Endline Survey Report – T-TEL Phase 1

TRANSFORMING TEACHER EDUCATION AND LEARNING (T-TEL)

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ACRONYM AND ABBREVIATIONS

CDP	College Development Plan
CIA	College Improvement Adviser
CIP	College Improvement Plans
CoE	College of Education
CoEs	Colleges 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	Pretertiary Teacher Professional Development and Management
QA	Quality Assurance
QAAAI	Quality Assurance, Assessment and Accreditation Instrument
TPC	Teaching Practice Coordinators
TPD	Tutor Professional Development
T-TEL	Transforming Teacher Education and Learning

EXECUTIVE SUMMARY

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

TABLE 1.0: Indicators and results achieved

		Indicator	Baseline (October 2015)	Target for year 2 (July 2017)	Midline (May 2017)	Target for year 3 (July 2018)	Endline (June 2018)
Better trained and prepared beginning teachers capable of applying student-centred and gender sensitive approaches to teaching and learning		**Outcome indicator 2**					
		Number and % of male and female beginning English, mathematics, and science teachers demonstrating core competencies in the Pre-tertiary Teacher Professional Development and Management 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% Overall – (6/370) 1.6%	English – Male (15%); Female (15%) Math – Male (15%); Female (15%) Science – Male (15%); Female (15%)	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% Overall – (61/408) 15.0%	English – Male (30%); Female (30%) Math – Male (30%); Female (30%) Science – Male (30%); Female (30%)	English – Male (21/55) 38.2%; Female (25/76) 32.9% Mathematics – Male (29/92) 31.5%; Female (18/60) 30.0% Science – Male (26/74) 35.1%; Female (11/51) 21.6% Overall – (130/409) 31.8%
		Outcome indicator 3					
		Number and % of male and female beginning English, mathematics, and science teachers demonstrating application of basic school curriculum	English – Male (2/81) 2.5%; Female (1/32) 3.1% Mathematics – Male (0/68) 0%; Female (0/68) 0% Science – Male (3/61) 4.9%; Female (1/60) 1.7% Overall – (7/370) 1.6%	English – Male (15%); Female (15%) Math – Male (15%); Female (15%) Science – Male (15%); Female (15%)	English – Male (10/48) 20.8%; Female (11/85) 12.9% Mathematics – Male (9/67) 13.4%; Female (9/75) 12.0% Science – Male (14/71) 19.7%; Female (8/62) 12.9%	English – Male (30%); Female (30%) Math – Male (30%); Female (30%) Science – Male (30%); Female (30%)	English – Male (20/55) 36.4%; Female (27/76) 35.5% Mathematics – Male (29/92) 31.5%; Female (17/60) 28.3% Science – Male (28/75) 37.3%; Female (12/51) 23.5%

		Indicator	Baseline (October 2015)	Target for year 2 (July 2017)	Midline (May 2017)	Target for year 3 (July 2018)	Endline (June 2018)
					Overall – (60/408) 14.7%		Overall – (133/409) 32.5%
		Outcome indicator 4					
		Number and % of male and female beginning English, mathematics, and science teachers demonstrating gender-sensitive instructional methods	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% Overall – (2/370) 0.5%	English – Male (15%); Female (15%) Math – Male (15%); Female (15%) Science – Male (15%); Female (15%)	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% Overall – (38/408) 9.3%	English – Male (30%); Female (30%) Math – Male (30%); Female (30%) Science – Male (30%); Female (30%)	English – Male (12/55) 21.8%; Female (16/76) 21.1% Mathematics- Male (15/92) 16.3%; Female (10/60) 16.7% Science- Male (16/75) 21.3%; Female (9/51) 17.7% Overall – (78/409) 19.1%
OUTPUT 1	Improved management and leadership practices in Colleges of Education	Output indicator 1.1					
		CoE principals demonstrating a percent achievement of a defined set of leadership and management skills	Male Principals – (8/27) 29.6% Female Principals – (5/11) 45.5% Overall (13/38) 34.2%	Male (15/29) 52% Female (7/11) 64%	Male Principals – (20/31) 64.5% Female Principals – (5/9) 55.6% Overall (25/40) 62.5%	Male (19/29) 67% Female (8/11) 73%	Male Principals – (25/29) 86.2% Female Principals – (8/11) 72.7% Overall (33/40) 82.5%
		Output indicator 1.2					
		Number and % of colleges meeting 50% of annual targets, including gender-	Overall (0/38) 0%	4 CoEs 10%	Overall (3/40) 7.5%	10 CoEs 26%	Overall (8/40) 20.0%

		Indicator	Baseline (October 2015)	Target for year 2 (July 2017)	Midline (May 2017)	Target for year 3 (July 2018)	Endline (June 2018)
		related targets within college improvement plan					
		Output indicator 1.3					
		Number and % of colleges with a defined set of management policies demonstrating a defined set of gender-sensitive criteria	a) Total number and percentage of all required policies adopted (249/532) 46.8% b) Percentage of policies that are gender sensitive (52/249) 20.9%	a) Total number and percentage of all required policies adopted 80% b) Percentage of policies that are gender sensitive 60%	a) Total number and percentage of all required policies adopted (460/560) 82.1% b) Percentage of policies that are gender sensitive (322/460) 70.0%	a) Total number and percentage of all required policies adopted 90% b) Percentage of policies that are gender sensitive 80%	a) Total number and percentage of all required policies adopted (539/560) 96.3% b) Percentage of policies that are gender sensitive (435/539) 80.7%
Output 2	Improved quality of preservice training	Output 2.1					
		Number and % of English, mathematics, and science male and female tutors using T-TEL teaching and learning materials for lessons and tutorials	English – Male (0/43) 0%; Female (0/30) 0% Mathematics - Male (0/77) 0.0%, Female (0/9) 0% Science- Male (0/100) 0%; Female (0/17) 0% Overall (0/272) 0.0%	English - Male 24%, Female 26% Math - Male 25%, female 22% Science - Male 23%, female 24%	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% Overall (159/293) 54.3%	English - Male 49%, Female 50% Math - Male 45%, female 44% Science - Male 45%, female 47%	English – Male (29/63) 46.0%; Female (13/28) 46.4% Mathematics - Male (41/80) 51.3%, Female (7/14) 50.0% Science - Male (39/79) 49.4%, Female (6/17) 35.3% Overall (135/281) 48.0%
		Output 2.2					

		Indicator	Baseline (October 2015)	Target for year 2 (July 2017)	Midline (May 2017)	Target for year 3 (July 2018)	Endline (June 2018)
		Number and % of English, mathematics, and science male and female 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% Overall (72/276) 26.1%	English – Male (44%); Female (47%) Math – Male (34%); Female (44%) Science – Male (39%); Female (35%)	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% Overall (193/293) 65.9%	English – Male (63%); Female (63%) Math – Male (58%); Female (66%) Science Male (59%); Female (59%)	English – Male (47/63) 74.6%; Female (20/28) 71.4% Mathematics – Male (69/80) 86.3%; Female (11/14) 78.6% Science – Male (58/79) 73.4%; Female (11/17) 64.7% Overall (216/281) 76.9%
Output 2.3							
		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% Overall (6/354) 1.6%	Male (10%); Female (12%)	Male (26/213) 12.2%; Female (21/197) 10.7% Overall (47/410) 11.5%	Male (30%); Female (35%)	Male (52/191) 27.2%; Female (48/209) 23.0% Overall (100/400) 25.0%
Output 2.4							

		Indicator	Baseline (October 2015)	Target for year 2 (July 2017)	Midline (May 2017)	Target for year 3 (July 2018)	Endline (June 2018)
		Number and % of English, mathematics, and science male and female colleges 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% Overall (6/276) 2.2%	English – Male (39%); Female (40%) Math – Male (31%); Female (33%) Science – Male (37%); Female (29%)	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% Overall (138/293) 47.1%	English – Male (63%); Female (63%), Math – Male (58%); Female (66%) Science – Male (59%); Female (59%)	English – Male (41/63) 65.1%; Female (16/28) 57.1% Mathematics – Male (60/80) 75.0%; Female (9/14) 64.3% Science – Male (52/79) 65.8%; Female (13/17) 76.5% Overall (191/281) 68.0%

NOTE: Indicator 1, 3.1 and 3.2 were not measured in this study

1.1 Background of T-TEL

Transforming Teacher Education & Learning (T-TEL) is a four-year Government of Ghana programme funded by the United Kingdom's Department for International Development designed to support the implementation of the new policy framework for pretertiary teacher professional development and management (PTPDM). T-TEL seeks to transform the delivery of preservice 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)[1].

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 improving the quality of teaching is critical if this is to be achieved. 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[2] 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 activities reflect these goals.

1.2 T-TEL's Theory of Change

T-TEL's theory of change, as 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 on the quality of teacher education, it is expected that new teachers would teach as they have been taught, basing classroom lessons and instructional methods on the styles and strategies they have experienced in their own schooling, or observed in the schools where they are teaching.

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[1] From June 2015 to August 2016, T-TEL worked with 38 CoEs. In July 2016, the MoE required T-TEL to add two new public CoEs. The new CoEs were inducted during August 2016, and from September 2016, T-TEL has worked with 40 colleges. From May 2018 T-TEL has worked with a further six CoEs which were absorbed into the public system in early 2018. These six new CoEs have not been included in this endline survey due to their late participation in the programme.

2 A beginning teacher has a Diploma in Basic Education (DBE) from one of Ghana's CoEs. Beginning teachers interviewed in this survey were deployed in September 2017 by the Ghana Education Service, which means that they had been teaching for approximately nine months at the time of the midline survey in June 2018.

FIGURE 1.1: T-TEL's Theory of Change

Student-focused methods (Outcome indicator 1)	Core competencies from the PTTPDM (Outcome indicator 2)	Knowledge of basic school curriculum assessment (Outcome indicator 3)	Gender-responsive pedagogy (Outcome indicator 4)

IMPROVED COLLEGE MANAGEMENT

- CoE principals demonstrating key leadership and management skills
- CoEs meet 50% of targets within College Development Plan
- CoEs have management policies with gender-sensitive criteria
- CoEs submit College improvement plans to National Council for Tertiary Education
- CoEs meet accreditation standards defined by National Accreditation Board

IMPROVED QUALITY OF PRE-ERVICE TRAINING

- Tutors effectively use T-TEL teaching and learning materials for lessons and tutorials
- Tutors demonstrate student-focused teaching methods
- Tutors demonstrate gender-responsive teaching methods
- Mentors use gender-responsive mentoring strategies

IMPROVED NATIONAL POLICIES

- Number of programmes to support national institutions involved in Act 847
- Diploma in Basic Education curriculum reviewed and revised
- Research studies in teacher education and gender
- Number of scholarships/Challenge Funds disbursed
- Number of communication and dissemination activities implemented

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

- Gaps and inconsistencies in teacher education policies that do not serve the sector well.

- Capacity of national institutions established to govern (quality assure) teachers' education as part of the tertiary education sector.
- Leadership and management skills of college principals and their teams.
- Teaching skills of tutors in CoEs, particularly in inclusive, student-centred pedagogies.
- Mentoring skills of mentors in the schools where student teachers practice teaching (and particularly gender-responsive mentoring strategies and inclusive, student-centred pedagogies). [3]
- Diploma in Basic Education (DBE) curriculum used to train student teachers, which is overloaded with upper secondary subject content, exam driven, and not designed to deliver teachers with specialist skills at each level of basic education[4].

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

A further assumption is that interventions to improve tutors' teaching skills will lead to changes in the teaching skills of student teachers 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. As a result, T-TEL's outcome targets aim for improvements in beginning teachers' performance without direct interventions with student teachers. Therefore, the main areas in which T-TEL aims to catalyse change are:
- Tutors
- College leaders
- National policy, institutions, and curriculum
- Mentors in partner schools[5]

1.3 T-TEL's Implementation Strategies

T-TEL is working closely with the Ministry of Education (MoE) and the National Council for Tertiary Education (NCTE), in consultation with national-level institutions such as the Ghana Education Service (GES), National Teaching Council (NTC), the National Accreditation Board (NAB), the National Inspectorate Board (NIB), five public universities 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)[6], 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

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[3] Student teacher refers to students pursuing a DBE at a CoE

[4] The levels of basic education are from Primary one to junior high school (JHS) three

[5] Partner schools are basic schools where CoEs send their student teachers for field practicums.

[6] PDS are organized for tutors to improve their practice using T-TEL's professional development materials. The sessions are organized by PDCs who have been trained by T-TEL.

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. To date, 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). T-TEL's teaching and learning advisers provide regular coaching support to tutors to implement new strategies in their classrooms. The TPD has prioritised teaching and learning strategies that are gender-responsive, student-centred, and inclusive[7].

iii.   Professional development for CoE management and leadership. The main T-TEL implementation strategy is a training programme for college leaders. This is structured into six units, with one week-long unit delivered prior to each new semester (i.e., two per year), and has included the integration of *gender-responsive management* into all 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 colleges and for mentors in schools. T-TEL's school partnership advisers[8] 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

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).

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[7] The themes that had been completed by the time of the endline survey were: *Creative Approaches*; *Questioning*; *Talk for Learning*; *Group work*, *Teaching and Learning*, *Assessment of Trainee teachers* and *Tutor as a researcher*.

[8] The school partnership adviser works with CoEs and partner schools to support trainees and mentors during the 'teaching practice' components of the DBE. They 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.

1.4 Objectives of the Endline Survey for Phase 1

This endline survey was carried out as part of the strategy to evaluate the progress of T-TEL against the log frame indicators over the four-year implementation period. Baseline and midline surveys were completed in October 2015 and August 2017 respectively[9].

TABLE 1.1: Outcome and output indicators focused on in the endline survey

Outcome/Output	Indicators
Outcome – Better trained and prepared beginning teachers capable of applying student and gender-sensitive approaches to teaching and learning	Indicator 1: % of male and female beginning teachers demonstrating interactive student-focused instructional methods disaggregated by subjects – English, Math 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: % of male and female beginning English, mathematics, and science teachers demonstrating the application of the basic school curriculum.
	Indicator 4: Number and % of male and female beginning English, mathematics, and science teachers demonstrating gender-sensitive instructional strategies.
Output 1- Improved management and leadership practices in CoEs	Indicator 1.1: Number and % of college principals demonstrating a % achievement of a defined set of leadership and management skills.
	Indicator 1.2: Number and % of colleges meeting 50% of annual targets, including gender-related targets within College Development Plan.
	Indicator 1.3: Number and % of colleges with a defined set of management policies demonstrating a defined set of gender-sensitive criteria.
Output 2 – Improved quality of preservice training	Indicator 2.1: Number and % of male and female tutors effectively using T-TEL teaching and learning materials for lessons and tutorials.
	Indicator 2.2: Number and % of English, mathematics, and science male and female 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 college tutors demonstrating gender-sensitive instructional methods.
Output 3 – National policies for preservice 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 % colleges meeting institutional accreditation standards defined by the NAB or equivalent. **
	3.4 DBE Curriculum reviewed and revised**

** Indicators not measured in the endline survey

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[9] T-TEL Baseline and Midline Survey Reports are available at www.t-tel.org. T-TEL has been extended through December 2020, so further surveys similar to the one reported here are anticipated.

2. ENDLINE SURVEY METHODOLOGY

2.1 Sampling

The endline survey adopted the same methodology employed at baseline and midline 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, 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 representative of the population, the random selection of sampling units was done proportionately to the size and in line with the pattern of the target population.

2.1.1 Sampling Method

Similar to the baseline and midline survey, the sample size assumed varying sampling error for specific targets (See Table 2.1). A confidence level of 95 percent was adopted for tutors, beginning teachers, mentors and mentees[10] and 3 percent standard error for student teachers and basic school pupils. 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 study were to be repeated using different participants from the same population, but selected in line with the sampling method, we would be 95 percent certain that observations made by other studies 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). Table 2.1 details the targeted and achieved sample size.

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

Population	Population	Estimated sample size	Achieved sample size			Assumed Confidence Level (CL) and Confidence Interval (CI) or Margin of Error
			Baseline	Midline	Endline	
1. Principals/ vice principals	40	40	38	40	40	Not applicable
2. College secretary/ Quality assurance officer	40	40	38	40	40	Not applicable
3. Student teachers	37,107	2,256	2,720	2,930	2,810	(CL=95%, CI =+/- 1.8%)
4. Tutors (English, mathematics, and science)	929	272	276	293	281	(CL=95%, CI =+/- 4.9%)
5. Beginning teachers	7,491	366	368	408	409	(CL=95%, CI =+/- 4.7%)
6. Basic school pupils	224,730	2,376	2,720	4,080	4,090	(CL=95%, CI =+/- 1.5%)
7. Mentors	7,491	366	368	410	400	(CL=95%, CI =+/- 4.8%)
8. Mentees	7491	366	368	410	400	(CL=95%, CI =+/- 5%)

Note: The margin of error is based on the achieved sample size for the endline.

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[10] To validate the responses from the key target stakeholders, student teachers, pupils and mentees were sampled for triangulation purposes only.

2.1.2 Sampling Process

A total of 20 CoEs were sampled for classroom observation with college tutors across the five T-TEL geographical 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 made to select mixed-sex CoEs for the survey. In total, two female-only CoEs, and 18 mixed-sex CoEs were sampled. For principals, vice principals and secretaries, the study targeted respondents across all 40 CoEs. For the list of CoEs in the endline survey, see Table A1 in Annex 1.

Tutor sampling

In each of the 20 CoEs selected for the sample, 14 tutors were randomly sampled based on subjects (English, mathematics, and science) and level of study. Similar to the baseline and midline approach, the method of selection of tutors was stratified using random sampling in which tutors were first categorized by subjects and the 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 was observed to triangulate the results based on the rubrics. A self-administered questionnaire was distributed to the randomly selected student teachers for completion.

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 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, the JMK team collected a list of mentees 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.

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 Ahmadiyya, 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 and midline.

2.2 Data Quality Control

A team of five supervisors was distributed across the T-TEL and the conference of principals geographic zones. The field supervisors randomly visited the data-collection team in the regions assigned to observe the data collection to ensure that the enumerators were adhering to the survey protocols. The supervisors verified that

nonresponses resulting from the field were not deliberate omissions by enumerators. Also, spot checks and re-interviews and classroom observations were conducted to ensure compliance. The Open Data Kit (ODK) design software allows for the cross-referencing of observations and re-interviews with the original records recorded by enumerators. The data-management team at JMK cross-checked the observation and interviews conducted by the supervisors with the actual interview records to compute inter-rater reliability tests[11]. The supervisors and quality assurance team provided technical support to the team if they found significant differences between the observation and interview records that the respective enumerator collected.

2.3 Data Management and Analysis

The data were imported from the SurveyCTO platform and analysed using Stata version 13 software after field work was completed. The *Do File*[12] feature of the Stata software allowed the endline data to be computed using the same computational procedure used for the baseline and midline surveys to ensure comparability of results across the three surveys. It is important to note that some computational procedures of some indicators were recomputed based on a review of those indicators prior to the endline survey (The changes are discussed under the specific indicators in the findings).

The data were analysed using descriptive statistical analysis to establish disaggregated scores for each data-collection tool. Data analysis and computation of indicator values were informed by scoring rubrics (See Table 3.23 in Annex 2). These scoring rubrics were developed to determine and make explicit, the *ideal* **scores** needed to be considered 'demonstrating' the specific practices or competencies highlighted in the log frame. For example, the composite score for 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 three scores that a teacher received for the student-focused components of the lesson observation, follow-up interview, and pupil interviews. If beginning teachers received the composite score needed to indicate that they had satisfactorily demonstrated student-focused methods, they would be counted towards that indicator in the log frame. 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 most key variables, t-tests were used to determine whether differences in the midline and endline scores were statistically significant at an alpha level less than or equal to .05. Where there were differences between or among groups, a Bonferroni multiple comparison tests at .05 was used to establish differences. For all differences noted in the report, an asterisk (*) has been used to indicate statistically significant differences between midline and endline scores. Significant difference tests were not conducted for indicators targeting CoEs because the entire population of CoEs provided information for the endline survey so there is no sampling error. It would be useful to note that statistical significance is partially affected by sample sizes. Due to the relatively higher number of males compared with females, statistically significant differences are more likely to occur for male than for female. As a result of this situation, males and females may have the same percentage changes but the change might be statistically significant for males but not for females.

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11 A kappa model was used to compute the inter-rater test. The result of the test showed a rater agreement of 0.88 out of 1.0
[12] The Do File feature of Stata allows the saving of computational procedures for validation and future usage given the same variables names and analysis procedures.

Also, data for male beginning teachers, tutors and mentors are on the left side of each page with a male icon while the data for females are on the right side of each page with a female icon.

3. KEY FINDINGS

3.1 Introduction
This chapter presents the key findings of the endline survey. The subsections of this chapter address each of the indicators, with the outcome indicators first and then the output indicators. The findings are presented in order of change agents involved: beginning teachers, tutors, mentors, and college principals. This ensures the logical

flow of the report rather than using the numerical order of the indicators. This survey report starts with a short descriptive summary of the demographic characteristics of stakeholders and then focuses on the analysis of indicator findings by change agents involved. As required by the T-TEL log frame, the data have been disaggregated by sex and the main subjects of interest – English, mathematics, and science. The endline results have been compared with the midline results to evaluate any changes. Also, the percentage change from midline to endline scores have been indicated in the extreme right column of the tables to evaluate performance.

3.2 Demographic Profile of Key Respondents

3.2.1 Demographic profile of Beginning Teachers

As shown in Figure 3.1, of the 409 beginning teachers observed and interviewed, females account for 187 representing 45.7 percent while males constituted 222 representing 54.3 percent. The overall subject distributions of beginning teachers are 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 mathematics and science.

FIGURE 3.1: Distribution of beginning teachers by sex and subjects taught (%)
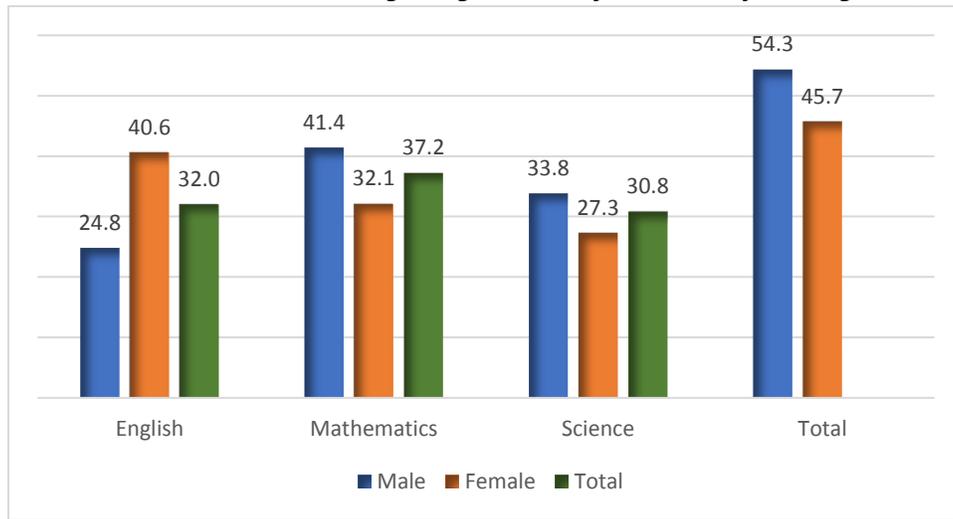
The results in Figure 3.2 also shows that the majority of female beginning teachers were observed teaching at lower primary schools (51.3 percent), followed by upper primary schools (42.3 percent). The plurality of male beginning teachers were observed teaching pupils in upper primary (42.3 percent).

FIGURE 3.2: Distribution of beginning teachers by sex and class of teaching (%)
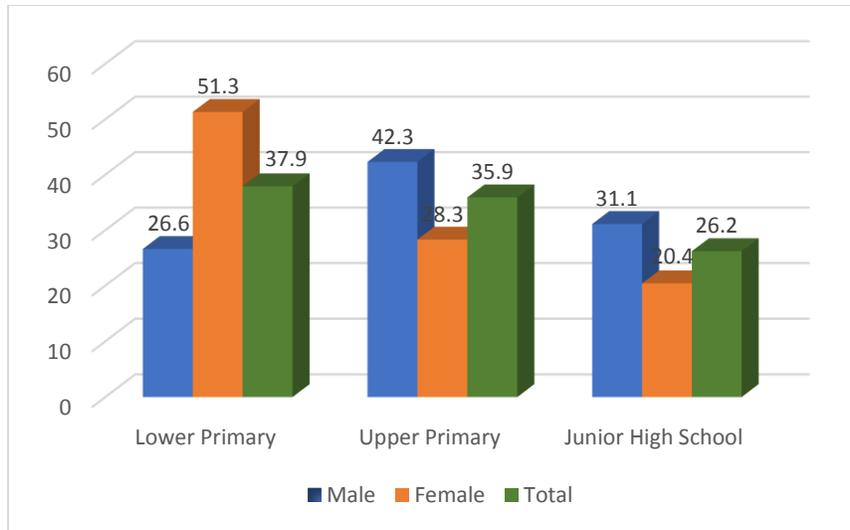
3.2.2 Demographic Profile of Tutors

Figure 3.3 shows the demographic characteristics of tutors. Of the 281 tutors surveyed, male tutors account for 79 percent while female tutors represent 21 percent. The distribution of subjects taught by tutors is evenly split. More female tutors were observed teaching English (47.5 percent) while the distribution of male and female tutors teaching mathematics and science was similar.

FIGURE 3.3: Distribution of tutors by sex and class of teaching (%)
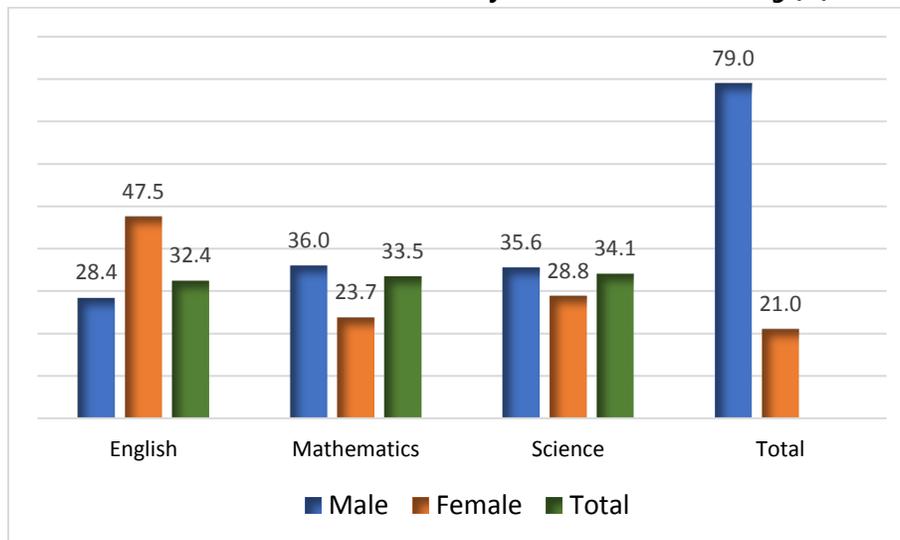
3.2.3 Demographic Profile of Mentors

Male mentors constituted 47.8 percent while female mentors constituted the remaining 52.2 percent of the 400 mentors sampled. Also, over half of the mentors surveyed (53.3 percent) teach all subjects while the remaining teach specific subjects. This observation was, however, not the same for all subject areas when analysed by sex. The proportion of female mentors who teach all subjects is higher compared with the proportion of males. Also, the majority of male mentors teach JHS (45.0 percent) while about a fifth (19.6 percent) of female mentors teach junior high school (JHS) (See Table 3.1).

TABLE 3.1: Demographic characteristics of mentors (%)

Subject of Mentors	Male	Female	Overall
English	13.1	12.4	12.8
Mathematics	17.3	8.1	12.5
Science	16.8	5.3	10.8
All subjects	40.8	64.6	53.3
Specific subjects	12.0	9.6	10.8
Class of Mentors			
Lower Primary	11.0	44.0	28.2
Upper Primary	44.0	36.4	40.0
JHS	45.0	19.6	31.8

Note: All sums do not add up to 100 percent due to rounding

3.2.4 Demographics of College Management

As shown in Figure 3.4, college principals are predominantly men. Males represent 72.5 percent of the college principals while females represent 27.5 percent; this shows a wide gender disparity in colleges. There is also considerable disparity across other management staff of CoEs. Male secretaries make up 87 percent while female secretaries constitute 13 percent. Almost 94 percent of college quality assurance (QA) officers are males.

3.3 Beginning Teacher Outcome Indicator Findings

One of the key aims of T-TEL is to reinforce preservice training in all CoEs to prepare beginning teachers to improve their skills and apply what they have learned. 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. A dedicated and well-trained teacher can provide children with the essential skills to critically analyse, challenge and mitigate the discriminatory attitudes or behaviours that may be present in their homes, schools, and communities. This report measures the extent to which newly trained beginning teachers demonstrate varying competencies in the delivery of their teaching practice.

Table 3.2 present the results of the classroom competency observation scores. The results show that across competency areas evaluated, beginning teachers recorded significantly high scores from midline to endline except for *teachers' attention to seating arrangements in the classroom*. Teachers' use of *teaching and learning materials* had the most significant net gain (50 percent) from midline to endline.

TABLE 3.2: Raw competency scores for beginning teachers (%)

Areas of competency	BL (Oct- 2015)	ML (May- 2017)	EL (Jun- 2018)	Δ from ML to EL
The teacher gives constructive feedback on student's answers, work or effort.	48.7	64.3	92.2	+27.9*
The teacher asks students a range of questions during the lesson.	57.6	62.6	90.2	+27.6*
The teacher has a clear, high-quality lesson plan or activity plan for parts of the lesson.	50.9	67.8	89.7	+21.9*
The teacher applies all teaching methods equally to female and male students.	55.0	63.5	89.7	+26.2*
The teacher uses strategies to provide clear explanations for new concepts, knowledge or skills.	49.5	58.8	88.0	+29.2*
The teacher uses strategies to open the lesson.	42.0	55.9	83.1	+27.2*
The teacher uses different teaching and learning materials to facilitate learning.	14.8	32.4	82.4	+50.0*
The teacher uses strategies to assess student understanding.	22.6	34.0	80.2	+46.2*
The teacher has demonstrated the use of strategies to manage a class.	48.3	65.3	77.5	+12.2*
The teacher uses different interactive methods/ activities to facilitate learning.	23.4	34.3	75.3	+41.0*
The teacher uses strategies to close lesson.	36.5	56.0	67.5	+11.5*
The teacher has clearly paid attention to the seating	42.7	57.2	55.9	-1.3
The teacher uses techniques to address mixed abilities.	22.5	39.8	48.2	+8.4*
The teacher uses gender-responsive strategies to challenge gender roles and gender norms.	4.9	23.8	37.9	+14.1*

Note: * $p=\leq 0.05$; BL = Baseline; ML=Midline; EL=Endline; Δ = percentage change

3.3.1 Demonstration of Core Competencies in Pre-tertiary Teacher Professional Development and Management (PTPDM)

Outcome Indicator 2: Number and percentage (%) of male and female beginning English, mathematics, and science teachers demonstrating core competencies in the PTPDM policy framework.

(Endline target for English, mathematics and science male and female beginning teachers is 30 percent)

The policy framework is focused on issues that relate to teacher development and management of pretertiary 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 outcome indicator 2 measures the proportion of beginning teachers demonstrating core competencies in PTPDM.

Beginning teachers were observed during English, mathematics and science lessons to assess the demonstration of specific competencies (See Box 3.1).

Box 3.1: 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 students' 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
- Have a clear, high-quality lesson plan

The scores from the demonstration of core competencies were generated using defined scoring rubrics (see Annex 2). The composite score for this indicator is the average of the scores of the lesson observation, interview, and pupil game tools.

At endline, the results in Table 3.3 show an improvement for male beginning teachers of 15.4 percentage points from the midline. Across subjects, significant improvements were also recorded for male mathematics and science beginning teachers by 16.6 and 15.4 percentage points respectively. Among female beginning teachers, a statistically significant improvement was also recorded from midline to endline by 17.2 percentage points. Females teaching English and mathematics also showed significant improvement in demonstrating core competencies in PTPDM during lessons.

The results over the project period show that at endline, targets (30 percent of beginning teachers demonstrating core competence) for male beginning teachers have been achieved across the subjects. For female beginning teachers, the endline targets have been achieved for English and mathematics.

TABLE 3.3: Teachers demonstrating core competence in PTPDM by sex and subject area (%)

Subjects	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
English	2.5	22.9	38.2	+15.3
Mathematics	0.0	14.9	31.5	+16.6*
Science	4.9	19.7	35.1	+15.4*
Total	2.4	18.8	34.2	+15.4*
Total N	**210**	**186**	**222**	

Subjects	BL (Oct-2015)	ML (May-2017)	EL (Jun-2015)	Δ from ML to EL
English	0.0	10.6	32.9	+22.3*
Mathematics	0.0	12.0	30.0	+18.0*
Science	1.6	12.9	21.6	+8.7
Total	0.6	11.7	28.9	+17.2*
Total N	**160**	**222**	**187**	

Note: BL = Baseline; ML=Midline; EL=Endline; Δ = percentage change

The study further analysed the proportion of beginning teachers demonstrating core competencies in PTPDM based on the class they teach. As illustrated in Table 3.4, male beginning teachers at lower, upper and JHS reported statistically significant changes from midline to endline. Also, female beginning teachers in upper primary and JHS also showed significant improvement from the midline.

TABLE 3.4: Teachers demonstrating core competence in PTPDM by sex and class (%)

Level	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
Lower Primary	1.1	19.1	23.7	+4.6
Upper Primary	2.5	23.0	35.1	+12.1
JHS	5.0	24.3	42.0	+17.7*
Total	2.4	18.8	34.2	+15.4*
Total N	**210**	**186**	**222**	

Level	BL (Oct-2015)	ML (May-2017)	EL (Jun-2015)	Δ from ML to EL
Lower Primary	3.1	13.7	24.0	+10.3
Upper Primary	0.0	7.5	22.6	+15.1*
JHS	0.0	13.2	50.0	+36.8*
Total	0.6	11.7	28.9	+17.2*
Total N	**160**	**222**	**187**	

*Note: * p≤0.05; BL = Baseline; ML=Midline; EL=Endline; Δ = percentage change*

In addition to the student-focused instructional methods, the PTPDM requires that teachers set professional targets at the beginning of each academic year that will then be used to assist teachers to achieve quality education goals. The endline survey therefore sought to determine the proportion of beginning teachers who set professional targets at the beginning of the academic year 2017/2018. Results in Table 3.5 reveal that about seven of ten teachers indicated that they set targets. Across subjects and sex of teachers, no significant differences were observed.

The specific targets set by teachers, focused on student performance enhancement in the classroom with on literacy and numeracy; others focused on completing the syllabus before the end of the academic year.

TABLE 3.5: Proportion of beginning teachers who set professional targets at the beginning of the academic year (%)

Indicator	Male	Female	All
English	72.7	80.3	77.1
Mathematics	69.6	65.0	67.8
Science	70.7	74.5	72.2
Overall	70.7	73.8	72.1

As per the requirements of the PTPDM, the study went further to ask teachers if they had ever participated in professional development activities as a means to demonstrate professional growth and achievement. Results in Table 3.6 reveal that over 60 percent of the teachers have participated at any time as a teacher in professional development activities with similar results across subjects taught by teachers. With respect to the type of professional development activities in which teachers have participated, the majority mentioned T-TEL training workshops, school and cluster-based in-service training, Jolly phonics workshops, induction and orientation workshops and USAID programmes on coaching.

TABLE 3.6: Proportion of beginning teachers who participated in professional development activities (%)

Indicator	Male	Female	All
English	72.5	62.3	66.3
Mathematics	64.1	53.9	60.2
Science	66.0	60.5	63.7
Overall	66.9	59.4	63.4

3.3.2 Demonstration of the Application of Basic School Curriculum

Outcome Indicator 3: Number and percentage (%) of male and female beginning English, mathematics, and science teachers demonstrating the application of basic school curriculum.

(Endline target for English, mathematics and science male and female beginning teachers is 30 percent)

T-TEL outcome indicator 3 was revised to measure the proportion of beginning teachers demonstrating the application of basic school curriculum. Based on the revision of this indicator, the computation was revised accordingly to reflect changes in the baseline and midline results. In assessing this indicator beginning teachers were observed during English, mathematics, and science lessons against specific competencies highlighted in Box 3.2. Similar to outcome indicator 2, the composite scores for the application

Box 3.2: Basic school 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 strategies to assess pupil understanding
- Use of strategies to close the lesson
- Use of high quality lesson plan

of basic school curriculum were generated using scoring rubrics (see Annex 2). The scoring rubrics benchmark deployed in the analysis is the ideal score, which is the score recognised to be the level required to demonstrate the application of the basic school curriculum. This benchmark score represents beginning teachers who scored at least 36 points for classroom observation, 21 points on the teacher interview, and 40 points on the pupil interviews.

Based on results in Table 3.7, the endline result shows a significant improvement for male beginning teachers by 17 percentage points from the midline (17.7 percent) to endline (34.7 percent). Across subjects, significant improvements were also recorded for male science beginning teachers by 17.6 percentage points. Among female beginning teachers, a statistically significant improvement was also recorded from midline to endline by 17.4 percentage points. Females teaching English and mathematics also showed significant improvement in demonstrating the application of basic school curriculum. At endline, the results over the project period show

that targets for male beginning teachers have been achieved across the subject areas. For female beginning teachers, the endline targets have been achieved for English and mathematics[13].

TABLE 3.7: Teachers demonstrating the application of basic school curriculum by sex and subject (%)

Subjects	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
English	2.5	20.8	36.4	*+15.6*
Mathematics	0.0	13.4	31.5	*+18.1*
Science	4.9	19.7	37.3	*+17.6*￼*
Total	2.8	17.7	34.7	*+17.0*￼*
Total N	**210**	**186**	**222**	

Subjects	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
English	3.1	12.9	35.5	*+22.6*￼*
Mathematics	0.0	12.0	28.3	*+16.3*￼*
Science	1.7	12.9	23.5	*+10.6*
Total	1.3	12.6	30.0	*+17.4*￼*
Total N	**160**	**222**	**187**	

*Note: * p≤0.05; BL = Baseline; ML =Midline; EL=Endline; Δ = percentage change*

Further analysis was conducted to measure the proportion of beginning teachers demonstrating the application of the basic school curriculum based on the class taught by beginning teachers. As illustrated in Table 3.8, male beginning teachers in JHS reported statistically significant endline results from midline by 27.8 percentage points. Also, female beginning teachers in upper primary and JHS also showed significant improvement from midline by 20.8 and 36.8 percentage points respectively.

TABLE 3.8: Teachers demonstrating the application of the basic school curriculum by sex and class (%)

Level	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
Lower Primary	2.1	19.1	28.8	*+9.7*
Upper Primary	3.1	18.9	31.9	*+13.0*
JHS	0.0	15.7	43.5	*+27.8*￼*
Total	2.8	17.7	34.7	*+17.0*￼*
Total N	**210**	**186**	**222**	

Level	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
Lower Primary	3.3	17.1	25.0	*+7.9*
Upper Primary	0.0	7.5	28.3	*+20.8*￼*
JHS	0.0	7.9	44.7	*+36.8*￼*
Total	0.7	12.6	30.0	*+17.4*￼*
Total N	**160**	**222**	**187**	

*Note: * p≤0.05; BL = Baseline; ML =Midline; EL=Endline; Δ = percentage change*

[13] The score for mathematics (28.3 percent) is within the confidence interval (23.6 percent,33.0 percent) given a margin of error of 4.7 percent

3.3.3 Demonstration of Gender-Sensitive Instructional Methods

Outcome Indicator 4: Number and percentage (%) of male and female beginning English, mathematics, and science teachers demonstrating gender-sensitive instructional methods.

(Endline target for English, Mathematics and Science male and female beginning teachers is 30 percent)

Prior to the endline survey, the wording of indicator 4 was revised[14]. The indicator now measures the proportion of beginning teachers demonstrating gender-sensitive instructional methods. In assessing the demonstration of these instructional methods, beginning teachers were observed during English, mathematics, and science lessons against specific competencies highlighted in Box 3.3. Similar to the previous outcome indicators, the composite scores from the demonstration of gender-sensitive

> **Box 3.3: Gender-sensitive instructional domains**
> - Application of 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

instructional methods were generated using scoring rubrics (see Annex 2). The scoring rubric deployed in the analysis is an *ideal* **score**, which is the score recognised to be the level required to demonstrate gender-sensitive instructional methods. 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.

At endline, results in Table 3.9 show an improvement for male beginning teachers by 9.2 percentage points from the midline (10.2 percent) to endline (19.4 percent). Across subjects, significant improvements were also recorded for male mathematics beginning teachers by 10.3 percentage points. Among female beginning teachers, a statistically significant improvement was also recorded from midline to endline by 10.1 percentage points. Females teaching English and science also showed statistically significant improvement in demonstrating gender-sensitive instructional strategies. The endline target for this indicator has not been achieved.

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[14] The indicator was changed from "Percentage of male and female beginning English, math, and science teachers demonstrating gender-sensitive and learner-centred instructional methods" to "Percentage of male and female beginning English, math, and science teachers demonstrating gender-sensitive instructional methods."

TABLE 3.9: Teachers demonstrating gender-sensitive instructional methods by sex and subject

Subjects	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
English	1.2	8.3	21.8	+13.5
Mathematics	0.0	6.0	16.3	+10.3*
Science	0.0	15.5	21.3	+5.8
Total	0.4	10.2	19.4	+9.2*
Total N	**210**	**186**	**222**	

Subjects	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
English	3.1	8.2	21.1	+12.9*
Mathematics	0.0	12.0	16.7	+4.7
Science	0.0	4.8	17.7	+12.9*
Total	0.6	8.6	18.7	+10.1*
Total N	**160**	**222**	**187**	

Note: *p≤0.05; BL = Baseline; ML=Midline; EL=Endline; Δ = percentage change

Results in Table 3.10 illustrate the proportion of male and female beginning teachers demonstrating gender-sensitive instructional strategies by the class they teach. The results show a significant improvement for both male and female beginning teachers who teach upper primary and JHS with over 10 percentage points each.

TABLE 3.10: Teachers demonstrating gender-sensitive instructional methods by sex and class (%)

Level	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
Lower Primary	0.0	16.7	15.3	-1.4
Upper Primary	0.0	6.8	17.0	+10.2*
JHS	0.7	10.0	26.1	+16.1*
Total	0.4	10.2	19.4	+9.2*
Total N	**210**	**186**	**222**	

Level	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
Lower Primary	0.0	12.0	20.0	+8.0
Upper Primary	0.0	3.0	13.2	+10.2*
JHS	1.4	7.9	23.7	+15.8*
Total	0.6	8.6	18.7	+10.1*
Total N	**160**	**222**	**187**	

Note: *p≤0.05; BL = Baseline; ML=Midline; EL=Endline; Δ = percentage change

3.4 Tutor Output Indicator Findings

Over the project period, T-TEL has made significant efforts to support improved quality of preservice training. During this period T-TEL implemented several interventions to achieve its targets. One of the key interventions is support for Tutor Professional Development (TPD). T-TEL encouraged CoEs to have 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 endline study, all 40 COEs were implementing CPD sessions each week. T-Tel has also provided eight themes, printing and distributing over 2,500 copies of materials for each theme over the project period. Some 80 PDC facilitators have been trained on each theme for training delivery.

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 over 60,252 student-teacher handbooks. More than five days of training were organized for TPCs across the 40 CoEs. In addition, TPCs presented on-campus teaching practice sessions for year-two student teachers.

Table 3.11 presents the results of the classroom competency observation scores. The results show that across competency areas evaluated, tutors recorded significantly high scores from midline to endline. Tutors' use of

gender-responsive strategies to challenge gender roles and gender norms had the most significant net gain (65.9 percent) from midline to endline.

TABLE 3.11: Raw competency scores for tutors (%)

	BL (Oct- 2015)	ML (May- 2017)	EL (Jun- 2018)	Δ from ML to EL
The tutor uses strategies to assess student understanding	21.6	40.6	98.9	+58.3*
The tutor uses strategies to provide clear explanations for concepts, knowledge, skills	63.4	65.3	92.9	+27.6*
The tutor gives constructive feedback on student's answers, work or effort	49.2	67.6	92.5	+24.9*
The tutor uses strategies to organise and execute group or pair work	16.0	40.8	92.2	+51.4*
The tutor uses different teaching and learning materials to facilitate learning	12.5	27.9	91.8	+63.9*
The tutor uses gender-responsive strategies to challenge gender roles and gender norms	1.9	25.2	91.1	+65.9*
The tutor asks students a range of questions during the lesson	68.0	70.6	90.4	+19.8*
The tutor promotes and manages whole class discussion	58.9	63.4	89.0	+25.6*
The tutor uses strategies to open the lesson	44.6	63.0	86.8	+23.8*
The tutor draws on Leadership for Learning strategies during the lesson	40.1	59.2	83.3	+24.1*
The tutor uses strategies to close the lesson	51.2	73.5	82.6	+9.1*
The tutor applies all teaching methods equally to female and male students	48.0	60.4	78.7	+18.3*
The tutor uses techniques to address mixed abilities	21.5	45.8	69.4	+23.6*
The tutor uses different interactive methods/ activities to facilitate learning	28.7	38.1	68.7	+30.6*
The tutor demonstrated use of T-TEL materials	0.4	36.5	54.1	+17.6*

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

Output Indicator 2.1: Number and percentage (%) of male and female tutors using T-TEL teaching and learning materials for lessons and tutorials.

Endline target for:

- **English male and female tutors are 49 percent and 50 percent respectively.**
- **Mathematics male and female tutors are 45 percent and 44 percent respectively.**
- **Science male and female tutors are 45 percent and 47 percent respectively.**

For outcome indicator 2.1, the survey measured the use of the TPD programme materials in terms of implementation of strategies from those materials in tutors' lessons. 'Usage' 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

Box 3.4: Teaching and learning domains
- T-TEL materials are used to plan lessons
- T-TEL materials are used to teach lessons
- T-TEL materials are used by students during the lesson

composite scores from the demonstration of usage of T-TEL teaching and learning materials for lessons and tutorials were generated using scoring rubrics (see Annex 2). The minimum composite score for a tutor to be counted towards the log frame indicator is five points. This benchmark represents tutors who scored at least two points for classroom observation and three points for the tutor interview.

At endline, the results in Table 3.12 does not show any significant differences across sex and subject areas from midline to endline. The results also show that the endline target for male and female mathematics tutors has been achieved. The endline target for male science teachers has also been achieved.

TABLE 3.12: Proportion of male and female tutors using T-TEL teaching and learning materials by subject (%)

Subjects	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
English	50.8	46.0	-4.8
Mathematics	54.2	51.3	-2.9
Science	57.8	49.4	-8.4
Total	54.7	49.1	-5.6
Total N	**225**	**222**	

Subjects	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
English	58.8	46.4	-12.4
Mathematics	43.8	50.0	+6.2
Science	50.0	35.3	-14.7
Total	52.9	44.1	-8.8
Total N	**68**	**59**	

The result across levels taught by tutors also shows a decline from midline to endline. However, the resultant

*Note: * p≤0.05; BL = Baseline; ML=Midline; EL=Endline; Δ = percentage change*

TABLE 3.13: Proportion of male and female tutors using T-TEL teaching and learning materials by class (%)

Level	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
Year 1	51.7	46.7	-5.0
Year 2	57.6	51.3	-6.3
Total	54.7	49.1	-5.6
Total N	**225**	**222**	

Level	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
Year 1	55.8	44.4	-11.4
Year 2	48.0	43.8	-4.2
Total	52.9	44.1	-8.8
Total N	**68**	**59**	

*Note: * p≤0.05; BL = Baseline; ML=Midline; EL=Endline; Δ = percentage change*

3.4.2 Demonstration of Student-focused Teaching Methods by College Tutors

Output Indicator 2.2: Number and percentage (%) of male and female tutors demonstrating student-focused teaching methods.

Endline targets:
English male and female tutors are 63 percent and 63 percent respectively.
Mathematics male and female tutors are 58 percent and 66 percent respectively.
Science male and female tutors are 59 percent and 59 percent respectively.

Indicator 2.2 measures the proportion of tutors demonstrating student-focused teaching methods. Box 3.5 presents teaching strategies that enable students to learn effectively. 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 ten of the observed tutors' students based on the scoring rubrics (see Annex 2). The scoring rubrics benchmark deployed in the analysis is an ***ideal* score**, which is the score

Box 3.5: 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

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 required competency for this indicator.

Based on results in Table 3.14, the endline results show a significant improvement for male tutors by 13.1 percentage points from the midline (65.3 percent) to endline (78.4 percent). Across subjects, significant improvements were also recorded for male mathematics tutors by 23.6 percentage points. Among female beginning teachers, no statistically significant improvements were recorded.

At endline the results over the project period show that targets for both male and female tutors have been achieved.

TABLE 3.14: Proportion of male and female tutors demonstrating student-focused teaching methods by subject (%)

Subjects	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
English	23.3	67.8	74.6	+6.8
Mathematics	28.6	62.7	86.3	+23.6*
Science	26.0	66.3	73.4	+7.1
Total	26.4	65.3	78.4	+13.1*
Total N	220	225	222	

Subjects	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
English	36.7	61.8	71.4	+9.6
Mathematics	22.2	75.0	78.6	+3.6
Science	5.9	72.2	64.7	-7.5
Total	25.0	67.6	71.2	+3.6
Total N	56	68	59	

Note: *p≤0.05; BL = Baseline; ML=Midline; EL=Endline; Δ = percentage change

Results in Table 3.15 illustrates the proportion of male and female tutors demonstrating student-focused teaching methods by the level they teach. The result shows a significant improvement for male tutors teaching year one and two.

TABLE 3.15: Proportion of male and female tutors demonstrating student-focused teaching methods by class (%)

Level	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
Year 1	16.8	67.8	81.3	+13.5*
Year 2	17.3	62.6	75.7	+13.1*
Total	26.4	65.3	78.4	+13.1*
Total N	220	225	222	

Level	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
Year 1	12.1	65.1	77.8	+12.7
Year 2	13.3	72.0	65.6	-6.4
Total	25.0	67.6	71.2	+3.6
Total N	56	68	59	

Note: *p≤0.05; BL = Baseline; ML=Midline; EL=Endline; Δ = percentage change

3.4.3 Demonstration of Gender-Sensitive Instructional Methods by Tutors

> **Output Indicator 2.4: Percentage (%) of male and female tutors demonstrating gender-sensitive instructional methods.**
>
> **Endline targets:**
> **English male and female tutors are 63 percent and 63 percent respectively.**
> **Mathematics male and female tutors are 58 percent and 66 percent respectively.**
> **Science male and female tutors are 59 percent and 59 percent respectively.**

Indicator 2.4 measures the proportion of tutors who demonstrate gender-sensitive instructional methods in the classroom. 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:

- The extent of equal treatment of female and male students (with regard to questions, discussion, participation, encouragement, classroom leadership, etc.)
- The 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 composite score: lesson observations, follow-up interviews with tutors; and self-administered questionnaires for ten students of the observed tutors based on scoring rubrics (see Annex 2). The scoring rubric deployed in the analysis is the ***ideal* score**, which is the score recognised to be the level required to demonstrate gender-sensitive instructional methods. The minimum composite score for a tutor to be counted towards the log frame indicator is 16 points for tutor observation, 7 points for tutor interview, and 24 points for students of the tutor interviewed.

Based on results in Table 3.16 the endline results show a significant improvement for male tutors by 22.2 percentage points from the midline (46.7 percent) to endline (68.9 percent). Across subjects, significant improvements were also recorded for English, mathematics, and science. Among female beginning teachers, no statistically significant improvements were recorded for any of the subjects despite a positive performance from the midline.

At endline, the results over the project period show that targets for male tutors were achieved across the subjects. For female tutors, the target for mathematics and science tutors was achieved at the end of the project[15].

---

[15] The score for mathematics (64.3 percent) is within the confidence interval (59.4 percent, 69.2 percent) given a margin of error of 4.9 percent

TABLE 3.16: Proportion of male and female tutors demonstrating gender-sensitive instructional methods by subject (%)

Subjects	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
English	4.7	45.8	65.1	+19.3*
Mathematics	2.6	48.2	75.0	+26.8*
Science	0.0	45.8	65.8	+20.0*
Total	1.8	46.7	68.9	+22.2*
Total N	220	225	222	

Subjects	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
English	0.0	44.1	57.1	+13
Mathematics	11.1	50.0	64.3	+14.3
Science	5.9	55.6	76.5	+20.9
Total	3.6	48.5	64.4	+15.9
Total N	56	68	59	

Note: * p≤0.05; BL = Baseline; ML=Midline; EL=Endline; Δ = percentage change

Results in Table 3.17 illustrate the proportion of male and female tutors demonstrating gender-sensitive instructional methods by the level tutors teach. The results show a significant improvement for male tutors teaching year 1 and 2 from midline to endline.

TABLE 3.17: Proportion of male and female tutors demonstrating gender-sensitive instructional methods by class (%)

Level	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
Year 1	2.7	44.1	72.0	+27.9*
Year 2	0.0	49.5	66.1	+16.6*
Total	1.8	46.7	68.9	+22.2*
Total N	220	225	222	

Level	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
Year 1	0.0	39.5	63.0	+23.5
Year 2	13.0	64.0	65.6	+1.6
Total	3.6	48.5	64.4	+15.9
Total N	56	68	59	

Note: * p≤0.05; BL = Baseline; ML=Midline; EL=Endline; Δ = percentage change

3.5 Mentors' Output Indicator Findings

To support the achievement of preservice training, T-TEL has 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 8,000 mentors, on how to use the T-TEL handbooks during teaching practice

3.5.1 Use of Gender-Sensitive Practicum Mentoring Strategies

Output Indicator 2.3: Number and percentage (%) of male and female mentors demonstrating gender-sensitive mentoring strategies.

Endline targets:
English male and female mentors are 30 percent and 35 percent respectively.
Mathematics male and female mentors are 30 percent and 35 percent respectively.
Science male and female mentors are 30 percent and 35 percent respectively.

The role of mentors is essential in guiding student teachers build their skills through practical experience in classrooms. It is essential for the mentor to be a role model to support the development of student teachers in building confidence and skills 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 (See Box 3.6). To triangulate data, the mentors' respective mentees were interviewed with regard to the performance of

Box 3.6: Gender-sensitive mentoring domains
- 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
- use of a variety of important mentoring strategies

mentors on the same actions and competencies. An **_ideal_** **score** was set for each action or competency. On the basis of the assessment by both mentors and mentees, a composite performance rating was computed (See Annex 2).

As shown in Table 3.18, the endline results show a significant improvement for both male and female mentors by 15.0 and 12.3 percentage points, respectively. The analysis also explored the performance across the subject areas of mentors. The results reveal that both male and female mentors who teach all subjects showed a significant improvement from midline to endline. At endline, the results over the project period show that targets for male mentors teaching specific subjects have been achieved because the score is within the confidence interval.

TABLE 3.18: Proportion of male and female mentors using gender-sensitive mentoring strategies by subject (%)

Subjects	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
English	3.9	12.5	16.0	+3.5
Mathematics	0.0	9.8	15.2	+5.4
Science	0.0	12.5	15.6	+3.1
All subjects	0.0	7.5	41.0	+33.5*
Specific subjects	1.4	15.8	26.1	+10.3
Total	1.2	12.2	27.2	+15.0*
Total N	165	213	191	

Subjects	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
English	2.7	0.0	15.4	+15.4
Mathematics	0.0	9.1	17.7	+8.6
Science	0.0	9.1	18.2	+9.1
All subjects	0.0	10.3	28.2	+17.9*
Specific subjects	2.6	12.9	5.0	-7.9
Total	2.0	10.7	23.0	+12.3*
Total N	203	197	209	

*Note: * p≤0.05; BL = Baseline; ML=Midline; EL=Endline; Δ = percentage change*

3.6 CoE Principal Outcome Indicator Findings

To ensure improved management and leadership practices in CoEs, component two of T-TEL supports 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 were implemented over the project period, 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[16].
- Workshops on self-assessment and improvement planning unit for college leadership teams benefiting 224 CoE leaders.
- Training for CoE leaders on building a shared vision and leading effective management systems to include policy formulation. 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 reaccreditation of CoEs. In total, four documents have been developed: the Quality Assurance Handbook, College of Education Evaluation Form, College Evaluation and Quality Frame Overview, and CoEs Quality Assurance and Accreditation Frame. In addition, as part of piloting the Quality Assurance and Accreditation Assessment Instrument (QAAAI), NAB with the support of T-TEL's, leadership programme, has provided training for 18 quality assurance experts. T-TEL then supported NAB to conduct CoE reaccreditation through application of the QAAAI in all 40 CoEs in June 2018.

3.6.1 Demonstration of a Defined Set of Leadership and Management Skills

> **Outcome Indicator 1.1: Number and percentage (%) of colleges demonstrating a percent achievement of a defined set of leadership and management skills.**
>
> **Endline target for male principals is 67 percent; Female is 73 percent**

In assessing this output indicator, college principals were asked questions about their leadership and management skills (See Box 3.7)

College principals were interviewed about their understanding and demonstration of the issues in leadership and management skills and were asked to provide documentary evidence where deemed appropriate. College secretaries/QA officers were interviewed on their views of their principal's performance on the same issues to triangulate the information.

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[16] As part of effort to strengthen the delivery of preservice teacher education, T-TEL introduced a challenge fund to run between 2015 and 2018. The main objective of the fund is to identify and nurture new ways to improve the quality of preservice training of teacher, especially for girls. The fund's focus is on exploring innovative approaches to teacher development including testing a new idea that has no evidence base and implementing an existing idea but in a new situation.

A scoring rubric outlining the numerical values needed for **_ideal_ scores** is provided in Annex 2. 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 secretaries/QA 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 obtained an average minimum of 100 is tagged as satisfying the indicator.

The findings in Table 3.19 indicate that there has been a marked improvement in the proportion of principals demonstrating a defined set of leadership and management skills at endline. The proportion of principals demonstrating leadership and management skills has increased to 82.5 percent at endline from 62.5 percent at midline. Based on this result, the endline target of 67 percent for male principals and 73 percent for female has been achieved.

Box 3.7: Leadership and management skills
- Whether colleges have vision and mission statement and whether they are aligned;
- Level of stakeholder involvement in the development of these statements and whether the vision has been shared with stakeholders
- Whether objectives have been developed objectives from the vision
- Use of vision to inform your college development plan (CDP)
- College principals' understanding of their statutory roles and responsibilities and that of the Governing Council
- Set up and level of functionality of committees of the governing council
- Set up and level of functionality of committees of the academic board
- Existence of strategies to support tutors' professional development
- Existence of strategies to support improvements in student performance
- Existence of strategies for improving teaching practice in schools
- Existence of plans and policies to affect change
- Development of CDP
- Level of stakeholder involvement in development of CDP

TABLE 3.19: Proportion of principals achieving a defined set of management skills (%)

Indicator	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
Male principals	29.6	64.5	86.2	+21.7
Female principals	45.4	55.6	72.7	+17.1
All principals	34.2	62.5	82.5	+20.0

3.6.2 Meeting Annual Targets, including Gender-related Targets, within College Improvement Plans

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

(Endline target for colleges is 26 percent)

The transformation of CoEs into effective and functioning tertiary institutions in accordance with the Colleges of Education Law (Act 847) 2012 requires the 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 the academic year 2017/2018.

To measure the progress made over the project implementation period, CoE that achieve 50 percent of their stated targets based on evidence provided by the principals are deemed to have satisfied the requirement of the indicator. Results from the survey reveal that, at endline, 20 percent of colleges had achieved their stated goals and objective up from 7.5 percent at midline. The endline target of 26 percent has not been achieved. Table A2 in Annex 1 provides a breakdown of the specific college targets and their achievement.

3.6.3 Demonstration of a Defined Set of Management Policies including a Defined Set of Gender-Sensitive Criteria

> **Output Indicator 1.3: Percentage of colleges meeting their annual targets, including gender-related targets, within college improvement plans.**
>
> **(Endline target for policy adoption is 90 percent; Gender-sensitive policies is 80 percent)**

Based on requirements of CoEs, there are 14 policies and 19 expected gender-related targets that colleges are supposed to achieve. This indicator, therefore, evaluated targets set by the colleges within the academic year and also measured whether achieved targets were gender-sensitive[17]. The measurement of the indicator was revised from the midline survey and decomposed into two parts. These include:

- The total number and percentage of all policies that have been adopted

- The percentage of adopted policies that are gender-sensitive

Based on this revision, the baseline and midline results were revised to make them comparable with the endline. Also, the average number of policies adopted by colleges during the study period has also been reported to measure progress over the project period by colleges.

As shown in Table 3.20, there has been a marked improvement in the proportion of policies that have been adopted at endline. The results show that the number of policies adopted at endline is 96.3 percent compared with a midline figure of 82.1 percent. It can also be noted from the results that 79.6 percent of the policies adopted are gender-sensitive. The results further illustrate that all colleges have adopted an average of 13 policies of the 14 at endline.

TABLE 3.20: Colleges with a defined set of management policies demonstrating gender-sensitive criteria (%)

Indicator	BL (Oct-2015)	ML (May-2017)	EL (Jun-2018)	Δ from ML to EL
% of policies adopted by colleges	46.8	82.1	96.3	*+14.2*
% of policies adopted that are gender-sensitive	20.9	70.0	80.7	*+21.4*
Average number of policies adopted	6.55	11.50	13.48	

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[17] Gender-sensitive aspects of policies are components of the policies that aim to address the special needs of females within the CoEs. For example, in the financial management policy, the gender-sensitive component is 'Budget for resources such as scholarships focused on female students and tutors'.

Results in Table 3.21 show the specific gender-sensitive policies adopted by CoEs. Exactly 90 percent of staff recruitment and sexual harassment policies that have been adopted by CoEs are gender sensitive. Public engagement has the least number of gender-sensitive adoption by colleges.

TABLE 3.21: Colleges with management policies demonstrating a gender-sensitive criteria (%)

Set of targets	BL (Oct- 2015)	ML (May- 2017)	EL (Jun- 2018)
Staff recruitment policy	34.2	65.0	90.0
Sexual harassment policy	36.8	72.5	90.0
Quality assurance policy	84.2	67.5	82.5
Acceptable use policy	26.3	32.5	82.5
Teaching and learning policy	55.5	65.0	80.0
Inclusion and gender policy	2.6	70.0	80.0
Health and safety policy	21.1	77.5	80.0
Tutor code of conduct	86.8	67.5	80.0
Admission and exam policy	86.8	77.5	77.5
Tutor professional development policy	47.4	62.5	72.5
Financial management policy	57.9	65.0	70.0
Tutor appraisal policy	65.8	47.5	70.0
Assessment policy	36.8	45.0	67.5
Public engagement policy	0.0	17.5	52.5

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusion

The endline survey sought to measure the progress made by T-TEL against its log frame indicators over the project period. In this respect, the endline report has probed into and provided the necessary information on the outcome and output indicators.

Beginning Teachers

The findings demonstrates a significant improvement across male and female English, mathematics, and science teachers over the project period. Demonstration of core competence in the PTPDM has seen a notable improvement with male teachers achieving the endline target of 30 percent in English, mathematics and science. Female teachers in English and mathematics also met the 30 percent target although female science teachers were unable to reach the target. The aim of training teachers in the application of the basic school curriculum also saw results with a significant improvement among both male and female teachers. In this indicator, all male teachers across subjects taught attained the endline target while the target for female English teachers was unmet. Demonstration of gender-sensitive instructional methods by teachers has seen some improvement overall from midline to endline but more progress still needs to be made in this area.

Tutors

For tutors, demonstration of student-focused teaching methods is one of the key areas where tutors have shown a good level of performance throughout the project period. Male mathematics tutors had the most significant gain among all the groups. The use of gender-sensitive instructional methods also witnessed significant gains overall with male tutors performing better than female tutors. These changes are indicative of improving pedagogical practices that suggest that the current methods of teaching have produced positive results and have the potential to produce enhanced results. However, the use of *T-TEL teaching and learning materials* for the pedagogical practices did not improve from midline to endline. The use of teaching and learning materials declined overall especially by male tutors from midline to endline. Female mathematics tutors, however, witnessed a significant gain.

Mentors

The number of mentors using gender-sensitive strategies increased significantly from baseline and endline. Mentors who teach all subjects had the highest gain at endline. Despite an overall positive performance by mentors, they did not achieve the endline target of 30 percent.

Colleges of Education

The survey results further show that leadership and management practices, as well as gender-sensitive policies of most of the colleges, have improved thus enabling them to meet goals in their college improvement plans. This is evidenced by the increased uptake of these practices. Nonetheless, colleges may benefit from more support in relation to practical strategies for meeting their annual targets including those related to gender sensitivity in the CIPs as well as gender targets in college management policies.

ANNEXES

Annex 1

TABLE A1: List of CoEs

Zones	No. of CoEs	NAME of CoE	DISTRICT & REGION	SEX COMPOSITION of CoE M = Mixed-sex CoE SF = Female-only CoE SM = Male-only CoE	STUDENT POPULATION
ZONE 1 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
ZONE 2 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
ZONE 3 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

Zones	No. of CoEs	NAME of CoE	DISTRICT & REGION	SEX COMPOSITION of CoE M = Mixed-sex CoE SF = Female-only CoE SM = Male-only CoE	STUDENT POPULATION
		4. Jasikan College of Education	Jasikan District / Volta Region	M	1046
		5. Peki College of Education**	Peki, (South Dayi District) / Volta Region	M	631
		6. St. Francis' College of Education**	Hohoe Municipal District / Volta Region	M	1,013
		7. St. Teresa's College of Education	Hohoe Municipal District / Volta Region	SF	630
ZONE 4 CENTRAL & WESTERN	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
ZONE 5 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)	M	1,076

** Colleges in which classroom observations were conducted

TABLE A2: CoEs achieving 50 percent of their annual targets (%)

Set of targets	BL	ML	EL
Gender-planning targets in their CDP	2.6	12.5	47.5
Financial management targets in their CDP	0.0	22.5	35.0
Teaching and learning targets in their CDP	0.0	12.5	42.5
Partnership and cooperation targets in their CDP	0.0	17.5	0.0
Infrastructure and environment targets in their CDP	2.6	7.5	32.5
Student engagement targets in their CDP	0.0	20.0	45.0
Total N	38	40	40

Annex 2: Scoring Rubrics

Scoring Rubrics for Beginning Teacher.xls:

Scoring rubrics for Tutors.xlsx

Scoring rubrics for Principal.xlsx

Scoring rubrics for Mentors.xlsx