed abilities	6+
<b>Total minimum score</b>	<b>60+</b>
<b>Follow up interview</b>	
The teacher uses different teaching and learning materials to facilitate learning	5+
The teacher uses different interactive methods/ activities to facilitate learning	5+
The teacher uses questions that prompt analysis	4+
The teacher promotes and manages whole class discussion	4+

The teacher uses strategies to organise and execute group or pair work	4+
The teacher uses strategies to assess pupil/student understanding	4+
The teacher gives constructive feedback on student's answers, work or effort	4+
The teacher uses techniques to address mixed abilities	3+
<b>Total minimum score</b>	<b>33+</b>
<b>Student survey</b>	
Pupils can freely ask the teacher questions	8
The teacher brings pictures or objects to help teach a lesson	8
The teacher uses activities like games or role play to help teach a lesson	8
The teacher uses whole class discussion	8
The teacher asks analytical questions like, 'why do you think this?'	8
The teacher encourages quiet students to speak	8
The teacher has students do work together in groups or pairs	8
The teacher has students mark each other's work	8
The teacher makes students feel bad if they make a mistake	8
The teacher tells students how they can improve	8
The teacher gives extra help to students who are having trouble understanding	8
The teacher makes the subject interesting and easy to understand	8
<b>Total minimum score</b>	<b>96+</b>
<b>Note: A composite score is provided by the average % score for all three tools</b>	

In carrying out the analysis, differences between two groups based on percentages on *ideal scores*, such as male and female or baseline and midline, are noted only when the differences are statistically significant at .05 level using two tailed t-tests. Where there are differences among more than two groups, a Bonferroni multiple comparison test at .05 was used to establish differences. A chi-squared test was also used to measure association between groups where applicable to establish relationships. For all differences noted in the report, an asterisk (\*) has been used to indicate statistically significant differences between baseline and midline scores, between males and females, or between academic subjects. Significant difference tests were not conducted for indicators targeting CoEs. This is because the whole population of CoEs were interviewed for the midline survey.

## 3. Key Findings

### 3.1 INTRODUCTION

The chapter presents the key findings of the midline survey. This chapter presents the findings for each indicator, with the outcome indicators first and then the output indicators. The findings are presented in the following order of change agents involved: beginning teachers, tutors, mentors, and college principals. This ensures a smooth flow of the report rather than using the numerical order of the indicators. The midline survey starts with a short descriptive summary of the demographic characteristics of stakeholders and then focuses on analysis of indicator findings by change agents involved. As required by the T-TEL logframe, the data have been disaggregated by sex and the main subjects of interest – English, mathematics, and science. The midline results have been compared with the baseline results to evaluate any changes.

### 3.2 DEMOGRAPHIC PROFILE OF KEY RESPONDENTS

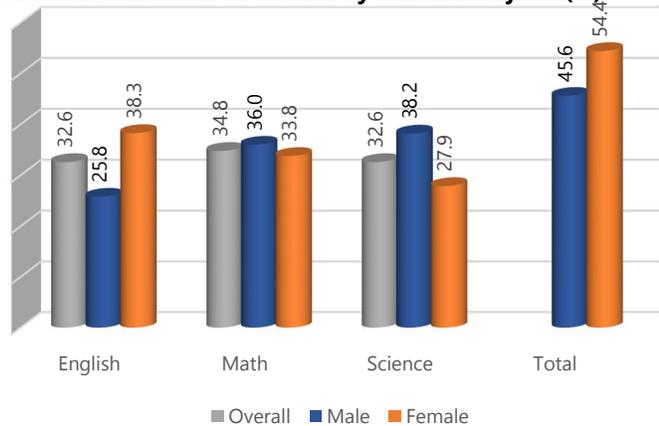
#### 3.2.1 DEMOGRAPHIC PROFILE OF BEGINNING TEACHERS

The beginning teachers are newly-trained DBE teachers who graduated from one of the 40 CoEs during the 2015/16 academic year.

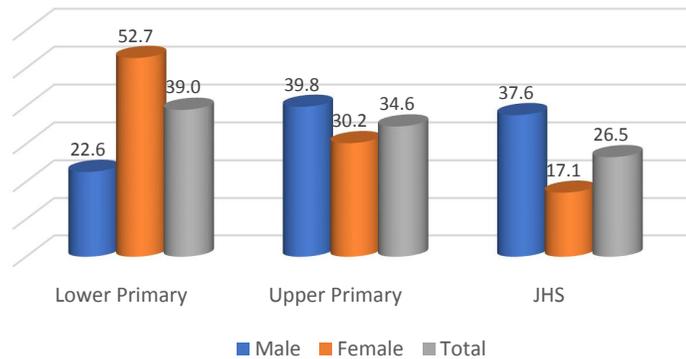
As shown in Figure 3.1, of the 408 beginning teachers observed and interviewed, females account for 222 representing 54.4 percent while males constituted 186 representing 45.6 percent. The overall subject distributions of beginning teachers is evenly split within the sample. However, more female teachers

than male teachers were observed teaching English while more male teachers than female teachers were observed teaching science<sup>17</sup>. The results also show that many beginning teachers were observed teaching at lower primary schools (39 percent), followed by upper primary schools (34.6 percent). The results show wide variations in terms of sex with more female teachers (52.7 percent) observed teaching lower primary compared to their male counterparts (22.6 percent) (see Figure 3.2).

**FIGURE 3.1: Distribution of teacher by sex and subjects (%)**



**FIGURE 3.2: Distribution of beginning teachers by sex and class of teaching (%)**

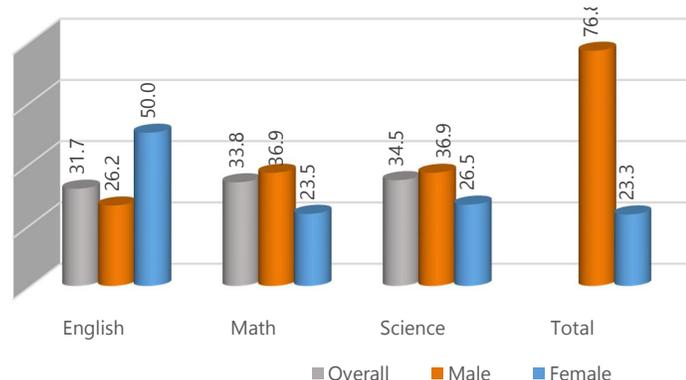


<sup>17</sup> Beginning teachers at the primary level 3 teach all subjects. Respondents were observed teaching either English, mathematics or science. In this report, English, science and mathematics beginning teachers refer to teachers observed at the time of teaching these three subjects.

### 3.2.2 DEMOGRAPHIC PROFILE OF TUTORS

Figure 3.3 shows the demographic characteristics of tutors. Out of the 293 tutors surveyed, male tutors account for 76.8 percent while female tutors represent 23.2 percent. The distribution of subjects taught by tutors is evenly split. More female tutors were observed teaching English (50 percent) while more male tutors were observed teaching mathematics and science (36.9 percent).

**FIGURE 3.3: Distribution of tutors by sex and class of teaching (%)**



### 3.2.3 DEMOGRAPHIC PROFILE OF MENTORS

Of the 410 mentors surveyed, male mentors constituted 51.9 percent of the sample while female mentors constituted the remaining 48.1 percent. Moreover, 46.8 percent of the mentors teach all subjects while 33.9 percent teach English, mathematics and science. This observation was, however, not the same for all subject areas when analysed in terms of sex. The proportion of mentors who teach all subjects was higher than English, mathematics and science. As also shown in Table 3.1, a majority of mentors who are junior high school (JHS) teachers (33.9 percent) and upper primary teachers (38.5 percent) are higher than lower primary teachers (27.6 percent). Most of the mentors double as class teachers, teaching in the various basic schools.

**TABLE 3.1: Demographic characteristics of mentors**

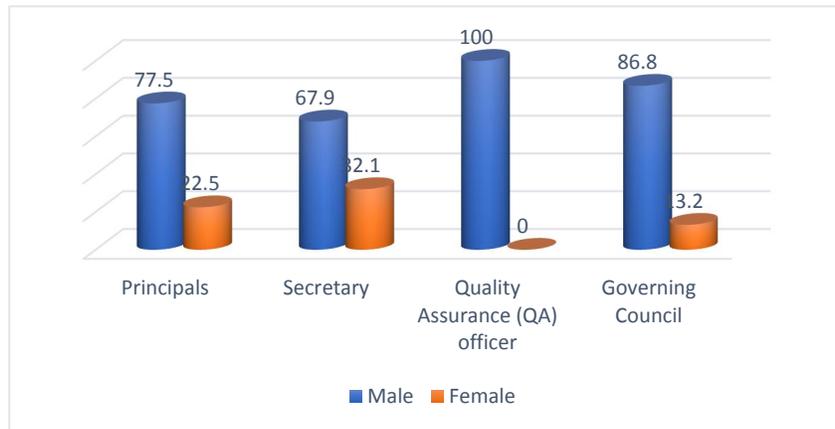
	Male	Female	Overall
<b>Subjects of Mentors</b>			
English	54.6%	45.5%	10.7%
Mathematics	78.9%	21.2%	12.7%
Science	74.4%	25.6%	10.5%
All subjects	39.6%	60.4%	46.8%
Other	50.6%	49.4%	19.3%
<b>Class of Mentors</b>			
Lower Primary	18.6%	81.4%	27.6%
Upper Primary	60.8%	39.2%	38.5%
JHS	69.1%	30.9%	33.9%
<b>School Position of Mentors</b>			
Class teacher/mentor	50.3%	49.7%	82.0%
Head teacher/lead mentor	20.0%	80.0%	1.2%
Head teacher/mentor/lead mentor	100.0%	0.0%	1.0%
Assistant head teacher/mentor/lead mentor	67.5%	32.5%	9.8%
Other	48.0%	52.0%	6.1%
Total	51.9%	48.1%	100%
Total N	213	197	410

### 3.2.4 DEMOGRAPHIC PROFILE OF COLLEGE MANAGEMENT

As shown in Figure 3.4, college principals are male dominated. Men represented 77.5 percent of the college principals and females 22.5 percent. This clearly shows a wide sex-based disparity. There is also considerable

disparity across other management of CoEs. Male secretaries<sup>18</sup> make up 67.9 percent while female secretaries constitute 32.1 percent. The quality assurance officers in all the CoEs are males. Males also dominate governing councils of the various CoEs.

**FIGURE 3.4: Proportion of CoE management by sex (%)**



### 3.3 OUTCOME INDICATORS

T-TEL aims to strengthen pre-service training in all CoEs to prepare beginning teachers who are better able to apply what they have learnt. This focus is underpinned by the belief that well-trained teachers will be able to guide the learning process of children, particularly girls, making learning relevant and stimulating. A well-trained teacher can impart knowledge and skills that can help children secure their educational rights, improve their health and self-esteem, and gain employment. Indeed, a dedicated and well-trained teacher can provide children with the essential skills to critically analyse, challenge and improve the discriminatory attitudes or behaviours that may be present in their homes, schools, and communities.

The midline survey measured the extent to which newly trained and deployed beginning teachers demonstrate interactive student-focused instructional methods; core competencies from the PTPDM framework; knowledge and application of basic school curriculum and assessment; and use of gender-sensitive and student-centred instructional strategies.

#### 3.3.1 DEMONSTRATION OF INTERACTIVE STUDENT-FOCUSED INSTRUCTIONAL METHODS BY BEGINNING TEACHERS

Outcome Indicator 1: Number and % of male and female beginning teachers demonstrating interactive student-focused instructional methods disaggregated by subjects - English, mathematics, and science

Box 3.1 lists interactive student-centred teaching methods measured by this survey and/or encouraged by T-TEL in its intervention strategies (TPD; TP support; principals' programme). In assessing the demonstration of these instructional methods, beginning teachers were observed during English, mathematics and science lessons against specific competencies highlighted in Box 3.1. Composite scores for the specific competencies were generated using scoring rubrics. The composite score is the average percentage for all three tools: observations and interviews with beginning teachers and pupils. The scoring rubrics benchmark deployed in the analysis represents an **ideal score**, which is the score recognised to be the level required to show competence in interactive student-focused instructional methods. This benchmark represents teachers meeting the minimum competency for the indicator. Thus, teachers scoring a minimum of 60 points for

<sup>18</sup> College secretaries are the chief administrative officers of the colleges and are answerable to the principal of the colleges in discharge of their administrative duties. They are responsible for the administrative, secretarial and personnel matters of the colleges.

classroom observation, 33 for teacher interview, and 96 for pupil interviews are counted as ideally demonstrating student-focused teaching methods<sup>19</sup>.

Results presented in Table 3.2 show that the proportion of teachers demonstrating interactive student-focused instructional methods has increased significantly from 0.8 percent at baseline to 17.9 percent at midline. The impressive increase in the use of these methods by new teachers is seen for both male and female teachers, [male teachers (1 percent at baseline, rising to 21 percent at midline) female teachers (0.6 percent rising to 15.3 percent)] and in all three subjects – English, mathematics, and science.

Across subjects, the results show significant improvement in the use of interactive student-focused instructional methods at midline from baseline. For instance, while 19.5 percent of beginning science teachers currently use interactive student-focused instructional methods, 1.7 percent used such methods at baseline. The proportion of beginning English teachers using interactive student-focused instructional methods increased from the baseline figure of 0.9 percent to 18.8 percent at midline. Also, the proportion of mathematics beginning teachers using interactive student-focused instructional methods during lessons increased from 0 percent at baseline to 15.5 percent at midline.

**Box 3.1: List of interactive student-focused assessment domains**

- Use of varied interactive methods/activities
- Use of questioning during the lesson
- Promotion and management of whole class discussion
- Use of strategies to organise and execute group work
- Use of strategies to assess pupil understanding
- Giving of constructive feedback
- Use of a range of teaching and learning materials
- Use of techniques to address mixed achievement and vulnerable learners

**TABLE 3.2: Proportion of beginning teachers demonstrating interactive student-focused instructional methods by sex and subject area**

	Male		Female		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
English	1.2%	25.0%*	0.0%	15.3%*	0.9%	18.8%*
Mathematics	0.0%	14.9%*	0.0%	16.0%*	0.0%	15.5%*
Science	1.6%	23.9%*	1.7%	14.5%*	1.7%	19.5%*
Total	1.0%	21.0%*	0.6%	15.3%*	0.8%	17.9%*
Total N	210	186	160	222	370	408

\* $p < 0.05$

The study further assessed the proportion of teachers using interactive student-focused instructional methods according to the class beginning teachers teach. As shown in Table 3.3, an increase in the adoption of interactive student-focused instructional methods (between baseline and midline) was also observed across the class in which beginning teachers teach. The results also show that the proportion of male beginning teachers at upper primary demonstrating interactive student-focused instructional methods during lessons or tutorials is higher than for female beginning teachers. Results from a chi-squared test also indicates that there is a relationship between the sex of beginning teachers in upper primary and their demonstration of interactive student-focused instructional methods. Male beginning teachers in upper primary are more likely to demonstrate interactive student-focused instructional methods than their female counterparts.

<sup>19</sup> The points are converted into percentage by equating the minimum score to 100 percent. This means that to meet the requirement of the indicator, a beginning teacher needs to receive an average score of 100 percent. This is the case for all the rubrics.

**TABLE 3.3: Proportion of beginning teachers demonstrating interactive student-focused instructional methods by sex and class**

	Male		Female		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
Lower Primary	1.1%	16.7%*	3.1%	18.8%*	0.9%	18.2%*
Upper Primary	0.0%	27.0%*	0.0%	9.0%*	0.0%	18.4%*
JHS	0.0%	17.1%	0.0%	15.8%*	0.0%	16.7%*
Total	1.0%	21.0%*	0.6%	15.3%*	0.8%	17.9%*
Total N	210	186	160	222	370	408

\* $p < 0.05$

3.3.2 DEMONSTRATION OF CORE COMPETENCIES IN PRE-TERTIARY TEACHER PROFESSIONAL DEVELOPMENT AND MANAGEMENT

Outcome Indicator 2: Number and % of male and female beginning English, mathematics, and science teachers demonstrating core competencies in the PTPDM Policy Framework

The PTPDM framework focuses on issues that relate to teacher development and management of pre-tertiary education. The PTPDM seeks to enable teachers to function effectively at the basic and secondary levels and to develop and nurture teachers to become reflective and proficient practitioners. Contained in the PTPDM policy document are competency-based frameworks and professional standards that all teachers are expected to exhibit. T-TEL logframe outcome indicator 2 measures the proportion of beginning teachers demonstrating core competencies in PTPDM. In assessing the demonstration of these instructional methods, beginning teachers were observed during English, mathematics and science lessons against specific competencies highlighted in Box 3.2

Similar to outcome indicator 1, the change in performance of beginning teachers on this indicator was assessed through lesson observations, interviews with teachers, and surveys with their pupils. The composite scores from demonstration of core competencies were generated using scoring rubrics similar to indicator 1 (see Annex 2a). The composite score is the average percentage for all three tools: observations, interviews with beginning teachers and pupils. The scoring rubrics benchmark deployed in the analysis is an **ideal score**, which is the score recognised to be the level required to demonstrate core competences of PTPDM. This benchmark represents those who scored at least 78 points for classroom observation, 39 points for the teacher interview, and 96 points for interviews with pupils. This represents the minimum competency for this indicator.

**Box 3.2: List of core competence in PTPDM assessment domains**

- Use of strategies to open the lesson
- Use of strategies to provide clear explanations for new concepts or skills
- Use of different teaching and learning materials
- Asking pupils a range of questions during the lesson
- Use of strategies to assess pupil understanding
- Giving constructive feedback on student's answers
- Use of techniques to address mixed abilities
- Use of strategies to effectively manage a class
- Paying attention to the seating arrangements in the classroom
- Having a clear, high-quality lesson plan for

Results show a significant increase in the proportion of teachers demonstrating the core competencies in the PTPDM. Comparing with baseline figures, the midline results show a noticeable increase (to 15 percent from 1.6 percent) in the proportion of beginning teachers who demonstrate core competencies in PTPDM during lessons.

Across sex, the pattern for males is similar to that of females for both baseline and midline. Both male and female teachers have significantly improved in the use of core competence in PTPDM. The improvement is most pronounced among male beginning English teachers relative to their female counterparts.

**TABLE 3.4: Teachers demonstrating core competence in PTPDM by sex and subject area**

	Male		Female		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
English	2.5%	22.9%*	0.0%	10.6%*	1.8%	15.0%*
Mathematics	0.0%	14.9%*	0.0%	12.0%*	0.0%	13.4%*
Science	4.9%	19.7%*	1.6%	12.9%*	3.3%	16.5%*
Total	2.4%	18.8%*	0.6%	11.7%*	1.6%	15.0%*
Total N	210	186	160	222	370	408

\* $p < 0.05$

The study further analysed the proportion of teachers demonstrating core competences in PTPDM according to the class beginning teachers teach. As illustrated in Table 3.5, beginning teachers at lower, upper and JHS reported similar results between the baseline and midline surveys. In contrast, the difference recorded by male beginning teachers in upper primary is higher than for their female counterparts.

**TABLE 3.5: Teachers demonstrating core competence in PTPDM by sex and class**

	Male		Female		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
Lower Primary	1.1%	19.1%	3.1%	13.7%*	1.6%	15.1%*
Upper Primary	2.5%	23.0%*	0.0%	7.5%*	1.5%	15.6%*
JHS	5.0%	24.3%	0.0%	13.2%*	1.8%	13.9%*
Total	2.4%	18.8%	0.6%	11.7%*	1.6%	15.0%*
Total N	210	186	160	222	370	408

\* $p < 0.05$

### 3.3.3 DEMONSTRATION OF KNOWLEDGE AND APPLICATION OF BASIC SCHOOL CURRICULUM AND ASSESSMENT

Outcome Indicator 3: Number and % of male and female beginning English, mathematics, and science teachers demonstrating knowledge and application of basic school curriculum and assessment.

T-TEL outcome indicator 3 measures the proportion of beginning teachers demonstrating knowledge and application of basic school curriculum and assessment. In assessing this indicator, beginning teachers were observed during English, mathematics and science lessons against specific competencies highlighted in Box 3.3. Similar to outcome indicators 1 and 2, the composite scores from demonstration of knowledge and application of basic school curriculum and assessment were generated using scoring rubrics (see Annex 2a). The composite score is the average percentage for three tools: observations and interviews with beginning teachers and pupils. The scoring rubrics benchmark deployed in the analysis is the *ideal score*, which is the score recognised to be the level required to demonstrate knowledge and application of basic school curriculum and assessment. This benchmark score represents beginning teachers who scored at least 46

#### Box 3.3: List of knowledge and curriculum assessment domains

- Use of strategies to provide clear explanations for new concepts or skills
- Use of different teaching and learning materials
- Use of different interactive methods
- Use of techniques to address mixed abilities
- Use of strategies to assess pupil understanding
- Use of strategies to close the lesson
- Having a clear, high-quality lesson plan for parts of the lesson

points for classroom observation, 26 points on the teacher interview, and 40 points on the pupil interviews. As Table 3.6 reports, overall, the proportion of beginning teachers that exhibited the required knowledge and application of basic school curriculum and assessment increased to 14.5 percent from the baseline figure of 1.6 percent. The observed change (between baseline and midline) is also notable among male and female beginning teachers.

Across subjects, the results show that English, mathematics and science teachers have particularly increased their knowledge and application of basic school curriculum and assessment at midline.

**TABLE 3.6: Teachers demonstrating knowledge and application of basic school curriculum and assessment by sex and subject**

	Male		Female		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
English	2.5%	18.8%*	0.0%	11.8%*	1.8%	14.3%*
Mathematics	0.0%	16.4%*	0.0%	9.3%*	0.0%	12.7%*
Science	4.9%	19.7%*	1.7%	12.9%*	3.3%	16.5%*
Total	2.4%	18.3%*	0.6%	11.3%*	1.6%	14.5%*
Total N	210	186	160	222	370	408

\* $p < 0.05$

The study further analysed the difference between baseline and midline results in terms of the class the beginning teacher teaches (see Table 3.7). The results show improvement in the midline results irrespective of whether the teacher teaches at lower primary, upper primary, or JHS. The results also show a difference between male and female beginning teachers in upper primary in terms of improvement in knowledge and application of basic school curriculum and assessment. Thus, male teachers in upper primary reported more improvement in their knowledge and how they apply curriculum and assessment than their female cohorts.

**TABLE 3.7: Teachers demonstrating knowledge and application of school curriculum and assessment by sex and class**

	Male		Female		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
Lower Primary	1.1%	19.1%*	3.1%	15.4%*	1.6%	16.4%*
Upper Primary	2.5%	18.9%*	0.0%	6.0%*	1.5%	12.8%*
JHS	0.0%	17.1%*	0.0%	7.9%*	0.0%	13.9%*
Total	2.4%	18.3%*	0.6%	11.3%*	1.6%	14.5%*
Total N	210	186	160	222	370	408

\* $p < 0.05$

### 3.3.4 DEMONSTRATION OF GENDER-SENSITIVE AND STUDENT-CENTRED INSTRUCTIONAL STRATEGIES

Outcome Indicator 4: Number and % of male and female beginning English, mathematics, and science teachers demonstrating gender-sensitive and student-centred instructional strategies.

T-TEL outcome indicator 4 measures the proportion of beginning teachers demonstrating gender-sensitive and student-centred instructional strategies. In assessing the demonstration of these instructional methods, beginning teachers were observed during English, mathematics and science lessons against specific competencies highlighted in Box 3.4. Similar to the previous outcome indicators, the composite scores from demonstration of gender-sensitive and student-centred instructional strategies were generated using scoring rubrics (see Annex 2a).

The composite score is the average percentage for all three tools: observations and interviews with beginning teachers and pupils. The scoring rubrics benchmark deployed in the analysis is an **ideal score**, which is the score recognised to be the level required to demonstrate gender-sensitive and student-centred instructional strategies. This benchmark score represents beginning teachers who scored at least 24 points for classroom observation, 10 points in the teacher interview, and 32 points in the pupil interviews.

**Box 3.4: List of gender-sensitive and student-centred domains**

- Application all teaching methods equally to male and female students
- Use of gender-responsive strategies to challenge gender roles and gender norms
- Having clearly paid attention to the seating arrangement in the classroom

As illustrated in Table 3.8, the proportion of teachers demonstrating gender-sensitive and student-focused instructional strategies has improved. The results show that the new teachers who demonstrated the use of gender-sensitive and student-centred teaching approaches increased to 9.3 percent at midline from 0.5 percent at baseline.

**TABLE 3.8: Teachers demonstrating gender-sensitive and student-centred instructional strategies by sex and subject**

	Male		Female		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
English	1.2%	8.3%*	3.1%	8.2%*	1.8%	8.3%*
Mathematics	0.0%	6.0%*	0.0%	12.0%*	0.0%	9.2%*
Science	0.0%	15.5%*	0.0%	4.8%*	0.0%	10.5%*
Total	0.4%	10.2%*	0.6%	8.6%*	0.5%	9.3%*
Total N	210	186	160	222	370	408

\* $p < 0.05$

The study further assessed the proportion of beginning teachers using gender-sensitive and student-centred instructional strategies according to the class the beginning teachers teach. As shown in Table 3.9, adoption of gender-sensitive and student-centred instructional strategies has increased among lower primary, upper primary, and JHS teachers.

**TABLE 3.9: Teachers demonstrating gender-sensitive and student-centred instructional strategies by sex and class**

	Male		Female		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
Lower Primary	0.0%	16.7%	0.0%	12.0%	0.0%	13.2%*
Upper Primary	0.0%	6.8%	0.0%	3.0%	0.0%	5.0%*
JHS	0.7%	10.0%	1.4%	7.9%	0.9%	9.3%*
Total	0.4%	10.2%	0.6%	8.6%	0.5%	9.3%*
Total N	210	186	160	222	370	408

\* $p < 0.05$

Table 3.10 presents data on competency scores of beginning teachers on each assessment question for observation scores to bring out areas of strengths and weaknesses. This is to inform T-TEL on the capacity-building needs at the college level. The results show that beginning teachers scored consistently low in use of:

- different teaching and learning materials to facilitate learning;
- different interactive methods/ activities to facilitate learning;
- strategies to organise and execute group or pair work;
- gender-responsive strategies to challenge roles and gender norms; and,

- strategies to assess student understanding.

T-TEL may therefore sharpen its capacity-building interventions for tutors in the above-mentioned areas.

It suffices to note that while performance in these competency areas is comparatively low, it has witnessed the largest gains. This suggests that if T-TEL intensifies the interventions in these low-performing areas, much improvement is likely to be recorded over time.

Similarly, T-TEL may also intensify the interventions for teachers in the following areas to stimulate larger gains at endline:

- The teacher uses strategies to provide clear explanations for new concepts, knowledge or skills;
- The teacher asks students a range of questions during the lesson;
- The teacher applies all teaching methods equally to female and male students; and,
- The teacher promotes and manages whole class discussion.

**TABLE 3.10: Raw competency scores for beginning teachers**

Areas of competency	OBSERVATION SCORE	
	Baseline	Midline
The teacher has a clear, high-quality lesson plan or activity plan for parts of the lesson.	50.9%	67.8%
The teacher has demonstrated use of T-TEL materials.	48.3%	65.3%
The teacher gives constructive feedback on student's answers, work or effort.	48.7%	64.3%
The teacher applies all teaching methods equally to female and male students.	<b>55.0%</b>	<b>63.5%</b>
The teacher asks students a range of questions during the lesson.	<b>57.6%</b>	<b>62.6%</b>
The teacher uses strategies to provide clear explanations for new concepts, knowledge or skills.	<b>49.5%</b>	<b>58.8%</b>
The teacher draws on leadership for learning strategies during the lesson.	42.7%	57.2%
The teacher promotes and manages whole class discussion.	<b>49.1%</b>	<b>56.2%</b>
The teacher uses strategies to close lesson.	36.5%	56.0%
The teacher uses strategies to open the lesson.	42.0%	55.9%
The teacher uses techniques to address mixed abilities.	<b>22.5%</b>	<b>39.8%</b>
The teacher uses different interactive methods/ activities to facilitate learning.	<b>23.4%</b>	<b>34.3%</b>
The teacher uses strategies to assess student understanding.	<b>22.6%</b>	<b>34.0%</b>
The teacher uses different teaching and learning materials to facilitate learning.	<b>14.8%</b>	<b>32.4%</b>
The teacher uses strategies to organise and execute group or pair work.	<b>8.1%</b>	<b>30.2%</b>
The teacher uses gender-responsive strategies to challenge gender roles and gender norms.	<b>4.9%</b>	<b>23.8%</b>

### 3.4 OUTPUT INDICATORS

#### 3.4.1 TUTORS

To support the achievement of improved quality of pre-service training, T-Tel implemented a number of interventions, the main intervention being the support for TPD. T-Tel encouraged CoEs to set up weekly CPD events for all tutors. T-Tel also provided support through developing resources based on a Theme per semester, and training the facilitators to deliver the CPD sessions. T-Tel's teaching and learning advisers then provided in-lesson support to tutors to implement strategies. By the time of this midline study, all 40 COEs

were implementing CPD sessions each week. T-Tel had also provided six themes, printed and distributed 2,500 copies of each, and 80 PDC facilitators had been trained on each theme.

T-Tel has also implemented several activities including the development and printing of over 2,000 tutor handbooks as well as development and distribution of 60,252 student-teacher handbooks. To ensure update of new teaching and learning methodology introduced by T-TEL, more than five days of training were organized for TPCs across the 40 CoEs. In addition, on-campus teaching practice sessions were presented for year-two student teachers by TPCs.

### 3.4.1.1 Use of T-TEL Teaching and Learning Materials for Lessons and Tutorials

**Output Indicator 2.1: Number and % of male and female English, mathematics, and science tutors effectively using T-TEL teaching and learning materials for lessons and tutorials**

For this indicator, the survey measured the use of the TPD programme materials in terms of implementation of strategies from those materials in tutors' lessons. 'Use' was measured through observation, and through self-reporting by tutors. At the time the baseline study was conducted, these materials had not yet been published (which accurately reflects the baseline aim of measuring practices and performance prior to T-TEL intervention). The composite scores from demonstration of usage of T-TEL teaching and learning materials for lessons and tutorials were generated using scoring rubrics (see Annex 2b). The composite score is the average of scores of lesson observations and follow-up interviews with tutors. The minimum composite score for a tutor to be counted towards the logframe indicator is five points. This benchmark represents tutors who scored at least two points for classroom observation and three points for the tutor interview.

As demonstrated in Table 3.11, 54.3 percent of tutors are using T-TEL teaching and learning materials for lessons and tutorials. The overall adoption rate by sex shows no notable difference between male and female tutors.

**TABLE 3.11: Proportion of tutors effectively using T-TEL teaching and learning materials**

	Male	Female	Overall
	Midline	Midline	Midline
English	50.8%	58.8%	53.8%
Mathematics	54.2%	43.8%	52.5%
Science	57.8%	50.0%	56.4%
Total	54.7%	52.9%	54.3%
Total N	225	68	293

\* $p < 0.05$

As shown in Table 3.12, tutors demonstrated use of T-TEL teaching and learning materials across all classes at midline.

**TABLE 3.12: Proportion of tutors effectively using T-TEL teaching and learning materials by class tutors teach**

	Male	Female	Overall
	Midline	Midline	Midline
Year 1	51.7%	55.8%	52.8%
Year 2	57.6%	48.0%	55.7%
Total	54.7%	52.9%	54.3%
Total N	225	68	293

\* $p < 0.05$

### 3.4.1.2 Demonstration of Student-focused Teaching Methods by College Tutors

Output Indicator 2.2: Number and % of male and female English, mathematics, and science tutors demonstrating student-focused teaching methods

Box 3.5 presents teaching strategies that enable students to learn. To measure the current level of tutors' use of student-focused teaching strategies, three methods were employed to provide one composite indicator: lesson observations, follow-up interviews with tutors, and self-administered questionnaires for 10 of the observed tutors' students based on the scoring rubrics (see Annex 2b). 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. This benchmark represents the average of tutors who scored at least 64 points for classroom observation, 35 points in the teacher interview, and 88 points for student interviews. This score represents the minimum competencies.

#### Box 3.5: List of student-focused teaching domains

- Use of different interactive methods
- Range of questions
- Promotes whole group discussion
- Group/pair work
- Use of assessment strategies
- Gives constructive feedback
- Use of strategies for mixed abilities

As shown in Table 3.13, 65.9 percent of tutors demonstrated student-focused teaching methods up from a baseline of 26.1 percent. This is a substantial increase in the proportion of tutors who demonstrated student-focused teaching methods at midline. This is also the case for both male and female tutors.

**TABLE 3.13: Tutors demonstrating student-focused teaching methods**

	Male		Female		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
English	23.3%	67.8%*	36.7%	61.8%*	28.8%	65.6%*
Mathematics	28.6%	62.7%*	22.2%	75.0%*	27.9%	64.6%*
Science	26.0%	66.3%*	5.9%	72.2%*	23.1%	67.3%*
Total	26.4%	65.3%*	25.0%	67.6%*	26.1%	65.9%*
Total N	220	225	56	68	276	293

\* $p < 0.05$

The survey further assessed the adoption of student-focused teaching methods by class in which a tutor teaches (see Table 3.14). For each class in which tutors teach, the results show increase from baseline to midline.

**TABLE 3.14: Tutors demonstrating student-focused teaching methods by class tutors teach**

	Male		Female		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
Year 1	16.8%	67.8%*	12.1%	65.1%*	15.8%	67.1%*
Year 2	17.3%	62.6%*	13.3%	72.0%*	16.8%	64.4%*
Total	26.4%	65.3%*	25.0%	67.6%*	26.1%	65.9%*
Total N	220	225	56	68	276	293

\* $p < 0.05$

3.4.1.2 DEMONSTRATION OF GENDER-SENSITIVE INSTRUCTIONAL METHODS BY TUTORS

Output Indicator 2.4: Number and % of male and female English, mathematics, and science tutors demonstrating gender-sensitive instructional methods

The midline survey assessed tutors' use of gender-responsive instructional methods. Following similar assessment methods described earlier, tutors were evaluated based on the following criteria:

- Extent of equal treatment of female and male students (with regard to questions, discussion, participation, encouragement, classroom leadership, etc.)
- Usage of gender-responsive strategies (with regard to challenging traditional gender roles in teaching and learning materials, examples, activities, etc.)

To measure the current level of tutors' use of gender-sensitive instructional methods, three main methods were employed to provide one composite data: lesson observations, follow-up interviews with tutors; and self-administered questionnaires for 10 students of the observed tutors based on scoring rubrics (see Annex 2b). The scoring rubrics benchmark 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 composite score is the average of scores of lesson observations and follow-up interviews with tutors and 10 students of observed tutors. The minimum composite score for a tutor to be counted for the logframe indicator is 16 points for tutor observation, 7 points for the tutor interview, and 24 points for students of observed tutors.

Results in Table 3.15 show that the proportion of tutors using gender-sensitive instructional methods during lessons and tutorials increased from 2.2 percent at baseline to 47.1 percent at midline. The pattern of adoption of gender-sensitive instructional methods during lessons and tutorials is similar across all the subject areas. The results show no significant differences between male and female tutors' demonstration of gender-sensitive instructional methods across subject areas.

**TABLE 3.15: Proportion of college tutors demonstrating gender-sensitive instructional methods**

	Male		Female		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
English	4.7%	45.8%*	0.0%	44.1%*	2.7%	45.2%*
Mathematics	2.6%	48.2%*	11.1%	50.0%*	3.5%	48.5%*
Science	0.0%	45.8%*	5.9%	55.6%*	0.8%	47.5%*
Total	1.8%	46.7%*	3.6%	48.5%*	2.2%	47.1%*
Total N	220	225	56	68	276	293

\* $p < 0.05$

The adoption rate in gender-sensitive instructional methods appears to improve with the class tutors teach, with differences in adoption rates more pronounced among year 2 class tutors (Table 3.16). Female year 2 tutors were more likely to use gender-sensitive instructional methods than their female cohorts in year 1 and male tutors who teach year 2. Male tutors who teach year 2 classes use more gender-sensitive instructional methods compared with other male tutors who teach year 1.

**TABLE 3.16: Proportion of college tutors demonstrating gender-sensitive instructional methods by class tutors teach**

	Male		Female		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
Year 1	2.7%	44.1%*	0.0%	39.5%*	2.1%	42.9%*
Year 2	0.0%	49.5%*	13.0%	64.0%*	1.8%	52.3%*
Total	1.8%	46.7%*	3.6%	48.5%*	2.2%	47.1%*
Total N	220	225	56	68	276	293

\* $p < 0.05$

Table 3.17 presents data on competency scores of tutors on each assessment question for observation scores to identify areas of strengths and weaknesses. This is to inform T-TEL's capacity-building programming for tutors. Similar to findings from the observation of beginning teachers, tutors performed consistently low in the following competency areas:

- different teaching and learning materials to facilitate learning;
- different interactive methods/ activities to facilitate learning;
- strategies to organise and execute group or pair work;
- strategies to assess student understanding;
- gender-responsive strategies to challenge gender roles and gender norms; and,
- demonstration of T-TEL materials

Similar to observation made earlier, while performance in these competency areas are comparatively low, it has witnessed many of the largest gains, thus suggesting that if T-TEL intensifies its interventions in these low-performing areas, more improvement is likely to be recorded over time. Similarly, T-TEL may also intensify the interventions for tutors in the following areas to stimulate larger gains at endline:

- use of strategies to provide clear explanations for new concepts, knowledge or skills;
- asks students a range of questions during the lesson; and,
- promotes and manages whole class discussion.

The results also confirm T-TEL's working assumptions and its hypothesis that beginning teachers will practice what they have been taught, basing classroom lessons and instructional methods on the styles and strategies they have experienced or have observed in the schools where they are teaching.<sup>20</sup> Thus as tutors performed low on strategies such as use of different teaching and learning materials to facilitate learning, organising and executing group or pair work, use of gender-responsive strategies to challenge gender roles and gender norms etc. so do beginning teachers.

**TABLE 3.17: Raw competency scores for tutors**

Assessment areas	OBSERVATION SCORE	
	Baseline	Midline
The tutor uses strategies to close the lesson	51.2%	73.5%
The tutor asks students a range of questions during the lesson	<b>68.0%</b>	<b>70.6%</b>
The tutor gives constructive feedback on student's answers, work or effort	49.2%	67.6%
The tutor uses strategies to provide clear explanations for concepts, knowledge, skills	<b>63.4%</b>	<b>65.3%</b>
The tutor promotes and manages whole class discussion	<b>58.9%</b>	<b>63.4%</b>
The tutor uses strategies to open the lesson	44.6%	63.0%
The tutor applies all teaching methods equally to female and male students	48.0%	60.4%
The tutor draws on Leadership for Learning strategies during the lesson	40.1%	59.2%
The tutor uses techniques to address mixed abilities	21.5%	45.8%
The tutor uses strategies to organise and execute group or pair work	<b>16.0%</b>	<b>40.8%</b>
The tutor uses strategies to assess student understanding	<b>21.6%</b>	<b>40.6%</b>
The tutor uses different interactive methods/ activities to facilitate learning	<b>28.7%</b>	<b>38.1%</b>
The tutor demonstrated use of T-TEL materials	<b>0.4%</b>	<b>36.5%</b>
The tutor uses different teaching and learning materials to facilitate learning	<b>12.5%</b>	<b>27.9%</b>
The tutor uses gender-responsive strategies to challenge gender roles and gender norms	<b>1.9%</b>	<b>25.2%</b>

<sup>20</sup> McCann, T. M, Johannessen, L. R., Kahn, E., & Flanagan, J. M. (2006). Talking in class: Using discussion to enhance teaching and learning. Urbana, IL: National Council of Teachers of English.

### 3.4.2 LEAD MENTORS / MENTORS

To support the achievement of pre-service training, T-TEL organized capacity-building training for TPCs in the use of teaching practice materials and orientation for 689 circuit supervisors and 112 girls' education officers on TP materials. CoEs implemented training for over 8000 mentors, on how to use the T-TEL handbooks during teaching practice.

#### 3.4.2.1 USE OF GENDER-SENSITIVE PRACTICUM MENTORING STRATEGIES

Output Indicator 2.3: Number and % of male and female mentors using gender-sensitive practicum mentoring strategies introduced by T-TEL

Mentoring is essential in helping student teachers build their skills through experiences of teaching in school classrooms. The mentor's role is to both inspire self-directed change, as a role model, and to support the student teachers' development through structured training and coaching. T-TEL has encouraged mentors to use gender-sensitive mentoring strategies to help guide the mentees.

In assessing the use of gender-sensitive mentoring strategies, mentors were interviewed with respect to several specific actions and competencies. These comprised:

- support provided to mentees at the beginning of practicums;
- support provided to mentees during practicums;
- extra support provided for female mentees;
- competencies mentees improved under mentorship during their practicums; and,
- use of a variety of important mentoring strategies.

To triangulate data, the mentors' respective mentees were interviewed with regard to the performance of mentors on the same actions/competencies. An **ideal score** was set for each action/competency and on the basis of the assessment by both mentors and mentees, a composite performance rating was computed as shown in Box 3.6. A scoring rubric outlining the numerical values needed for **ideal scores** is also provided in Annex 2c

As Table 3.18 demonstrates, the proportion of mentors using gender-sensitive mentoring strategies improved to 11.5 percent at midline from the baseline value of 1.6 percent.

Although not required for the logframe, the survey team also explored differences across subject areas. The results show that apart from English where no significant difference was observed between baseline and midline, the rest of the subjects recorded improvements at midline.

#### Box 3.6: Computation of mentor scoring rubrics

1. If the mentor does not score the minimum of 81, the mentor is dropped and will not be counted on the logframe indicator.
2. If the mentor has a minimum score of 81, his/her score is triangulated with the mentee score.
3. If the mentee triangulation score is below 81, the value (which is below 80) is subtracted from the mentor's score (e.g. mentee gave 76, thus 4 points are subtracted from the mentor's score to arrive at the total)
4. If the mentee triangulation score is above 81, the value (which is over 80) is added to the mentor's score (e.g., mentee gave 86, thus 6 points are added to the mentor's score to arrive at the total)
5. If the mentee triangulation score is exactly 81, the mentor's score is left as it is (for the total).
6. After addition/subtraction of mentee's score, the total composite/triangulated score needed for a mentor to be counted for the logframe is 81

**TABLE 3.18: Proportion of mentors demonstrating gender-sensitive practicum mentoring strategies by subject and sex**

	Male		Female		Overall	
	Baseline	Midline	Baseline	Midline	Baseline	Midline
English	3.9%	12.5%*	2.7%	0.0%	3.2%	6.8%
Mathematics	0.0%	9.8%*	0.0%	9.1%*	0.0%	9.6%*
Science	0.0%	12.5%*	0.0%	9.1%*	0.0%	11.6%*
Other	0.0%	7.5%*	0.0%	10.3%*	0.0%	8.9%*
All subjects	1.4%	15.8%*	2.6%	12.9%*	2.2%	14.1%*
Total	1.2%	12.2%*	2.0%	10.7%*	1.6%	11.5%*
Total N	165	213	203	197	368	410

\* $p < 0.05$

### 3.4.3 MANAGEMENT AND LEADERSHIP PRACTICES AT COLLEGES OF EDUCATION

To ensure improved management and leadership practices in CoEs, component two of T-TEL supports national institutions (NCTE and NAB) to strengthen the quality assurance system for colleges and professional development and training for college leadership teams, including coaching at colleges. Several activities have been implemented, including:

- Training for college improvement advisers (CIAs) to facilitate the zonal/cluster workshops in areas such as gender-responsive management, collaborative approaches to college improvement planning, project communication, project activity reporting, and the application process for T-TEL’s challenge fund.<sup>21</sup>
- Workshop on self-assessment and improvement planning unit for college leadership teams benefiting 224 CoE leaders.
- Training for CoE leaders through a further four units that covered the topics: building a shared vision, leading effective management systems to include policy formulation. Leading institutional strengthening focusing on accountability, quality assurance, risk management, social inclusion and integration; leading curriculum, training and learning, quality assurance instruments produced for accreditation of colleges, etc. All training was followed up with coaching by CIAs, including at least two visits to each CoE per Semester.
- In collaboration with NAB and NCTE, a comprehensive Quality Assurance Toolkit has been developed and approved by NAB for the purpose of validating standards for future re-accreditation of CoEs. In total, four documents have been developed: Quality Assurance Handbook, College of Education Evaluation Form, College Evaluation and Quality Frame Overview and Colleges of Education Quality Assurance and Accreditation Frame. In addition, as part of piloting the Quality Assurance and Accreditation Assessment Instruments, with the support of T-TEL’s Leadership Programme NAB has provided training for 18 QA experts.

#### 3.4.3.1 DEMONSTRATION OF A DEFINED SET OF LEADERSHIP AND MANAGEMENT SKILLS

Output Indicator 1.1: College principals demonstrating a % achievement of a defined set of leadership and management skills

In assessing this output indicator, college principals were asked questions about their leadership and management skills (see Table 3.19).

<sup>21</sup> As part of an effort to strengthen the delivery of pre-service teacher education, T-TEL introduced a challenge fund to operate between 2015 and 2018. The fund’s main objective is to identify and nurture improvements in the quality of pre-service training of teachers, especially for girls. The fund’s focus is on exploring innovative approaches to teacher development, including testing a new idea that has no existing evidence base and implementing an existing idea but in new situations.

**TABLE 3.19: Leadership and management skills**

<ul style="list-style-type: none"> <li>Whether colleges have vision and mission statement and whether they are aligned;</li> <li>Level of stakeholder involvement in the development of these statements and whether the vision has been shared with stakeholders</li> <li>Whether objectives have been developed objectives from the vision</li> <li>Use of vision to inform your college development plan (CDP)</li> <li>College principals' understanding of their statutory roles and responsibilities and that of the Governing Council</li> <li>Set up and level of functionality of committees of the governing council</li> </ul>	<ul style="list-style-type: none"> <li>Set up and level of functionality of committees of the academic board</li> <li>Existence of strategies to support tutor professional development</li> <li>Existence of strategies to support improvements in student performance</li> <li>Existence of strategies for improving teaching practice in schools</li> <li>Existence of plans and policies to affect change</li> <li>Development of CDP</li> <li>Level of stakeholder involvement in development of CDP</li> </ul>
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College principals were interviewed about their understanding and demonstration of the issues in the leadership and management skills domain in Table 3.19 and were asked to provide documentary evidence where deemed appropriate. To ensure triangulation of principals' data, college secretaries/QA officers were interviewed on their views of their principal's performance on the same issues.

A scoring rubric outlining the numerical values needed for *ideal scores* is provided in Annex 2d. A composite score was calculated from the responses of both the college principals and secretaries/QA officers. The minimum scores from the principal interview and secretary needed to count as a 'college principal demonstrating a defined set of leadership and management skills' is 49 and 45 points respectively. A college that obtains an average minimum score of 100 satisfies the indicator.

Findings from Table 3.20 indicate that there has been a marked improvement in the proportion of principals demonstrating a defined set of leadership and management skills at midline. The proportion of principals demonstrating leadership and management skills has increased significantly to 62.5 percent at midline from 34.2 percent at baseline. It suffices to note that eight principals joined the programme mid-way and have not yet benefited from all of T-TEL's programme interventions.

**TABLE 3.20: CoEs demonstrating a defined set of leadership and management skills**

Set of targets	Baseline	Midline
<b>% of CoEs demonstrating a defined set of leadership and management practices</b>	34.2%	62.5%
Total N	38	40

*3.4.3.2 MEETING ANNUAL TARGETS, INCLUDING GENDER-RELATED TARGETS, WITHIN COLLEGE IMPROVEMENT PLANS*

Output Indicator 1.2: Number and % of colleges meeting 70% of annual targets, including gender-related targets within their college improvement plans

The transformation of CoEs into effective and functioning tertiary institutions in accordance with the Colleges of Education Law (Act 847) 2012 requires development and implementation of college improvement plans (CIPs). To achieve this, T-TEL has supported CoEs to develop their CIPs, which then feed into longer term three- to five-year college development plans (CDPs). Each plan has annual targets against objectives, which CoEs need to achieve. Output indicator 1.2 measures how well colleges are making progress in implementing their CIPs. Principals were interviewed about whether their colleges had developed a CIP and met targets

within the CIP for academic year 2016/2017. The minimum score for a CoE to count as 'meeting 70 percent of annual targets, including gender-related targets' within CDPs is 40 points.

Results in Table 3.21 shows an improvement in the achievement of 70 percent of annual targets including gender-related targets from zero percent at baseline to 7.5 percent at midline. This improvement is observed across all set targets especially on financial management.

**TABLE 3.21: CoEs with annual targets and achievement rate of 70% of targets**

Set of targets	Baseline	Midline
<b>Overall indicator:</b>		
<b>% of CoEs achieving 70% of all sets of targets in their CDP</b>	<b>0.0%</b>	<b>7.5%</b>
<b>Specific Targets in CIP</b>		
% of CoEs with gender-planning targets in their CDP	2.6%	12.5%
% of CoEs with financial management targets in their CDP	0.0%	22.5%
% of CoEs with teaching and learning targets in their CDP	0.0%	12.5%
% of CoEs with partnership and cooperation targets in their CDP	0.0%	17.5%
% of CoEs with infrastructure and environment targets in their CDP	2.6%	7.5%
% of CoEs with student engagement targets in their CDP	0.0%	20.0%
Total N	38	40

### 3.4.3.3 DEMONSTRATION OF A DEFINED SET OF MANAGEMENT POLICIES INCLUDING A DEFINED SET OF GENDER-SENSITIVE

#### CRITERIA

Output Indicator 1.3: Number and % of colleges with a defined set of management policies demonstrating a defined set of gender-sensitive criteria

In assessing this indicator, college principals were asked whether they had prepared the policy documents shown in Table 3.22 and whether those policy documents contain specific gender-sensitive criteria. As shown in the table, there are 14 policies and 19 expected gender-related targets in the policy documents. Existence of a policy carries one point and the corresponding gender-related target in the policy also assigns one point each, thus creating a minimum score of 33 points. To count toward this indicator, a college must receive a minimum score of 33 points.

**TABLE 3.22: Defined set of management policies and their corresponding gender targets**

Policy documents	Gender related targets in policy documents
Inclusion and gender policy	Dedicated spaces/admission for students from disadvantaged backgrounds
Sexual harassment policy	Transparent reporting system for harassment Recourse and reprimand for harassment
Financial management policy	Budgets for resources (i.e., scholarships, college facilities) focused on female students/tutors
Health and safety policy	Resources (i.e., toilets and female hygiene) dedicated specifically for female students/tutors
Tutor professional development policy	Resources dedicated specifically for female tutors Training on gender-responsive pedagogy and gender equality
Tutor code of conduct	Conduct regarding treatment/teaching of female students (i.e., harassment, sexual favours, etc.)
Tutor appraisal policy	Appraisal regarding gender-responsive pedagogy
Student admission and exam policy	Dedicated spaces/admission for female students
Quality assurance policy	Monitoring and evaluation strategy includes gender-responsive indicators

Policy documents	Gender related targets in policy documents
Teaching and learning policy	Gender-sensitive teaching practicum guidance
	Gender-sensitive lesson observation procedure
Staff recruitment policy	Recruitment of female tutors and staff
Public engagement policy	Fundraising (revenue generation) plan include engagement with industry/women groups
	College news/communication strategy includes gender focus
Assessment policy	Gender-sensitive appeals and mitigation process
	Gender-sensitive learning needs assessment
Acceptable use policy	Gender-sensitive procedures for libraries, information and communication technology and other college facilities

As shown in Table 3.23, there has been an improvement in the proportion of colleges with the set of management policies, including gender-sensitive targets from zero percent at baseline to 7.5 percent at midline. Despite observed improvement in the majority of CoEs with management policies, the study also notes reductions on some specific management policies with gender-sensitive criteria. This apparent decline may be explained by responses from new college principals who may not have been familiar with the content of their colleges' policy documents.

**TABLE 3.23: Colleges with management policies demonstrating a defined set of gender-sensitive criteria**

Set of management policies	Baseline	Midline
<b>Overall indicator</b>		
<b>% of CoE with a defined set of management policies demonstrating a defined set of gender-sensitive criteria</b>	<b>0.0%</b>	<b>7.5%</b>
<b>Set of management policies with gender-sensitive criteria</b>		
% of CoE with public engagement policy	0.0%	17.5%
% of CoE with staff recruitment policy	34.2%	65.0%
% of CoE with quality assurance policy	84.2%	67.5%
% of CoE with sexual harassment policy	36.8%	72.5%
% of CoE with admission and exam policy	86.8%	77.5%
% of CoE with teaching and learning policy	55.5%	65.0%
% of CoE with inclusion and gender policy	2.6%	70.0%
% of CoE with financial management policy	57.9%	65.0%
% of CoE with health and safety policy	21.1%	77.5%
% of CoE with tutor professional development policy	47.4%	62.5%
% of CoE with assessment policy	36.8%	45.0%
% of CoE with tutor code of conduct	86.8%	67.5%
% of CoE with tutor appraisal policy	65.8%	47.5%
Total N	38	40

#### 3.4.3.4 SUBMISSION OF ANNUAL SELF-ASSESSMENT AND IMPROVEMENT PLANS TO NCTE

Output Indicator 1.4: Number and % of colleges submitting completed annual self-assessments and improvement plans to NCTE

CoEs need to undertake rigorous and effective planning to strengthen their practices against seven quality indicators of leadership and management. Their leadership teams devise and implement CIPs each year.

These robust and logical plans assist colleges to identify and bridge gaps in their systems and operations and their professional and academic development. Each year, the planning process starts with a rigorous self-assessment. T-TEL's output indicator 1.4 measures the proportion of colleges that submitted completed annual self-assessments and improvement plans to NCTE. A scoring rubric outlining the numerical values needed for **ideal scores** is provided in Annex 2d. A composite score was calculated from the responses of both the college principal and secretary. The minimum scores from the principal and secretary interview needed to count as a 'college principal demonstrating a defined set of leadership and management skills' is 16 points.

The results in Table 3.24 show that the proportion of colleges that completed and submitted annual self-assessments and improvement plans to NCTE increased to 67.5 percent at midline from 28.9 percent at baseline. The results further show wider improvements in the proportion of colleges who completed and submitted specific self-assessments to NCTE. The completion and submission rates are more pronounced for preparation of CIPs.

**TABLE 3.24: Colleges submitting completed annual self-assessments and improvement plans to NCTE**

	Baseline	Midline
<b>% of CoEs submitting completed annual self-assessments and improvement plans to NCTE</b>	<b>28.9%</b>	<b>67.5%</b>
% of CoEs with CIP	34.2%	100%
% of CoEs with broader stakeholder involvement in developing the CIP (at least five stakeholders)	31.6%	100%
% of CoEs with a review schedule for the CIP	28.9%	65.0%
% of CoEs that have led a college self-assessment this year	42.1%	100%
Total N	38	40

#### 3.4.3.5 EFFECTIVE GOVERNING COUNCILS

Output Indicator 3.1: Number and % of CoEs with effective governing councils

As a result of the new government transition arrangements, no CoE has councils in place during the time of the survey. All councils were dissolved in January 2017 as a result of the new government's transition arrangements. This indicator could therefore not be assessed at midline.

#### 3.4.3.6 COLLEGES MEETING NAB STANDARDS

Output Indicator 3.3: Number and % of CoEs meeting institutional accreditation standards defined by NAB

In line with the requirements of the NAB's mandate to evaluate and establish standards in CoEs, the board conducts assessments to establish whether the colleges meet the standards. The survey asked college principals to indicate the extent to which they meet the NAB's accreditation requirements. This accreditation standard is related to the quality of:

- leadership and management;
- teaching and learning;
- students' engagement;
- assessment;
- partnerships and cooperation;
- monitoring and evaluation; and,
- college infrastructure and environment

A minimum score for a college to count as meeting 'institutional accreditation standards defined by NAB or equivalent' is seven points. Thus, a college must receive a minimum of seven points to be counted for the logframe.

As shown by Table 3.25, the proportion of colleges that meet all the criteria for institutional accreditation defined by accreditation board increased to 67.5 percent at midline from 7.9 percent at baseline. The results also show that colleges have improved significantly on some specific accreditation standards, such as quality of college infrastructure and environment, quality of monitoring and evaluation, and quality of assessment.

**TABLE 3.25: Proportion of colleges meeting NAB accreditation standards**

NAB accreditation standards	Baseline	Midline
% of CoEs meeting quality of leadership and management criteria	60.5%	85.0%
% of CoEs meeting quality of teaching and learning criteria	60.5%	82.5%
% of CoEs meeting quality of students engagement criteria	55.3%	75.0%
% of CoEs meeting quality assessment criteria	52.6%	80.0%
% of CoEs meeting quality of partnership and cooperation criteria	47.4%	70.0%
% of CoEs meeting quality of monitoring and evaluation	52.6%	80.0%
% of CoEs meeting quality of college infrastructure and environment	47.4%	80.0%
<b><i>% of CoEs meeting all the institutional accreditation criteria defined by NAB</i></b>	<b><i>7.9%</i></b>	<b><i>67.5%</i></b>
Total N	38	40

## 4. Conclusions

The midline survey sought to assess the progress of T-TEL against its logframe indicators over the two and one-half years of its implementation. In this respect, the report has delved into and provided detailed information on the status of key outcome and output indicators at midline, including application of student-centred and gender-sensitive approaches to teaching and learning, quality of pre-service training, CoE management and leadership practices, and national policies for pre-service teacher education.

The findings demonstrate an improved picture from the one captured at baseline. A growing number of tutors have mastered the use of student-focused teaching methods and gender-responsive instructional strategies. More tutors have demonstrated usage of T-TEL teaching and learning materials for their pedagogical practices. The observed improvement in the practice of tutors has begun to impact positively, albeit marginally, on the practice of beginning teachers. More beginning teachers (than at baseline) demonstrated use of interactive student-focused instructional methods and gender-sensitive and student-centred instructional strategies. Results of other outcome indicators such as knowledge and application of basic school curriculum and assessment and demonstration of core competence in PTPDM support this conclusion. These changes are indicative of improving pedagogical practices. In other words, the current methods of teaching have been shown to produce positive results and have potential to produce better results. This survey therefore concludes that training modules introduced by T-TEL for tutors are paramount because they have the potential to improve the quality of teaching and learning in the CoEs.

Survey results further show that consistent support to college management could improve their leadership and management practices. This is evidenced by the recorded increased uptake of these practices resulting from programme implementation. Nonetheless, colleges may benefit from more support in relation to practical strategies to meeting their annual targets including those related to gender sensitivity in the CIPs as well as gender targets in broader college management policies. College management should therefore focus on developing the right attitude in their staff so that they apply not only to the right leadership and management practices but also have the stamina to work efficiently and effectively in achieving annual targets, particularly gender targets in resource-constrained environments

With regard to mentors, the survey concludes that continuous training for mentors is critical for increased uptake of gender-sensitive mentoring strategies. This is underpinned by the slight increase in mentors' uptake of these strategies since the introduction of T-TEL interventions.

The survey also concludes that continuous improvement in the pedagogical practices of tutors will have a direct positive effect on the practice of beginning teachers in basic schools for enhanced teaching and learning. T-TEL's working hypothesis can therefore be said to be valid.

## ANNEXES

## ANNEX 1 LIST OF COEs BY ZONE

TABLE A.1: List of CoEs

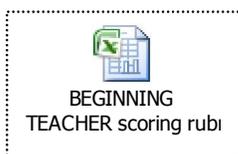
Zones	No. of CoEs	NAME of CoE	DISTRICT & REGION	SEX COMPOSITION of CoE	POPULATION
				M = Mixed-sex CoE SF = Female-only CoE SM = Male-only CoE	
<b>ZONE 1</b> NORTHERN/ UPPER EAST & WEST	8	1. Bagabaga College of Education	Tamale Metropolitan District / Northern Region	M	970
		2. Bimbilla Evangelical 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
<b>ZONE 2</b> ASHANTI / BRONG AHAFO	11	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
<b>ZONE 3</b> VOLTA	7	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

Zones	No. of CoEs	NAME of CoE	DISTRICT & REGION	SEX COMPOSITION of CoE	POPULATION
				M = Mixed-sex CoE SF = Female-only CoE SM = Male-only CoE	
		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
<b>ZONE 4</b> CENTRAL & WESTERN	6	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
<b>ZONE 5</b> EASTERN / GREATER ACCRA	8	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

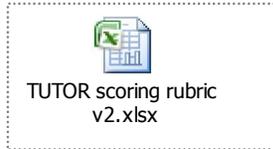
\* Colleges in which classroom observations occurred.

## ANNEX 2 SCORING RUBRICS

### Annex 2a



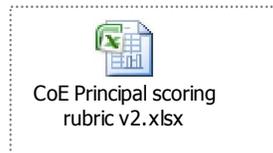
*Annex 2b*



*Annex 2c*



*Annex 2d*



*ANNEX 3 ADDITIONAL INFORMATION ON METHODOLOGY*

**Annex 3a. Survey tools**

The midline survey deployed the same tools used for the baseline to ensure comparability of data (See Box A3.1). The baseline data collection tools were updated with information on 'other' responses, which were posted during the baseline study. Further, the tools for mentors, college tutors and college management were updated with additional questions to assess the level of uptake of key programme activities.

It suffices to note that data collected from primary outcome and output targets (namely, beginning teachers, tutors, mentors, college principals) through observations and interviews were further triangulated through cross verification from one or more sources as shown in Box A3.1 below.

### Box A3.1: Data collection tools

- Tool #1:** Beginning Teacher Lesson Observation
- Tool #2:** Follow-up Interview with Beginning Teacher (triangulation)
- Tool #3:** Pupil Game Survey (triangulation)
- Tool #4:** Principal Interview and document review
- Tool #5:** Interview with CoE Secretary/Quality Assurance (QA) Officer, and Governing Council member (triangulation)
- Tool #6:** Tutor Lesson Observation
- Tool #7:** Follow up Tutor Interview (triangulation)
- Tool #8:** CoE Student Questionnaire (triangulation)
- Tool #9:** Mentor Interview
- Tool #10:** Mentee Interview (triangulation)

Unlike the baseline survey in which only paper-aided personal interviewing data capture was used, the midline survey made use of both paper-assisted and computer-aided personal interviewing to enhance the speed of delivery of field data. Thus data were first recorded on paper questionnaire and later (after close of day) transferred onto tablets for onwards remittance to the quality assurance team at back office. In particular, the team used ODK Collect software for electronic data capture. The designed form was configured on android tablets. Enumerators were trained on the use of the software to capture data electronically after first collecting the data manually.

The scoring rubrics and rationale for the benchmark levels for the composite scores were shared with T-TEL's key advisers for technical validation. Table A3.1 describes the baseline tools and the indicators to which they relate.

**TABLE A3.1: Overview of midline tools**

Outcome Indicator 1	Outcome Indicator 2	Outcome Indicator 3	Outcome Indicator 4
Number and % of male and female beginning teachers demonstrating interactive student focused instructional methods disaggregated by subjects - English, mathematics, and science	Number and % of male and female beginning English, mathematics, and science teachers demonstrating core competencies in the Pre-Tertiary Teacher Professional Development Management Policy Framework	% of male and female beginning English, mathematics, and science teachers demonstrating knowledge and application of basic school curriculum and assessment.	% of male and female beginning English, mathematics, and science teachers demonstrating gender-sensitive and learner centred instructional strategies.
Evidence for all four indicators provided by composite scores on: <ol style="list-style-type: none"> <li>1) Beginning Teacher Lesson Observation</li> <li>2) Follow-up Interview with beginning teachers (triangulation)</li> <li>3) Pupil Sleeping Game Survey<sup>22</sup> (triangulation)</li> </ol>			
Output Indicator 1.1	Output Indicator 1.2	Output Indicator 1.3	Output Indicator 1.4
College principals demonstrating a % achievement of a defined set of leadership and management skills	Number and % of colleges meeting 70% of annual targets, including gender-related targets within their college improvement plan	Number and % of colleges with a defined set of management policies demonstrating a defined set of gender-sensitive criteria	Number and % of colleges submitting completed annual self-assessments and improvement plans to NCTE
Evidence for all four indicators provided by composite scores on: <ol style="list-style-type: none"> <li>1) Principal interview and document review</li> <li>2) Interview with CoE secretary/quality assurance (QA) officer and governing council member (triangulation)</li> </ol>			
Output Indicator 2.1	Output Indicator 2.2	Output Indicator 2.4	Output Indicator 2.3

<sup>22</sup> The pupils sleeping game tool is administered in the form of a game played with pupils in basic schools to triangulate data collected through classroom observation and interview with their class teachers/beginning teachers. The tool is administered by randomly selecting five boys and five girls from a class in which a beginning teacher was observed and interviewed.

Number and % of male and female English, mathematics, and science tutors effectively using T-TEL teaching and learning materials for lessons and tutorials	Number and % of male and female English, mathematics, and science tutors demonstrating student-focused teaching methods	Number and % of male and female English, mathematics, and science tutors demonstrating gender-sensitive instructional methods	Number and % of male and female mentors using gender-sensitive practicum mentoring strategies introduced by T-TEL
Tutor evidence provided by composite scores on:		Mentor evidence provided by composite scores on:	
1) Tutor Lesson Observation		1) Mentor Interview	
2) Follow-up Tutor interview (triangulation)		2) Mentee Interview (triangulation)	
3) CoE Student Questionnaire (triangulation)			

Output Indicator 3.1	Output Indicator 3.2	Output Indicator 3.3	Output Indicator 3.4
Number and % of CoEs with effective governing councils	Number of programs implemented to support national institutions involved in pre-tertiary teacher education as described in Act 847	Number and % of colleges meeting institutional accreditation standards defined by NAB or (equivalent)	DBE curriculum reviewed and revised
Evidence provided by:	Evidence provided by:	Evidence provided by:	Evidence provided by:
1) Principal interview and document review	1) T-TEL reporting/documentation	1) Principal interview and document review	1) T-TEL reporting/documentation
2) Interview with CoE Secretary/QA Officer and Governing Council member			

Output Indicator 4.1	Output Indicator 4.2	Output Indicator 4.3
Number of research studies in teacher education and gender used to inform practice	% of Challenge Fund results framework milestones achieved	Number of communication and dissemination activities developed and implemented
Evidence provided by: T-TEL reporting/documentation		

### **Annex 3b Data Collection**

Two categories of field teams were deployed for the survey: (1) educationist/ Ghana Education Service (GES) circuit supervisors for classroom observation and interviews with tutors, student teachers and beginning teachers and pupils; (2) qualitative survey facilitators for mentors and mentees interviews as well as college management in nonsampled CoEs. In total, 40 circuit supervisors were recruited for classroom observation and interview teams together with six field supervisors, one for each zone (with the exception of Zone 2 where two supervisors were deployed). For interviews with mentors and mentees, 25 enumerators and 5 supervisors were deployed to interview mentors and mentees and nonsampled COEs within their zones. Data collection took place in classrooms of CoEs and basic schools as well as school compounds, Table A3.2 presents the key locations for data collection. The locations for data collection (within the sampled CoEs and schools) were informed by data quality considerations as well as cost and time efficiency.

**Box A3.2: Location and methods of data collection**

Name of stakeholder	Location of data collectors	Method of data collection
Beginning teachers	Classrooms of basic schools	Classroom observation and follow-up interviews
Pupils in basic schools	Free space within basic schools	Sleeping game survey
CoE tutors	Classroom of CoEs	Classroom observation and follow-up interviews
Student teachers	Classroom of CoEs	Questionnaire
Mentors	Basic schools	Structured interviews
Mentees	Basic schools	Structured interviews
Principals/vice principals/CoE council members	CoEs	Structured Interviews and document review

### Annex 3c Quality assurance measures

To ensure the collection of high-quality data, several quality assurance measures were put in place. This entailed the development and deployment of several protocols to guide field activities including survey implementation protocols, a training curriculum for enumerators, and quality assurance protocols. The survey implementation protocols provided guidelines and standards for collecting data in the field and outlined how the data-collection process should proceed. The training curriculum provided an orientation to all of the data-collection tools as well as detailed information on how enumerators should approach respondents. This training highlighted sensitive areas and quality measures that enumerators should consider during data collection. The quality assurance protocols outlined guidelines to ensure consistency and accuracy of field data. The guidelines were used as a guide by both enumerators and supervisors in conducting the field interviews and organizing data on the field (See Box A3.3).

#### Box A3.3: Survey implementation protocol and training curriculum



In addition, other ex-post strategies were employed. This included broad discussions across teams, focusing on issues that emerged in the days of fieldwork and developing concerted and well-communicated solutions to the teams. This strategy was a continuous process involving supervisors and their teams throughout the fieldwork phase. Further, experienced field supervisors/educationist accompanied enumerators to schools to ensure they were engaging respondents appropriately and recording data accurately. A WhatsApp platform was readily available for supervisors and enumerators to send urgent matters and concerns and receive assistance with issues as they occurred. Supervisors conducted spot checks of enumerators to ensure that the data were properly collected, recorded and stored. Field supervisors did not have the opportunity to change any data they reviewed.

In support of the above, back-office procedures ensured that data were analyzed to support in-field data verification. After each day's enumeration, data were transferred to a server primarily for backup purposes but also to identify outliers and systematic errors in data collected. After data were screened, a report was generated for remedial action in the field, before each team departed for the next day's field activity.

#### ANNEX 4. CHALLENGES DURING DATA COLLECTION

The following challenges were observed.

- **Respondents' unavailability:** Some tutors had gone for supervision of mentee student teachers in basic schools. This made tutor observation difficult as appointments had to be rescheduled to get enough lessons to observe.
  - Again, most beginning teachers were not at post due to delay in salary and had travelled to seek financial assistance. Appointment were made at a later date before observation and interviews could be conducted successfully.
  - Also, some of the beginning teachers were posted outside the district of the CoEs so the enumerators had to travel to other districts to conduct the interviews.
- **Lack of cooperation from some CoEs/schools:** Some tutors refused to be observed and interviewed. Four tutors availed themselves to be observed. They had suspicion that the field activities were spearheaded by the government as a form of witch-hunting as their principal was on suspension. The team had to make up the shortfall in the zone from other COEs in Hohoe and Peki.

- **Poor road networks:** Some enumerators had to travel very far since most mentees were posted to remote communities with poor road network. This contributed to the delay in getting the data on time. In the case of the northern zone, all the circuit supervisors had to travel to other districts to observe the beginning teachers and interview them.