An Evaluation of T-TEL's Teaching and Learning Materials

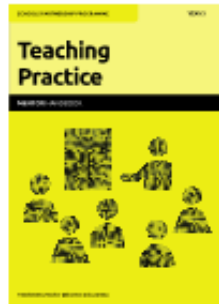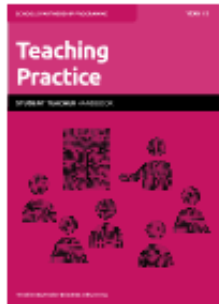Evaluation Timeline: 23 June to 30 August 2016

2 September 2016

22 Station Road
Cambridge CB1 2JD
United Kingdom

T +44 (0)1223 463500
F +44 (0)1223 461007
camb-ed.com

An Evaluation of T-TEL's Teaching and Learning Materials

Evaluation Timeline: 23 June to 30 August 2016

Jonathan Fletcher and Sarah Shepherd

2 September 2016

Acronyms

ASBHA	Ashanti Brong Ahafo
CoE	College of Education
DBE	Diploma in Basic Education
DFID	Department for International Development (UK)
EPS	Education and Professional Studies
GES	Ghana Education Service
JHS	Junior High School
NAB	National Accreditation Board
NCTE	National Council for Tertiary Education
NIB	National Inspectorate Board
NTC	National Teaching Council
PDC	Professional Development Co-ordinator
PDS	Professional Development Session
SHS	Senior High School
SPA	School Partnerships Adviser
TLA	Teaching and Learning Adviser
TP	Teaching Practice
TPC	Teaching Practice Co-ordinator
TPD	Tutor Professional Development
T-TEL	Transforming Teacher Education and Learning
UCC	University of Cape Coast
UEW	University of Education, Winneba

Contents

327209 | 2 September 2016

C:\Users\gor71054\Documents\DFID\Ghana\Component 1\Materials Evaluation\T-TEL Materials Evaluation Report_FINAL revised CA.docx

1   Executive Summary

1.1   Introduction

The Transforming Teacher Education and Learning (T-TEL) project is a four-year Government of Ghana programme funded by UKAid and designed to support the implementation of the new policy framework for Pre-Tertiary Teacher Professional Development and Management. It aims 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). The programme is being managed by Cambridge Education. T-TEL is part of the DFID's Girls Participatory Approaches to Students Success (G-PASS) programme in Ghana.

T-TEL's support to improving the quality of teacher education includes investments in tutor professional development and in supported teaching practice for student teachers. Teaching and learning resources have been developed for use by tutors in CoEs, mentors in schools, and student teachers. Use of the materials has been supported through coaching by T-TEL staff. T-TEL and DFID share a commitment to ensuring that investments in materials are effective, have the potential for an impact on learning in Colleges and schools in Ghana, and are sustainable. Furthermore, as T-TEL initiated materials development before the revision of the Diploma in Basic Education (DBE) curriculum, lessons learned through the use of new materials might be relevant to DBE curriculum review. An evaluation of the use of the T-TEL materials during the first year of the programme was agreed to be prudent.

1.2   Objective of the Evaluation

The evaluation examines the extent to which **tutors** and **student teachers** are able to use and apply the materials developed by T-TEL, specifically the first four themes of Tutor Professional Development (TPD) materials introduced since October 2015, and the Teaching Practice (TP) Handbooks introduced since January 2016. The evaluation aims to evaluate both sets of materials against the following criteria:

● **Appropriateness and Relevance**
● **Accessibility and User friendliness**
● **Impact on learning and teaching**
● **Impact on gender inclusiveness**
● **Sustainability**

1.3   Methodology

Two independent evaluators were contracted; Professor Jonathan Fletcher (University of Ghana) and Mrs. Sarah Shepherd. The evaluation took place during the months of June and July 2016 during which the evaluators completed a desk study of the *TPD* and *TP materials* and interviewed 100 stakeholders including students, tutors, Teaching and Learning Advisers (TLAs), School Partnership Advisers (SPAs) and Stakeholders from the National Council for Tertiary Education (NCTE), National Accreditation Board (NAB), Principals Conference (PRINCOF) and writers. The evaluators also reviewed many key documents and reports written about the T-TEL design, and implementation process. The evaluation report was produced during August. The final draft was

presented to DFID on 1st September 2016, and the key findings were presented to the annual Conference of PRINCOF on 9th September 2016.

1.4 Findings

Appropriateness and Relevance

The *TPD materials* and *TP materials* are relevant to teaching and learning in CoEs in Ghana. However, respondents expressed mixed opinions about the appropriateness of the *TPD materials* to the current (subject content focused) DBE curriculum, and current assessment approaches. The *TDP resources* were considered relevant by methods tutors with subject content tutors expressing greater concern about their appropriateness in the current context. The teaching strategies explored by the TPD materials are considered relevant to all tutors. This evaluation found that whilst many tutors were able to elicit strategies from unfamiliar content and transfer them to their own subject teaching, a large proportion were not yet confident to do so, and would need more support, both in terms of how to make the strategy relevant, and in terms of their own motivation to try to do so.

The *Teaching Practice handbook* is appropriate and relevant for student teachers that are training in the current teaching practice model in CoEs.

Accessibility and User friendliness

The T-TEL resources reviewed were found to be accessible and user-friendly. Respondents commented that they liked that *TPD materials* are very systematic and read like commercial textbooks. However, tutors also found the text dense and complex, and would like to work through the materials at a steadier pace, with more time to gain mastery before moving on.

The *TP handbooks* are well-liked by students, who are very happy with their layout, structure, and ease of use. They also appreciated the greater transparency in the roles tutors and mentors are required to play during teaching practice, and activities student teachers should engage in.

Impact on Learning and Teaching

At the end of the first year of implementation of the TPD programme, there is some evidence of impact on learning, for Professional Development Coordinators (PDCs), tutors and student teachers. PDCs have become confident, able facilitators of professional development for their peers. Although many tutors state they already know of the teaching strategies, this evaluation has found that tutors' understanding of the strategies, and how they might be used has deepened. Some tutors are already trying to implement strategies introduced in the materials, into their classes and this is confirmed by the comments of students, who think that tutors are using the T-TEL approaches more and more and that this has made lessons interesting and interactive. This "trialling behaviour" on the part of tutors is an important stage in the implementation process, but it is apparent that these changes are not occurring in the majority of classes, and there is still a long way to go to achieve full implementation, and mastery of practice. There is also evidence to suggest that already there are some small changes in student learning behaviour due to the introduction of more student-centred strategies by tutors, with some students interviewed stating that they intend to use the new strategies in their own teaching.

The PD sessions have allowed staff members to get to know each other and have improved professional relationships across the college campus.

The impact of the *TP materials* on student and mentor learning has been constrained by changes in the teaching practice curriculum for second year students, and the timing of the introduction of

the materials for third year students. However, first year students report a very positive impact of the materials in their participation, and learning during their first year induction to teaching.

Impact on Gender Equality

Gender equality in teaching and learning is well promoted in the *TPD materials* and *TP handbooks*. Many of the example lessons in the TPD materials have a section that reminds tutors to plan for gender responsiveness in their lessons, and the "Reflect Together" and "Tutor Discussion" sections of the PD sessions also have some questions and statements that refer to gender responsiveness. The strategies examined within the TPD materials are also associated with collaborative learning, which aids more equitable participation in learning. Indeed, tutors commented on the greater participation by women in sessions deploying the strategies.

The *Teaching Practice Handbook* also has elements of gender responsiveness, integrated within the learning process.

The only negative observation respondents made regarding gender is the lack of female capacity building, with women under-represented amongst Professional Development Coordinators (PDCs) in Colleges, and amongst T-TEL's education advisers (coaches) based in the zones (only 20% are women).

Sustainability

Sustaining the use and impact of the T-TEL materials will require stronger ownership of the implementation model by Colleges, and some improvements to the delivery model. It will be significantly enhanced if T-TEL is successful in realigning the materials to a reformed DBE curriculum.

Although some principals are enthusiastic about the materials and are likely to support future sustained use of them, the evaluation found that the main challenge to sustainability in the CoEs is the perception that the programme belongs to T-TEL and is simply an imposing of extra work on tutors and principals.

Many respondents were concerned about how *TPD sessions* will be sustained after T-TEL ends. T-TEL has built the capacity of 79 PDCs who are able to facilitate training sessions at their colleges, and could potentially develop their coaching skills to drive up the quality of teaching and learning in colleges. The PD sessions lay the foundations for a college-based system of professional development. Tutors insist that their motivation to participate in TPD will be improved with certification, and regularly call for certificates of attendance. As T-TEL aims to impact on tutor behaviour, programme staff proposed that any certification must include evidence that tutors have implemented the skills and knowledge gained through TPD. The evaluators recommend that tutor certification, and professional development, will be sustainable if linked to university programmes, for example through a credit transfer system.

The evaluators found that the *T-TEL materials* are, for the most part, relevant to the current DBE curriculum and could still be useful, even when the curriculum review is complete.

At present, longer-term sustainability of capacity built during *TPD materials* development is limited by the fact that T-TEL did not build the capacity of enough Ghanaian writers from conceptualisation.

1.5   Recommendations

1. The Tutor Professional Development model piloted by T-TEL should be continued but strengthened with a greater focus on coaching support to tutors to implement new strategies.

Coaching should be provided by peers in a CoE (including senior managers, Heads of Departments, and PDCs). T-TEL could play a valuable role in supporting CoEs to develop strategies to improve lesson-based coaching support for their tutors.

2. Small adaptations are required to the *TPD materials* to make them more effective for all tutors, particularly less confident, less motivated, or less skilled tutors. The pace at which new content is covered needs to be slowed to allow more time for tutors to plan how to use strategies in their own curriculum area, to practise them, to receive coaching and feedback from peer-coaches, and improve mastery before moving on to the next strategy. This will help change the perception of some tutors that the materials are only suitable for 'methods' lessons.

3. The *TP materials* are well designed but must be introduced into CoEs with all parts of the support system, including adequate introduction to materials prior to TP, mentor training and tutor support.

4. Collaboration between T-TEL, UCC and other stakeholders should be continued, so that the lessons learned through T-TEL can inform the review of the DBE curriculum (as a blueprint for effective teacher education). This evaluation provides evidence that the *TPD materials* are already starting to have a positive impact on teaching by tutors in CoEs, and on student teachers' experience and appreciation of effective teaching methods. It also demonstrates the effectiveness of structured materials for student teachers on teaching practice. These lessons will be valuable for the forthcoming review, and must be shared. Working closely with UCC and other stakeholders on the upcoming curriculum review will ensure that the T-TEL strategies and approaches can be fully embedded into the Colleges' curriculum, timetables, and assessment.

5. Tutors and students put a great deal of emphasis on assessment practices overseen by UCC. Collaboration between T-TEL and UCC in this regard will help synchronise assessment practices in the DBE curriculum with the approaches developed in the programme to support both initial teacher education and tutor professional development.

6. More local professionals should be employed in the planning stages of the production *of T-TEL materials* so that the latter would be owned locally to ensure that T-TEL strategies live beyond the life of the programme.

7. Tutors who take an active part in the programme and who demonstrate their new skills in their teaching should be rewarded through career-relevant qualifications. Tutor qualifications could be based on a credit system towards further education and/or career progression. Collaboration between T-TEL and universities can help accelerate internalisation of the processes.

8. As universities are the main providers of higher education qualifications in teaching, T-TEL should invite universities that deliver teacher education programmes to look at the programme and explore ways of turning the latter into a qualification. Sustainability of the materials and approaches could be enhanced if they were embedded into an appropriate professional qualification.

9. The *T-TEL materials* are useful in many ways, and T-TEL should make donations of electronic and hard copies of these materials to all universities for inclusion in their libraries. Universities that deliver teacher education programmes could use them in research, and teaching qualification programmes while "non-teaching" universities could use them in internal faculty professional training and development programmes.

10. Colleges must be strongly encouraged to include at least one female member of staff amongst their PDCs. T-TEL will also need to pay attention to the gender balance of its field staff. Senior female tutors could be encouraged to understudy the TLAs and SPAs to

prepare them for similar position in future. That way female capacity building will be achieved.

2 Introduction

2.1 Ghana's Education System

The current structure and content of education in Ghana is the result of the educational reform of 2007 (MoESS, 2007) aimed at increasing access to education, and making the education system of the country more relevant to the socio-economic status of the country and more competitive to meet international standards. The 2007 reform specified two years of kindergarten education, six years of primary school (lower primary being years 1-3, upper primary being years 4-6), three years of Junior High School (JHS), four years of Senior High School (SHS) and four years of university education. The duration of the SHS education was revised to three years in 2010.

The structure of Ghana's current education system is summarised in figure 1 below. It shows the different levels of institutions which make up the education system. It is important to note that the apprenticeship system, proposed by the Anamuah-Mensah National Education Review Committee (2002), is yet to be implemented.

Figure 1: The Structure of Ghana's Education System

YEARS	AGE	Commitment of Government Compulsory Kindergarten and Basic Education for All (Age 4-15)	Level	Description	Apprenticeship Training
			Tertiary Education	**TERTIARY** University/Polytechnic/Technical University/Professional Institutes/Teacher Education	
3 2 1	17-18 16-17 15-16		Second Cycle Education	**SENIOR HIGH SCHOOL** Specialisation in Grammar/Technical/Agricultural/ Vocational/Apprenticeship Programme	
3 2 1	14-15 13-14 12-13			**JUNIOR HIGH SCHOOL** General Curriculum for Entry into Grammar, Technical, Vocational, Agricultural Courses	
6 5 4 3 2 1	11-12 10-11 9-10 8-9 7-8 6-7		First Cycle Education	**PRIMARY** Basic Literacy, Numeracy, Science, and Social Studies	
2 1	5-6 4-5			**KINDERGARTEN** Creative Arts, Language & Literacy, Numeracy, Social Studies	

The unique feature of the current structure is the inclusion of kindergarten education in the formal education system and the use of both Ghanaian languages and English as media of instruction in kindergarten and lower primary. The reform that brought about the current structure emphasised literacy, numeracy, creative arts, and problem-solving skills at the basic level (6-15 years) to promote understanding and application of relevant concepts to real life (MOESS, 2007).

2.2 Basic Teacher Education

Basic teacher education in Ghana has passed through many stages, resulting in various categories of teachers in the system who possess different professional qualifications. Currently, the training of basic school teachers is located in the Colleges of Education (CoEs), formerly known as teacher training colleges, and at least four universities. Until 2012, teacher training colleges were pre-tertiary institutions under the supervision of the Ghana Education Service (GES). A number of reports, including the 1991 White Paper on reform to the tertiary education system, the Akyeampong Report of 1998 and the Anamuah-Mensah Report of 2002 had all recommended the upgrading of teacher training colleges to tertiary status. After several consultations on this transition of the teacher training colleges, the Colleges of Education Act, 2012 (Act 847, 2012) establishing CoEs as tertiary institutions was passed and it received the Presidential Assent on 27th June, 2012.

With the passing of this Act, the CoEs ceased to become second cycle institutions and assumed their new status as tertiary institutions. The Act mandates CoEs to be affiliated to an institution of higher learning established by Law or Charter for Teacher Education in Ghana. Currently, all CoEs are affiliated to the University of Cape Coast, which develops the basic teacher education curriculum as well as assesses and certifies student teachers.

The aims of the CoEs, as given in the Acts, are as follows:

- training students to acquire the necessary professional and academic competences for teaching in the pre-tertiary institutions and non-formal educational institutions;
- building the professional and academic capacities of serving teachers through regular continuing education;
- providing programmes that will promote the effective teaching of science, mathematics, information communication technology and other related subjects to meet the needs of contemporary society; and
- fostering links with relevant institutions and the community in order to ensure the holistic training of teachers.

The Act is clear on the functions of the CoEs, which include providing teacher education to citizens in the teaching profession, exposing students to modern and innovative techniques of teaching and learning to promote critical thinking and problem-solving in the classroom, setting up well-equipped resource centres where staff, students and serving teachers will be assisted to acquire skills in making and using teaching and learning materials for effective classroom teaching. In fact, the Act even gives CoEs the opportunity to decide on the subjects to be taught based on their special relevance to the needs of the educational system of the country and for national development. Every CoE has a Council, which has the necessary powers that enable it to effectively perform the functions of the colleges. Principals of CoEs have become Chief Executives working to the new governing Councils. Thus, in a nutshell, CoEs are meant to be institutions which have some control over what happens in these institutions.

2.3 T-TEL's Programme overview

The Transforming Teacher Education and Learning (T-TEL) project is a four-year Ghanaian government programme funded by the UK Department for International Development (DFID) designed to support the implementation of the new policy framework for Pre-Tertiary Teacher Professional Development and Management and 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 CoEs.

T-TEL seeks to initiate a reform programme to instigate effective professional learning for college tutors and pre-service 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 overall outcome of the programme is the development of beginning teachers who demonstrate interactive, student-focused instructional methods, who demonstrate gender sensitive and learner-centred instructional strategies, and who know and can apply the school curriculum and assessment. The programme's implementation activities reflect these goals.

2.4 T-TEL's Programme objectives

The programme has identified seven core elements, aimed at achieving positive change in teacher training which, when implemented together, will lead to the achievement of competent and effective beginning teachers in schools. The core elements of T-TEL are:

- Professional development and coaching for all CoE tutors, with an emphasis on the use of mathematics, English and science ("Tutor Professional Development");
- Support to the management of CoEs and training of its principals;
- Support to develop more effective student teaching practice ("School Partnerships");
- Work with MoE and regulatory bodies on the implementation of existing policies for teacher education;
- Support to reform the pre-service curriculum;
- A Challenge Fund which CoEs and their partner districts and schools will be able to apply to carry out innovative initiatives;
- A set of incentives for each CoE to improve their management and training delivery;
- Gender-responsive, and inclusive, teacher education are priorities that cut across all seven core elements.

2.5 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 (NTC), the National Council for Tertiary Education (NCTE), the National Accreditation Board (NAB), the National Inspectorate Board (NIB), the Universities of Cape Coast (UCC) and Winneba (UEW) and all 40 public Colleges of Education (CoEs). To broaden stakeholder participation and to ensure alignment with national level policies, two committees – a Steering Committee and a Technical Advisory Committee – have been constituted to provide overall strategic direction and technical oversight respectively.

Key implementation strategies in each of the programmes core areas are summarised below:

i. Professional development for all CoE tutors with an emphasis on the use of mathematics, English and science

So far, the main T-TEL implementation strategy is the college-based Tutor Professional Development Programme, consisting of weekly Professional Development Sessions (PDS) that are held by CoEs and are coordinated by tutors known as Professional Development Coordinators (PDCs), in conjunction with regular classroom implementation, coaching support, as well as peer support. T-TEL encouraged CoEs to set up the PDS and developed detailed PDS-by-PDS guidelines for the PDCs on how to facilitate them ("Handbook for PDCs"). Additionally, there are PDS-by-PDS guidelines for tutors ("PD Guide for Tutors"). So far, guidelines have been produced under four themes, based on teaching strategies that are relevant to tutors and student teachers. The themes covered so far are Creative Approaches, Questioning, Talk for Learning and Group Work.

College PDCs are supported to deliver each new theme by workshops held every semester, as well as by T-TEL staff known as ''Teaching and Learning Advisers'' (TLAs). There is one T-TEL TLA in each PRINCOF zone. They are based at the T-TEL office in the zone and support all the CoEs in their zone, usually 7 or 8 CoEs, but up to 11 CoEs in ASHBA. The TLAs perform various programme roles including the following:

- Meeting with CoE management;
- Providing support to Professional Development Sessions (PDS);
- Meeting with and coaching Professional Development Coordinators (PDC);
- Interacting with tutors during and outside of PDS;
- Providing lesson support to CoE tutors;
- Supporting PDC to send reports on PDS to T-TEL.

The materials developed by T-TEL to support Tutor Professional Development in the CoEs are one focus of this evaluation.

ii. Support to the management of CoEs and training of its Principals

Principals are being supported through training for College Leaders and the provision of resources to support the areas of management and leadership addressed through training. At the time of this evaluation, two modules of training have been implemented and resources for Setting New Directions and Leading Institutional Strengthening have been produced. College Improvement Advisers (CIAs) support CoE management and train Principals using the Manual for College Improvement Advisers. This evaluation does not consider the materials developed by T-TEL for leadership training.

iii. Support to develop more effective teaching practice

T-TEL supports more effective teaching practice through a set of handbooks for student teachers, reinforced with coaching by CoE tutors and school mentors. Currently, student teachers in Ghana observe 10 days in a school during their first year of teacher training, and participate in six weeks of teaching practice on their CoE campus during their second year of training. During their third year student teachers spend six months in a school on teaching practice. T-TEL's Teaching Practice Handbooks for Student Teachers provide a set of activities for student teachers to implement during each period of teaching practice. Student teachers are supported during teaching practice by a mentor in their school, and T-TEL has produced a complementary TP Handbook for Mentors which explains how mentors can support student teachers with their TP activities.

T-TEL staff known as ''School Partnership Advisers'' (SPAs) have facilitated processes to orientate the range of actors that have a role in the success of teaching practice. District Directors of Education and CoE Principals, Circuit Supervisors (CSs) and Girls Education Officers (GEOs) have been introduced to the handbooks and implementation strategy. Teaching Practice Coordinators (TPCs) trained tutors in their CoE on how to support students on teaching practice using the T-TEL resources.

The roles of SPAs include the following:

- Meeting with CoE management
- Working with CoEs and partner schools to support student teachers and mentors during the 'teaching practice' component of the DBE programme
- Meeting with and coaching Teaching Practice Coordinators (TPCs), particularly in the use of the Teaching Practice materials
- Interacting with tutors
- Providing support on teaching practice to CoE tutors

The materials developed by T-TEL to support Teaching Practice are one focus of this evaluation.

iv. Work with MoE and regulatory bodies on the implementation of existing policies for teacher education

T-TEL collaborates with some key stakeholders involved in teacher education in Ghana. Among these are the National Council for Tertiary Education (NCTE), the National Accreditation Board (NAB) and the National Teaching Council (NTC). The NCTE is required by law to, among other functions, advise the Minister of Education on the development of institutions of tertiary education in Ghana; publish information on tertiary education in Ghana; and perform any other functions relating to tertiary education as are incidental to the functions specified in the National Council for Tertiary Education Act, 1993 (Act 454). The NCTE has played and continues to play a vital role in the activities in the CoEs.

The National Accreditation Board (NAB) is responsible for the accreditation of both public and private institutions as regards the content and standards of their programmes. The NAB accredits all programmes run in the CoEs. The National Teaching Council (NTC), according to the Education Act, 2008 (Act 778), is the authority responsible for matters relating to the licensing of teachers. The Act states that a teacher's license is the only legal authorisation for teaching and this shall be issued by the Council and shall bear the registration number of the Council. Currently, teachers are not licenced by the Council but this might change soon, when the Educational Bill 2015 is passed into law.

T-TEL is working closely with each of these institutions through a series of targeted interventions. The programme supported the NTC's work to develop draft national teaching standards; the NTCE has developed an institutional road map outlining the route to fully-fledged tertiary status, and has made a start on support for a College Education Management Information System (CEMIS); and the NAB is working with T-TEL to develop a quality assurance instrument to ensure standards are maintained in the delivery of the DBE curriculum.

v. Support to reform the pre-service teacher education curriculum

A committee for the review of the Diploma in Basic Education (DBE) curriculum has been put together to develop a national curriculum framework for teacher education. If approved by the Ministry of Education, this framework would set the compulsory requirements for all teacher education programmes in Ghana. It would then also provide the evaluation framework through which the DBE curriculum will be reviewed. Recommendations arising from the review would then

inform the revision of the DBE. Anticipating the need to review the DBE, T-TEL has entered a Memorandum of Understanding (MoU) with UCC to review the Diploma in Basic Education Curriculum for Colleges of Education in Ghana.

vi. **A Challenge Fund which CoEs and their partner districts and schools will be able to apply to carry out innovative initiatives**

The Challenge Fund (CF), with grants ranging from GHC 60,000 to GHC 300,000, is a competitive funding mechanism for Colleges to address specific challenges that constrain the achievement of quality education outcomes in CoEs. The purpose of the CF is to identify and nurture new ways of improving the quality of pre-service training of teachers. The programme seeks to use the CF to encourage a range of actors to pilot interventions that will improve the quality of teaching and/or support innovative activities that enable better learning and better conditions for girls.

vii. **A set of incentives for each CoE to improve their management and training delivery**

Through the 'Payment by Results' (PBR) Fund T-TEL will make awards to CoEs that have achieved agreed improvement targets within the College's Improvement Plan.

2.6 Monitoring and evaluating T-TEL's progress

T-TEL's *Monitoring and Evaluation and Research Strategy* explains how the programme results are monitored, and evaluated. It also presents plans for research that will contribute valuable evidence for programme evaluation (T-TEL 2016e). Broadly speaking, T-TEL's *M&E and Research Strategy* involves five main sources of information:

- T-TEL monitoring surveys carried out every eighteen months: baseline (October, 2017), midline (April 2017) and end line (October 2018).
- Component-based monitoring (in Year 2, T-TEL will collect core monitoring data across the programme using ''DataWinners surveys'').
- Formative evaluation activities carried out by the M&E team and by components.
- Research studies designed to produce more detailed evaluation data (e.g. longitudinal study planned for October-December 2016).
- External evaluations (as needed).

By August 2016, the M&E system had provided some evidence of progress in the implementation of T-TEL's tutor professional development and teaching practice activities. It had also provided initial indications of impact on tutor behaviour.

Progress in tutor professional development

Monitoring surveys completed by TLAs and PDCs provide data on progress with the tutor professional development model.

Progress with PD Sessions by Colleges of Education

– Collectively, **the CoEs completed 822 PD sessions (out of a maximum of 836), which is a 98% completion rate**, focusing on TPD Themes 1 – 4 (Creative Approaches, Questioning, Talk, Group Work).

– The sessions were **typically attended by 65% of the tutors in a College, equivalent to about 1,100 tutors engaging with PD once per week**.

– The attendance reduced slightly between Semesters 1 and 2, though the change is not statistically significant (S1: 68%, S2: 63%).

– The average attendance per College varied from 44% and 84%.

Source, T-TEL 2016c

TLA surveys have also rendered some information about the classroom-based support offered to tutors.

Progress with TLA support to tutors' lessons

– TLA classroom support indicates that in **almost 70% of the lessons supported in Semester 2, the tutor implemented at least one teaching strategy drawn from the TPD programme.**

– In the majority of cases, the **teaching strategy implemented originates from the Themes used in the same Semester** (S2; Talk for Learning and Group Work), suggesting a direct link to the PD sessions on classroom practice

Source: T-TEL 2016c

T-TEL's M&E team carried out focus group discussions with all PDCs which have shed much light on the implementation challenges – *and the key drivers for success* - within the CoE context (T-TEL, 2016a). Many of these have been validated by the findings of this evaluation.

The SPA maintain routine data on the implementation of workshops and their coaching visits to CoEs, although routine data is not yet collected by CoEs on their implementation of the approach to supported teaching practice offered by the *TP Handbooks*.

In July 2016, T-TEL carried a 'mini' survey to measure progress against the programme's logframe indicators where component-based M&E systems had not (yet) yielded sufficient data. The mini survey results are presented below but with the caveat that the sample size was not representative. The baseline survey sample was representative of all CoEs.

Table 1: T-TEL's performance on indicators of teaching and learning (2015-2016)

Logframe indicator	Baseline (2015)	Mini-Survey (2016)	Comment
2.1 Number and % of male and female tutors effectively using T-TEL teaching and learning materials for lessons and tutorials	English Male – 0% Female – 0% Maths Male – 0% Female – 0% Science Male – 0% Female – 0%	Male (30.4%) Female (28.6)	The surveys measured tutors' use of the new strategies in planning and teaching their classes. Found significant relationship between 'ideal' use of T-TEL materials and attendance at PD sessions
2.2 Number and % of English, Maths, and Science male and female tutors demonstrating student-focused teaching methods	English Male – 12.2% Female – 16.7% Maths Male – 16.9% Female – 11.1% Science Male – 18.6% Female – 0%	English 43.8% Male 40.0% Female (50%) Maths 35.7% Male 30.8% Female (100%) Science 46.5% Male 46.5% Female (0%)	
2.3 Number and % of male and female mentors using gender-sensitive practicum mentoring strategies introduced by T-TEL.	English Male – 3.85% Female – 2.7% Maths Male – 0% Female – 0% Science Male – 0% Female – 0% Other subjects Male – 0% Female – 0%	Not measured	T-TEL support to mentor training due to start October 2016
2.4 Number and % of male and female college tutors demonstrating gender-sensitive instructional methods	English Male – 2.4% Female – 0% Maths Male – 2.6% Female – 11.1% Science Male – 0% Female – 5.9%	Male (5.6%) Female (28.6%)	

Source: (T-TEL, 2016f)

Although there are concerns with the reliability of the mini-survey due to the small sample size, the statistically significant relationship between tutors' achievement of the indicator and their attendance at PD sessions is interesting.

2.7   An independent evaluation of the T-TEL materials

Significant resources are being invested in the development and printing of learning resources for tutors, student teachers and mentors (currently a total of 18% of the expenses budget). At the outset of T-TEL's implementation phase (June 2015), DFID and Cambridge Education agreed that an M&E report would be delivered at the end of Quarter 4 (May 2016) on the use of TPD materials in Colleges. The M&E report is available (T-TEL, 2016c), and the key findings on the use of materials are noted above. However, even though M&E data indicates that tutors are starting to implement new methods within their teaching, formative evaluations over the past year have reported that tutors expressed strong views about the relevance of the materials to the current (content-focused) DBE curriculum, and were concerned about the difficulties they faced

in translating the T-TEL strategies into their day-to-day practice (G-PASS Annual Review 2015; T-TEL 2016a). DFID and T-TEL therefore agreed that a formative evaluation of the T-TEL materials was required. The evaluation should provide sufficient evidence to inform strategic decisions on the way forward, particularly in the context of the planned DBE curriculum review.

This evaluation was commissioned by T-TEL in order to gain an independent, objective view of the relevance, use, quality, and potential for impact of the materials developed by T-TEL to support tutor professional development and teaching practice in Colleges of Education.

3 Evaluation Methodology

This evaluation took place during the months of June and July 2016, and was carried out by two independent consultants. Professor Jonathan Fletcher is a specialist mathematics educator, teacher educator and assessment consultant with extensive experience in teacher education at the primary, secondary, and tertiary levels of education.

Sarah Shepherd is an early years and primary educator with extensive experience of teaching, training teachers, and reviewing and producing curricula and teaching and learning materials.

3.1 Evaluation questions

The evaluators were guided by the following evaluation questions:

Appropriateness and Relevance

1. What is the appropriateness and relevance of the content of the T-TEL materials in relation to the daily practice for tutors in CoEs?
2. How appropriate are the T-TEL materials in relation to the four pillars and cross-cutting themes of the draft DBE Curriculum Framework?
3. What is the appropriateness and relevance of the approach and structure of the TPD materials in relation to the Professional Development Session (PDS) model in CoEs?
4. What is the appropriateness and relevance of the approach and structure of the TP materials in relation to the teaching practice model in CoEs?

Accessibility and User friendliness

5. How accessible and easy to use are the materials for tutors in their teaching (including through TP)?
6. How accessible and easy to use are the TP materials for student teachers on teaching practice?

Impact

7. What is the likely impact on inclusion and gender responsive pedagogies?
8. What potential is there for the materials to change tutor practice?
9. What potential is there for the materials to change the learning outcomes of student teachers

Sustainability

10. How sustainable and effective were the processes used to develop the materials?

The evaluators took on different roles during the evaluation process. Professor Jonathan Fletcher completed a desk study of T1 & T2, and carried out interviews with various stakeholders, mainly representatives of bodies who are working closely with T-TEL.

Sarah Shepherd focused on the desk review on T3, T4 and the Teaching Practice handbook. She carried out interviews with students, tutors, professional development coordinators, teaching practice coordinators and vice principals in five Colleges of Education. Sarah Shepherd also carried out a number of stakeholder interviews.

Both evaluators also reviewed many key documents and reports produced by T-TEL and written about the T-TEL design, and implementation process, including internal monitoring and evaluation reports.

3.2   Stakeholder Interviews

A list of potential stakeholder interviewees was given to the evaluation team by T-TEL and they were able to choose with whom to meet. All the stakeholders were available to meet up with or talk to over the phone.

The stakeholder interview questions were designed from guiding questions in the Terms of Reference.

These are the stakeholders who were interviewed during the evaluation process:

Table 2: Stakeholders interviewed for the T-TEL materials evaluation (June-July 2016)

Name of Stakeholder	Position	Interviewed by	Location	Method of Interview
Akwasi Addae-Boahene	National Programme Manager	Sarah Shepherd	T-TEL office Ghana	In person one-on-one interview
Rosie Lugg	Deputy National Programme Manager	Sarah Shepherd	T-TEL office Ghana	In person one-on-one interview
Janet Blair	Lead Adviser for School Partnerships	Sarah Shepherd	Home via skype	One on one interview
Bjoern Hassler	Lead Adviser for TPD and Core Coaching Component.	Sarah Shepherd	Cambridge Faculty of Education	One on one discussion
Bjoern Hassler	Lead Adviser for TPD and Core Coaching Component.	Jonathan Fletcher	London University of London Institute of Education	In person one-on-one interview
Charlie Gordon	T-TEL - Cambridge Education staff	Sarah Shepherd	Office via skype	In person one-on-one interview
Charlie Gordon	T-TEL - Cambridge Education staff	Jonathan Fletcher	T-TEL office Ghana	In person one-on-one interview
Beryl Opong-Agyei	Co-ordinator for TPD	Sarah Shepherd	T-TEL office Ghana	One-on-one interview
Sharon Tao	Research Adviser	Sarah Shepherd	T-TEL office Ghana	In person one-on-one interview
Sharon Tao	Research Adviser	Jonathan Fletcher	T-TEL office Ghana	In person one-on-one interview
SPAs	T-TEL staff working with CoEs on teaching practice component	Abdul Kadiri	T-TEL office Ghana	One-on-one interview
TLAs	T-TEL staff working with CoEs on TPD component	Jonathan Fletcher	T-TEL office Ghana	Focus Group
Bea-Noble Rogers	Lead Adviser for TPD and Core Coaching Component.	Jonathan Fletcher	Home via skype	One-on-one interview
Professor Frederick Ocansey	Director, Institute of Education, UCC	Jonathan Fletcher	UCC	In person one-on-one interview

Name of Stakeholder	Position	Interviewed by	Location	Method of Interview
Dr. Eric Anane	Institute of Education, UCC	Jonathan Fletcher	UCC	In person one-on-one interview
Dr. Christine Adu Yeboah	Writer, UCC	Jonathan Fletcher	Office	On-line
Dr. D. D. Agyei	Director, Centre for Teaching Support, UCC	Jonathan Fletcher	UCC	Telephone
Jerry Sarfo	Deputy Executive Secretary, NCTE	Jonathan Fletcher	NCTE Office, Accra -Ghana	In person one-on-one interview
Emmanuel Duku	Senior Assistant Secretary, NAB	Jonathan Fletcher	NAB Office, Accra - Ghana	In person one-on-one interview
Sister Elizabeth Amoako-Arhen	President, PRINCOF	Jonathan Fletcher	Office	Telephone
Dr. Harriet Amui	Principal & Writer, PWTC, Aburi	Jonathan Fletcher	Office	On-line
Emmanuel Aboagye	Deputy Executive Secretary, NTC	Jonathan Fletcher	Office	On-line
Eric Ofosu Dwamena	Writer, UEW	Jonathan Fletcher	Office	On-line

Table 3: The Interviews at Colleges of Education

Location	Students	Tutors	PDCs	TPCs	Vice	Totals
Ada College	12	3	2	1	1	19
Mampong Technical College	8	1	2	1	1	13
Mount Mary's College	10	2	1	1	1	15
St.Monica's College	8	2	1	1	1	13
Wesley College	8	3	1	1	0	13
Totals	46	11	7	5	4	73

Source: Field Data, 2016

In all cases the student interviews were carried out as small group discussions of at least 4 students. The TLA and SPA interviews were also focus group interviews. All other stakeholder interviews were on a one-on-one basis, with the exception of two male PDCs, at Mampong Technical College, who wanted to be interviewed together.

3.3   College visits

How the colleges were chosen

The colleges made available to visit were decided by time restraints of the evaluators' ability to travel before the end of the school term. As a result, only 5 colleges (selected from two zones) were visited over a 3-day period, and all these colleges were in the south of Ghana, within a day's driving distance of Accra or Kumasi. The evaluators were given a list of Colleges of Education in these areas with an overall description of performance. Five colleges were then chosen, St. Monica's (ASHBA) and Ada (Greater Accra/Eastern) with stronger performance, and three that had lower performance – Mampong Technical (ASHBA), Mount Mary (Greater Accra/Eastern)

and Wesley College (ASHBA). There was also a range of all male, all female, and mixed gender colleges chosen.

How the interviewees at the colleges were chosen

The TLAS arranged the interviews at the chosen colleges and supported one of the evaluators as she visited the colleges. The evaluation team stated that at each college two PDCs, two TPCs, five Tutors and ten students would be available for interview. Due to examinations the choice of tutors and students was in the most part random due to whoever was available, which ensured that not just the best tutors and students were interviewed. At each college a mixture of stronger tutors and less-motivated or skilled tutors were interviewed.

How the interviews were conducted

The evaluator introduced herself as an independent evaluator not working for T-TEL, or the Government or Ghana. Honest and frank responses were requested and the reasons for this given. The objectives of the evaluation were also explained in detail. Throughout the interviews the evaluator ensured that the interviewees understood the questions, or asked if they had their own questions or comments. The interview instruments were designed by the evaluators and were based on the evaluation terms of reference and guiding questions. Questions were also included that were raised through the evaluator's desk review of the T-TEL materials and reports. Similar instruments with similar items had been used by T-TEL Ghana researchers and had been found appropriate in earlier studies. Even so, the interview instruments for the evaluation generally, were used flexibly, allowing for follow up questions.

3.4 Challenges of the Evaluation Methodology

There were some aspects of the evaluation process that restricted the evaluators gaining all the information.

Interviews at Colleges of Education

Due to the time of the evaluation in the school year, it was difficult to gain access to students. Students were engaged in exams during the week that interviews took place at Colleges of Education so time was limited. Access to 3rd year students was impossible as they were out in the field on their teaching practice.

The majority of students and some of the tutors were very reluctant to speak openly during the interviews for the first 15 or 20 minutes. This often meant that some of the answers to earlier questions were not accurate. More detailed answers, with discussions about challenges and strengths came through in the later questions. This was not an issue with PDCs, TPCs and Vice Principals.

Focus Group Student Interviews at Colleges of Education

In the groups of students where both males and females were present, the males dominated the conversation. Even when questions were directed to only the females, there was hesitancy from the female students to answer fully. In the all-female groups this was not an issue.

There were also too many questions for the student group interviews. The questions were designed for one-on-one interviews but time restrictions meant that group interviews took place. Therefore, some questions were not asked.

It was also difficult to know the thoughts of all participants in the group interviews as once one student made a comment, all the other students would just agree and not offer their own responses, or just repeat the first student's comments.

The Interview Questions

As mentioned above, the interview questions were designed around the Terms of Reference and served as a strong guide to interviews, but the order in which the questions were answered depended somewhat on the flow of the conversation. Sometimes answers to other questions came out in different questions. In a few interviews some questions were not answered due to time restrictions or lack of interviewee understanding.

Some of the questions in the interview asked the interviewee to give a number to describe the ease of use of the materials, or the helpfulness of the training. This was a difficult concept for many interviewees. Many would respond with 5 – very useful – but then comments later in the interview would suggest their opinion was otherwise. Instead of ranking with numbers interviewees should have been given four statements to choose from.

It became apparent during the interviews that some important questions were missing, so these were added into the script at the last minute. One question was asking students for their input regarding any changes in tutors' use of teaching strategies. When students were found struggling with this question, the evaluators asked for a percentage of the week that the tutor used lecture method and interactive strategies. A question about the role of the mentor was also added in.

Only the TPCs and students were asked by the evaluators about the Teaching Practice book, when it would have been very beneficial to hear from all tutors regarding the TP books.

3.5   Desk Review of *TPD Materials* and *Teaching Practice Handbook*

All seven books that were the subject of the evaluation were studied for analysis of the contents to see how these were aligned to the contents of the DBE curriculum, to determine the relevance and appropriateness of the materials. Links between the student teacher handbooks and the tutor handbooks on the various themes were also examined. Evidence in the handbooks was gathered against relevant indicators of success of the T-TEL professional development teaching practice enhancement programmes. To address the future uses of the materials, an analysis was conducted of the four main pillars of the DBE curriculum which had been linked to the national Teaching Standards.

The main strength of this approach was the amount of material covered within a week and the easy access to other materials that made reference to the materials under study. This strength ironically led to the greatest challenge of sifting through so many different documents to link pieces of evidence. This challenge was met by mapping the research questions onto each document and indicating possible answers to the questions.

3.6   Desk Review of other documents and reports

A similar approach was used to work with the numerous reports the evaluators had access to. Studying these documents in conjunction with the TPD and TP materials made it somewhat easier to understand the various reports and why access to them had been given. Pieces were put together much more quickly than had been the case with the handbooks. Here too, the main challenges were the volume of information that was available and the limited space and time in which to make sense of the information and use it to answer the questions posed. Using the evaluation questions helped the evaluators to summarise the information in reasonable time.

4   Findings and Discussions

This section discusses how well the T-TEL materials enable Colleges of Education to meet the programme's objectives, and how T-TEL can strengthen the development and implementation of forthcoming materials.

The findings of the evaluation of the *TPD materials* are presented first, followed by the findings of the evaluation of the *Teaching Practice handbooks*. Each set of materials is evaluated in terms of its appropriateness and relevance, usability, potential for impact and sustainability. Each evaluation criterion is reported on in terms of positive findings and challenges identified.

4.1   Tutor Professional Development Materials

4.1.1   Appropriateness and Relevance of the TPD materials to the professional development of tutors

The *TPD materials* were designed to support the implementation of a specific model of tutor professional development. This model is a college-based model, aiming to implement reflective practice, through weekly Professional Development Sessions (PDS) for all tutors in a CoE, in conjunction with classroom implementation and peer support. The PD sessions are facilitated by two staff members nominated as ''Professional Development Coordinators'' (PDCs). The model combines these college-based sessions with coaching - for PDCs and tutors - which is currently provided by T-TEL staff (the Teaching and Learning Advisers (TLA) (see Figure 2 below).

The *TPD materials* are developed for use in the PD sessions and to scaffold classroom implementation. They are structured as a series of themes. For each theme, the materials include a *Handbook for PDCs*, and a *PD Guide for Tutors*. As well as supporting a tutors' participation during the weekly PDS, 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 to examples taken from the DBE Curriculum, and contains "Plan and Practise Together" activities during which tutors plan for classroom teaching.

To date, T-TEL has developed materials for 6 themes, and 4 have been implemented by CoEs (Creative Approaches, Questioning, Talk for Learning, Group Work). Themes 1 and 2 were implemented during Semester 1 (October to January 2015/6) and themes 3 and 4 were implemented during Semester 2 (March to June 2016). Each theme includes five or six 'teaching strategies', with one strategy for each weekly PDS. The themes have been deliberately selected to:

- Strengthen the delivery of the current DBE curriculum as intended by the curriculum[1];
- Strengthen areas of the DBE curriculum that currently get too little attention (e.g. pedagogy; subject-specific pedagogy);
- Model approaches that have the most impact on children's learning, as evidenced by research;

---

[1] The DBE curriculum (2014) aims to produce teachers who are *"facilitators of learning"* and *"creative researchers in the classroom, i.e. solving problems through action research"*, with methods of CoE-level teaching that *"gives priority to problem-solving, decision making, critical and reflective thinking"*, as well as *"[college] student-centred"* approaches; where *"in very few cases, the lecture method or unilateral interaction approach will be adopted"*, and there is a special emphasis on "practical and tutorial sessions".

- Focus on subjects that are GoG priorities (English; maths; science), as well as strengthening those areas across the curriculum.

Annex 1 presents a matrix that lists priority areas identified in stakeholder workshops, and (bearing in mind international research outcomes) maps these onto a 12 theme structure for the TPD programme.

At the beginning of each Semester, the T-TEL TLAs introduce all the PDCs from 38 CoEs[2] to the two new themes to be run that Semester, focusing on the use of the materials to run an effective PD programme in CoEs. Supported by the materials, PDCs then facilitate weekly professional development sessions for all tutors in their colleges throughout the semester.

Versions of the tutor resources were adapted for use by tutors with student teachers (focusing on the same strategies, but aimed at the teacher education curriculum). These have not yet been implemented, as the possibility for widespread implementation depends on the details of the new curriculum. Figure 2 demonstrates how the materials are intended to be used at each level of the professional development process.

Figure 2: The Coaching Model

---
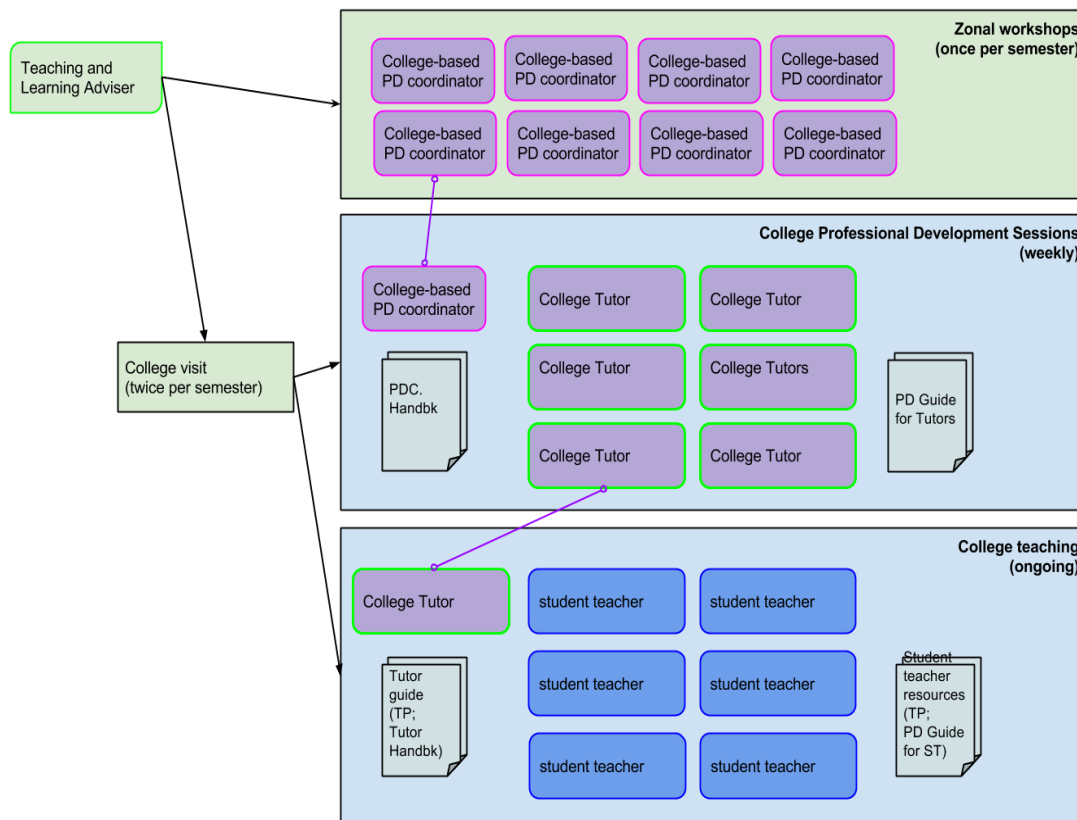
[2]   At the time of the materials evaluation, T-TEL was working with 38 CoEs. Since June 2016, T-TEL has been working with 40 CoEs.

Positives

The themes for tutor professional development

The selection of themes for the *TPD materials* drew on proposals made by stakeholder processes during the inception, and was informed by international research. There is a body of evidence from international research of the impact of these strategies on learning (e.g. Westbrook et al., 2013; Nag et al., 2014), suggesting these are important strategies for tutors (and for student teachers) to know about and be able to incorporate into their teaching.

The evaluators note, however, that whilst the research evidence on learning cited by T-TEL includes influential systematic literature reviews and research on education in developing countries, additional research on effective teaching and learning from well-functioning and well-resourced learning environments was also taken into account. It is our opinion that the selection of themes and activities should be based on the success of learning strategies in Ghanaian Colleges of Education and basic education school classrooms, and that where possible effective practitioners should be involved in the development of materials. Moreover, the materials should be trialled in a sample of colleges. A possible absence of existing evidence of effectiveness of teaching and learning strategies, points to a potential role T-TEL could play in trialling learning materials and testing the effectiveness of particular learning strategies, and disseminating the outcomes.

Regular Weekly Professional Development Sessions

Prior to the T-TEL TPD sessions, that occur every week for 1.5 to 2 hours, tutors did not have access to any regular and comprehensive professional development. The introduction of the T-TEL programme has encouraged Colleges of Education to make space in their timetables to meet as a whole and improve their practice together. This is a significant improvement.

The requirement for colleges and tutors to dedicate this time and energy is appropriate and manageable. Each college visited on the evaluation was able to make a two-hour slot of time available for all tutors to meet and attendance rates have been good. All 5 colleges visited as part of this evaluation stated that tutor attendance was above 60% at every PD session, and most were over 80%. This finding is supported by T-TEL's own Monitoring and Evaluation data. The T-TEL Tutor Professional Development Report (2015/2016; T-TEL, 2016c) notes that during the first year of implementation:

- Collectively, the CoEs completed 822 PD sessions out of a maximum of 836, (i.e. 98% completion rate) focusing on TPD Themes 1‑4 (Creative Approaches, Questioning, Talk for Learning, Group Work).
- Each session was typically attended by 1,100 tutors nationwide, equivalent to about 68% engaging with PD once per week.
- However, the high average attendance in Year 1 masks a sharp downwards trend in attendance. The typical attendance dropped from 1,150 to 1,000 tutors (equivalent to from 73% to 63%). Also average attendance varied between CoEs, ranging between 44% and 84%.

The *TPD materials* are very detailed in terms of the steps PDCs should go through at each PDS. All the TLAs are positive about the relevance and appropriateness of the approach and relevance of the *TPD materials* to the professional development sessions, as a result of the detail provided.

The PDCs are well prepared to facilitate PD sessions:

Almost all PDCs interviewed for this evaluation said that the T-TEL workshops held twice a year were very useful in preparing them to facilitate the PD sessions. PDCs said that they had been through every session; with telephone and in-person support of the TLAs, they felt well prepared to lead sessions.

The PDCs have become confident in facilitation and professional development:

The majority of PDCs (86%) interviewed for this evaluation said that the workshops by T-TEL had prepared them well to facilitate the PDC. And, as Table 4 below shows, the same proportion of interviewed PDCs said that the PDC professional development and experience of running PDC had increased their skills as a facilitator. The T-TEL materials, along with workshops and support from TLAs, have increased the capacity of the PDCs tremendously. This is confirmed by the PDC focus group discussions facilitated by T-TEL in February 2016 as part of T-TEL's internal M&E, as well as T-TEL's own Year 1 Monitoring and Evaluation report (T-TEL, 2016c). The PDCs have benefited greatly from being part of the T-TEL programme:

> *"Many [PDC] spoke about how they feel like they are developing themselves professionally, learning about new ideas and concepts, building their leadership abilities, enjoying the collegiality of meeting PDCs from other colleges, feeling appreciated by their colleagues and principals, and building a sense of confidence that many did not have before. There is a palpable sense of pride amongst most PDCs and it will be important to nurture and capitalise on this in the future."* (T-TEL, 2016a: p 3)

Levels of tutor motivation at PD sessions

Almost 30% of all comments from interviewees about the PD sessions stated that tutors enjoyed the weekly PD sessions and were motivated by them. Other positive statements made by interviews noted that:

- Tutors are forced to talk more and participate in activities with each other.
- The tutors are forming strong professional relationships with each other that will enhance the effectiveness of the college.
- PD sessions have also allowed staff members to get to know each other and have improved broader relationships across the college campus. Tutors who had never spoken to each other are now talking and some tutors are even socialising with each other whereas before they were not.

The PD sessions were designed to prepare the tutors to deliver their lessons:

A very high proportion (91%) of tutors interviewed for this evaluation stated that PD sessions prepared them well to teach their classes using the T-TEL strategies. Later in this report (section 4.1.2), tutors 'comments that seem to contradict this finding about the PD sessions, and where tutors expressed a lack of confidence in their abilities to implement the teaching strategies explored in the PDS, will be discussed. At this point in the report, it is sufficient to note that it is the opinion of the evaluators that although the PD sessions apparently provided effective PD for the tutors, and that they may have understood the strategies and how the latter can work in the classroom, the process of actually implementing the strategies in their classrooms on a regular basis is far more difficult, and constrained by wider factors. In other words, while the PDS themselves scaffold classroom practice through extensive planning and reflection periods, as well as encouragement of peer support, it may be the case that such

elements need to be strengthened further. Traditional professional development can be ineffective, despite the usefulness of workshops, because the workshop may not support tutors sufficiently for the stage of learning with the steepest part of the learning curve: implementation. In the same way that learning **about** how to swim is easier than actually learning **how to** swim, employing a teaching strategy in the classroom is more difficult than learning about the strategy itself. This is discussed more fully in section 4.1.2 of this report.

Management provided support to PD sessions

Vice-principals commented positively on the provision of refreshments more often than tutors. Although this is not easy for all CoEs to do, the vice-principals interviewed noted that it is a positive way in which they are supporting the programme.

Table 4: Positive comments from interviewees about the PD sessions

Positives about the trainings / PD sessions	# of PDCs	# of Tutors	# of VPs	Totals
Good attendance in PD sessions	5	0	0	5
Gained confidence in facilitation skills	5	1	0	6
Tutors are motivated by the PD sessions	0	1	1	2
Tutors enjoy the sessions	5	4	0	9
VP/P very supportive	4	0	2	6
Tutors are forced to speak and participate more	0	1	0	1
The tutors are forming stronger relationships	2	2	1	5
Tutors are learning from each other	0	0	1	1
Refreshments are provided by school	1	0	4	5
T & L materials are provided by school	2	0	0	2
TLA supportive	2	0	0	2
PD sessions are good stress relief	0	1	0	1

Challenges

The PDC focus group discussions led by T-TEL in February 2016 concluded that there were many challenges for PDCs associated with leading the PD sessions:

> *"The most salient challenges entailed the opportunity cost of running the sessions (many PDCs have had to forgo second jobs/businesses in order to plan for sessions), lack of certification/allowance to make up for financial losses, the stress involved in preparing and 'presenting' in front of critical colleagues, the exhaustion felt after finishing a session (and then having to do it again just a week later), the lack of colleague/principal appreciation and support, and in some cases, explicit hostility from colleagues who believe that PDCs are earning money for all of this extra time and effort."* (T-TEL, 2016a: p3).

This evaluation made similar findings with regard to challenges with the PDC model. These emerged as recommendations from college staff on how to improve the TPD, and are presented in Table 5 below.

Table 5: Recommendations by interviewees of how to improve the T-TEL *TPD*

Suggestions for workshops/PD sessions/ training	# of PDC	# of Tutors	# of VPs	Totals
Reduce amount of content in each college-based PD session	4	2	4	10
Sponsorship/allowances for tutors	1	4	2	7
Reduce content in the PDC training workshops	3	1	3	7
Need T & L materials for PD sessions	2	2	2	6
Need support with motivating tutors (including attendance)	3	0	2	5
More clarity about the sustainability of the programme	1	1	2	4
Ipads needed for evaluations	4	0	0	4
Certification programme	2	2	0	4
More support for how principals can support tutors	0	0	1	1
More involvement from principals	2	0	0	2

Not new strategies, more of a revision

The majority of tutors interviewed considered that the *TPD materials* and PDS were mostly a review of strategies that they already knew about. This was something that many tutors seem proud of and maybe implied that they thought they did not need the extra professional development on these strategies. However, the evaluators believe that whilst tutors have heard of these strategies before, and many have even had training about them over the years, their current level of pedagogic knowledge may, to some extent, be limited to knowing the strategies and understanding what they are. Later in this report, the challenges tutors face in turning this knowledge about, and understanding of, pedagogy into actual practice, will be discussed.

Too much content covered

As shown in Table 5, 20% of recommendations by interviewees stated that the PD sessions try to cover too much material, and that tutors would like to learn about fewer strategies and get good at them before moving on. PDCs, tutors and vice-principals agree that too much is covered in the workshops. Tutors need more time, and more repetition, to fully understand how the strategies work, and to be able to implement them well with a positive impact on student learning.

Poor motivation to participate

24% of comments were related to the need for some motivation for taking part in what are still seen to be ''T-TEL programme activities'' within the CoEs. Some tutors also have second jobs and must miss work to attend the PD sessions. 14% of comments suggested financial motivation for tutors, whereas 8% of comments stated that the tutors would like to receive some qualification or certification for completing the professional development sessions.

Support of principals

In colleges visited where the vice-principal or principal appeared motivated and knowledgeable about the TPD sessions and materials, the tutors seemed to be more motivated and more likely to implement. 4% of recommendation comments were asking for more support from college administration. The positive relationship between strong support of the college principal and tutors' motivation to attend PDS has been consistently noted in T-TEL's monitoring of the TPD (T-TEL 2016a, b and c). On average, principals attended (for some or part of the session) in 23% of the PDS (T-TEL, 2016c). In about 25% of the CoEs, the principal did not attend any of the sessions. Vice-principals were present in 61% of the sessions. There appears to be scope for

increased involvement of principals and vice-principals to enhance the motivation of tutors (T-TEL, 2016c).

Support of principals is not just evident in tutors' attitudes towards the PDC, and their attendance. 12% of recommendation comments referred to how difficult it is for tutors to implement some of the strategies (games for example) without some basic TLMs like pens and large pieces of paper. If tutors get the full support of their principal, they might be able to implement the use of strategies that require TLMs. As one stakeholder observed "the principals hold the key to the success of implementation of the T-TEL strategies".

4.1.2   What is the appropriateness and relevance of the content of the *TPD materials* in relation to the daily practice for tutors in CoEs?

This section discusses how appropriate and relevant the *TPD materials* (both in terms of subject content and pedagogical content) are for tutors, their daily practice and the teaching and learning context of CoEs in Ghana.

Interviews with various stakeholders described the context in which tutors are working as challenging. To be effective, *TPD materials* therefore need to be appropriate to the realities of teaching and learning in the Colleges of Education in Ghana. In particular, tutors noted the realities of large class sizes, fixed furniture, general lack of TLMs, pressure for tutors to get students to pass exams, overloaded timetables in certain subjects, and the fact that many student teachers lack foundational content knowledge.

Positives

Pedagogical strategies are relevant to tutors in Ghana

The pedagogical approaches covered by the *TPD materials* are applauded by nearly all the stakeholders interviewed. Regarding the appropriateness of the *TPD materials*, the responses from tutors were mixed, and dependent on the tutors' subject specialism. For example, tutors of *content* courses argue that the delivery modes advocated in the *TPD materials* are out of sync with the quantum of work and assessment practices in the CoEs. On the other hand, tutors of *method* courses are enthusiastic about the use of the *TPD materials* because the content and approaches support the student teachers' preparation towards the end of semester examinations for their units. The area of the DBE curriculum that tutors teach and mode of assessment therefore is a key determinant of tutors' perceived relevance of the *TPD materials.*

Some strategies are easier to use in CoE classrooms than others

As shown in the Table 6 below some content or strategies have been more easily understood, remembered, and therefore possibly implemented than others.

Group work appears to be a popular strategy that was mentioned 17 times when asked about what has been learnt. Think-Pair-Share and Questioning were also mentioned several times. The value of these strategies may be their relevance for use in large classes, with limited or no teaching and learning materials. It is also apparent from talking with student teachers that group work and questioning are playing a role in the college classrooms now. The frequency of response, however, may have been a result of the timing of the evaluation, as group work had been covered most recently so may have been fresh in tutor's minds.

Collaborative group work is necessary especially when the purpose of the session is to develop conceptual understanding or strategies for problem solving of more challenging problems. In these cases, learners need to share alternative views, interpretations or approaches. As Jaworski (1994) points out, the social environment of the classroom (such as team work in a competition)

provides fertile grounds for meaningful discussion and is good at throwing up constraints which challenge individual perceptions. This observation has been confirmed in a number of studies (e.g. Swan, 2005). Learners often have different views of a situation. If these views seem incompatible, there is a need for reconciliation that can lead to the social mediation of individual knowledge. Through discussion or argument, the participants negotiate new positions that lead to the development of shared meanings. Such negotiation is not bargaining, but a genuine offering of individual perspectives and meanings for consideration by others. It involves making an effort to listen to and understand other perspectives. As a result, common, or 'taken-as-shared' meanings develop in a classroom (Watson et al., 2003).

Additionally, as mentioned in the PDCs' focus group discussions completed by T-TEL in February 2016 as part of the T-TEL internal M&E, teaching with more interactive strategies will eventually make teaching easier. The T-TEL report notes **"Several PDCs discussed that although planning may take some extra time, the benefit is that delivery in class is much easier ('the students do all the work!' or 'I don't have to memorise all the content now'). This rationale – that taking a bit of extra time will reap great dividends in the future – is another message that could be seeded in future handbooks."** (T-TEL 2016a, p. 3).

Table 6: Aspects of the TPD materials interviewees found easy to implement

Positives about TPD content in general	# of PDC	# of TPC	# of Tutors	# of student groups
Use of group work in class	4	2	5	6
Use of games	2	0	2	1
Use of Think-Pair-Share	1	1	4	1
Use of story telling	0	0	1	0
Use of role play	0	0	0	0
Use of discussion	0	0	0	2
Use of research projects	0	0	0	2
Use of questioning	1	1	2	2
Use of cartoons	0	0	3	0
Strategies build on what students know	0	0	1	0
Competitions in activities encourages student participation	2	0	0	0
Like the more simplified lesson planning format	0	0	1	0
Correct understanding of how to use the strategy examples	4	0	2	0

Source: Field Data, 2016

Some tutors are using the lesson examples correctly

Some tutors mentioned that they have been taught how to use the T-TEL activity examples and then apply a strategy to their own lesson content. This finding is supported by the T-TEL PDCs' focus group discussion report:

> *"There are several other inspiring stories that not only demonstrate tutor satisfaction with the content of the handbooks, but how students value and are starting to model the new methods as well. These stories can be shared with the T-TEL communications team, and could also be used in future PD handbooks/videos."* (T-TEL 2016a: p3).

The TPD M&E survey data also provides evidence that tutors are implementing strategies in their teaching:

- TLA classroom support indicates that in almost 70% of the lessons supported in Semester 2, the tutor implemented at least one teaching strategy drawn from the TPD programme.
- In the majority of cases, the teaching strategy implemented originates from the Themes used in the same Semester (S2; Talk and Group Work), suggesting a direct link between the PD sessions and the uptake of strategies in classroom practice. (T-TEL 2016a).

Some of the DBE curriculum content is covered through lesson examples and tutor PD activities

The *TPD materials* draw on a range of subjects across the DBE (General Programme) curriculum for lesson examples and activities. Although only one theme from the *TPD materials* was analysed as a sample from the four themes[3] , the theme 3 *TPD material* demonstrates how varied the subject content is, and that all DBE year groups are covered to varying degrees; 13 subject areas are reached through 71 lesson examples. As specified by the T-TEL Terms of Reference and logframe which prioritises English, maths and science, the T1 and T2 materials limited lesson examples from these three subjects. However, following feedback from tutors and requests for more examples from across the curriculum, the materials for T3 and T4 draw on all subject areas of the curriculum, while maintaining a focus on the use of English, mathematics, and science within those subjects.

Table 7: Coverage of DBE curriculum subjects in activity examples in T3 *TPD guide*

SUBJECT	1st Year Course	Total # of T-TEL activities using this curriculum area.	2nd Year Course	Total # of T-TEL activities using this curriculum area.	3rd Year Course	Total # of T-TEL activities using this curriculum area.	Grand Total # of T-TEL activities using this curriculum area.
ICT	ICT 211	8	GNS 211	1		0	9
PE	PRA 121	1	PRA 216	2			
	PRA 211	1	PRA 225	1			5
HIV/AIDS	GNS 121	3					
Vocational	FVH 122	1		0		0	4
English Language		0	FDC 211	1		0	1
Visual Arts	FVA 111	1	FVA 211	1		0	
			FVA 225	1		0	3
RME	FDC 119	2	FDC 219	1		0	3
Education	EPS 111	2	EPS 222	1			3
Environmental & Social Studies	FDC 118	6	FDC 218	2			8
	FDC 128	3		0		0	3
Integrated Science	FDC 124	5	FDC 224	4			
	FDC 114	5				0	14
Mathematics	FDC 112	12			FDC 312	1	
	FDC 122	4		0		0	17
Ghanaian language	FDC 123	1					1
Totals		**55**		**15**		**1**	**71**

---

[3] Time restrictions did not allow the evaluation team to complete this exercise for all 4 Themes. Furthermore, the analysis will need to be repeated by T-TEL in the near future, but against the new national curriculum framework for teacher education.

Challenges

TPD materials are seen as not matching the UCC exams, and so are ''extra work''

30% of comments regarding how to improve T-TEL content (Table 9 below) were related to the fact that tutors and students see *TPD materials* as being extra work, or extra content that is not covered in the exams. If tutors do not think T-TEL materials support them in terms of covering the DBE curriculum, then clearly the materials will not be considered relevant or appropriate, other than by the most motivated tutors. Many respondents made reference to assessment and argued that "if the assessment can be changed to suit the approaches, then the materials would be appropriate for both content and methods."

Subject content is different from what tutors teach

Some interviewees stated that the DBE content referred to in the materials was not relevant to them because the lesson examples were not the subject that they taught. For example, in T1 and T2, all the lesson examples that show tutors how to use the strategies in class, were maths, English or science. Tutors who were not teaching those subjects, or who were not teaching that particular lesson, said that they could not use that strategy in class, as they did not have any relevant lesson examples.

As discussed above, T-TEL responded to this concern by including more examples from a variety of subjects in T3 & T4. Even so, as Table 7 above shows, even with more lesson examples from a wider range of subjects, some subject areas are still covered more extensively than others; for example, 24% of lesson examples are mathematics, and 20% are integrated science. It must be noted that T-TEL materials are not intended to (nor can they) provide full curriculum coverage or schemes of work for the entire curriculum. Nevertheless, some tutors seem to think that the *TPD materials* are an incomplete scheme of work, it seems important to improve communication around the nature of the professional development programme that needs to be provided.

While it is important for college tutors to develop their practice by working together across subjects, it is also important to note here that teachers, in general, feel more comfortable when trying out new ideas using content that they already feel most comfortable with. Programmes need to take care to not add another layer of complexity to the learning process, by exposing teachers to subject content that they do not understand, which is likely to confuse and complicate the learning experience. Developing pedagogic and curriculum expertise will be easier if taught through the comfort of their subject specialism. Professional development that focuses on teachers analysing the specific skill and concept they will teach in their discipline is not only well-received by teachers, but has also been shown to improve both teacher practice and student learning (Bland de la Alas and Smith, 2007; Carpenter et al., 1989; Cohen and Hill, 2001; Lieberman and Wood, 2001; Merek and Methven, 1991; Saxe, Gearhart, and Nasir, 2001; Wenglinksky, 2000; McGill-Franzen et al., 1999; Darling-Hammond et al., 2009).

Coverage of the Educational Studies Curriculum Content is low for the *TPD materials*

The evaluation team cross-referenced the objectives of all the Education and Professional Studies (EPS) courses (educational studies) offered by the Colleges of Education to see how much content is covered. Table 8 below shows the results:

Table 8: Coverage of EPS course content by T-TEL materials

Year	Course	Content Covered by T-TEL Materials
1st	EPS 111: Principles and Practice of Education:	NONE

Year	Course	Content Covered by T-TEL Materials
2nd	EPS 211: Principles and Methods of Teaching in the Primary School	All covered through the Teaching Practice Handbook and T3, T4.
2nd	221: Educating the Individual with Special Needs:	NONE
2nd	EPS 222: Trends in Education in School Management in Ghana:	NONE
3rd	EPS 311 Introduction into Guidance and Counselling:	NONE
N/A	EPS Assessment in Basic School Level	N/A

Although two courses are well covered by the *Teaching Practice handbooks, the TPD materials* do not cover the EPS content, and do not specifically refer to them.

Implementation of strategies in class takes too long

11% of comments by interviewees also described the challenges of their overloaded curriculum and how they struggle to teach all the content, even when using the lecture method. When using the more interactive methods of teaching, there is more talking, more moving around, more discussion, and all of this takes time, especially as tutors are still gaining confidence and learning how to manage the strategies effectively. Tutors are concerned that the materials involve strategies that take too long, and that they may not be able to cover enough ground to enable student teachers to pass examinations.

Tutors also commented that planning how to implement the strategies was also time consuming, a concern also mentioned by PDCs during the T-TEL PDCs' focus discussions:

> *"PDCs mentioned that another barrier to tutors applying new methods is the amount of time and thought it takes to plan for their use. Some tutors complained about the Activity Plan (how it is laborious and too similar to the lowly lesson plans used at the basic level)" (*T-TEL 2016a: p3)

Strategies require TLMs that are not available

A number of tutors expressed concern that many of the strategies need teaching and learning materials in order to be able to implement them in the classroom. For example, a sorting or ordering game as suggested in T3 would need paper and pens at the very least. One tutor who was very motivated to implement the T-TEL strategies told the evaluators "I have cut up every month of my calendar now and used the back" to make TLMs. The importance of low cost TLMs and the power of tutor commitment are both evident in this comment.

Teaching strategies and examples are not Ghanaian

A few respondents to this evaluation commented that *TPD materials* are not Ghanaian in context (7% comments). A related point, about using locally relevant terminology and exemplars was also raised in the preliminary findings from the PDC focus group research carried out by T-TEL in February 2016.

> *"More significantly, it was clear that there were many references made by writers that were not at all relevant to the Ghanaian context. For example, one PDC pointed out the example of, "Use Blu-Tac[k] to stick the poster on the wall". People do not use Blu-Tac[k] in Ghana, and some PDCs were left feeling embarrassed when challenged on this point."* (T-TEL 2016 a: 3)

However, the evaluators consider that this may need further investigation. When interviewees were questioned further about this, they reported one strategy example that they personally did

not like, or did not understand, and stated that it was not appropriate for the Ghanaian context. For example, one tutor did not enjoy mind mapping, and stated that this was not a strategy that is Ghanaian. We suspect that this view may be a reflection on how the materials were used during the PD sessions, rather than to do with the strategy as such. In T3 and T4 each PD session offered three strands of activities. During the PDC workshops, PDCs were encouraged to just select one strand if they thought that some of the activities were not appropriate for their colleagues. In T-TEL's M&E PD session surveys *(T-TEL, 2016c)* the data shows that across all the colleges, there was not one strand that was not chosen during PD sessions. This suggests that there were no major or widespread issues with the appropriateness of these materials - across Ghana, all were considered relevant by at least some colleges.

Strategies are not suitable for large class sizes

5% of comments also stated that the strategies are difficult to implement in large class sizes. In some colleges class sizes are up to 100 students and so even group work is difficult to manage. Tutors end up managing too many groups, or groups are too large, or there are not enough teaching and learning materials. Conversely, this finding raises additional questions about how CoEs structure the delivery of the teacher education curriculum, particularly as teaching in such large groups may not be appropriate for units on pedagogic practices.

Too much content and pace too fast

2% of comments suggested that tutors would prefer to learn fewer strategies and become confident and competent before moving on to the next strategy. One of the key stakeholders made a similarly strong observation regarding the fast pace at which different aspects of the programme were introduced. This they claimed stunted consolidation. Indeed, this observation is similar to the one made earlier on the volume of work demanded by the materials and the strategies.

Table 9: Respondents' recommendations on how to improve T-TEL content

Suggestions for content	# of PDCs	# of Tutors	# of VPs	Totals
Make T-TEL part of the UCC curriculum/exams	4	8	1	19
More examples of each strategy in all subjects	2	6	0	9
Need T & L materials	3	3	1	8
Make example lessons/activities that are shorter	2	5	0	7
Use Ghanaian Appropriate Activities only	1	4	0	5
More clarity on how to use examples to help plan lessons with different content/age groups	1	3	0	4
More age appropriate examples (CoE)	1	2	0	3
Activities to suit large class sizes	1	2	0	3
Activities to suit fixed furniture	1	0	0	1
Colleges need to be separate from UCC	0	0	1	1
Students need foundational knowledge in subjects in order to teach	0	0	0	1
Support tutors use group work effectively so all students get a chance to lead	0	0	0	1
Some of the more technical subjects are hard to understand for non-experts	0	0	1	1
Focus on 1 strategy and get good at it	0	1	0	1

Source: Field Data, 2016

Support to translate learning in PDS into teaching in their classrooms:

Tutors vary in terms of how well they have been able to implement the new strategies within their own teaching. As has been noted above, this transfer is easier for tutors of 'teaching methods' courses, as the content of the TPD materials is relevant to the content of their DBE units. Some tutors have been able to learn the new strategies easily and implement them well with motivation. Others have taken part enthusiastically in the PD sessions, and learnt a lot about the new strategies, and understand what they are and how they work. But they are not being implemented.

Some tutors suggested that more support is needed to correctly use the lesson examples in the materials. These tutors are probably expecting schemes of work for all courses, which the programme is not intended to provide. It is the evaluators' opinion that this is the underlying issue concerning all the tutors who say they cannot implement the strategies without examples that are relevant to their subject and year group.

The PD sessions and materials give ample opportunities for tutors to learn about the strategies, see examples of the strategy in action, plan their own activity and try it out in the classroom. This whole process is complete with several opportunities to discuss and reflect with colleagues. This thorough process, however, does not seem to be encouraging **all** tutors to fully implement the strategies. Tutors seem fixated on the fact that they would like a complete scheme of work to support their implementation of strategies into their subject area.

It is the opinion of the evaluators that it is this stage, the implementation of strategies, which is the most difficult and most important part of the tutor professional development process. Tutors can enjoy the PD sessions, can understand the strategies, can take part in the planning activities, but if they are not confident enough to implement, or convinced that implementation will lead to something, then the fact that there are not enough examples in their subject area is a convenient excuse. Regardless of whether this is true or not, if tutors are not implementing the strategies, after going through the process laid out in the PD sessions, something more needs to be done.

During the vital implantation stage, initial attempts to use the new strategy will be frustrating and often met with failure. In several case studies, even experienced teachers struggled with a new instructional technique in the beginning (Ermeling, 2010; Joyce and Showers, 1982). Tutors need support and guidance through the awkward performance of early implementation, and attention needs to be given to how the process of implementation changes with more attempts and guidance. When professional development merely describes a skill to teachers, only 10% can transfer it to their practice; however, when teachers are coached through the awkward phase of implementation, 95% can transfer the skill (Bush, 1984; Truesdale, 2003). In fact, studies have shown it takes, on average, 20 separate instances of practice, before a teacher has mastered a new skill, with that number increasing along with the complexity of the skill (Joyce and Showers, 2002). Effective professional development programmes require anywhere from 50 to 80 hours of instruction, practice, and coaching before teachers arrive at mastery (French, 1997; Banilower, 2002; Yoon et al., 2007). The T-TEL programme moves on to a new strategy or a new version of a strategy well before tutors have had time to gain mastery of the previous one.

It is the evaluators' opinion that the *TPD materials* are working well to prepare the PDCs to facilitate the professional development sessions. The evaluators also agree that the *TPD materials* are teaching the tutors about the new strategies so that they understand what they are and how they work in an enjoyable and reflective way. Where the true challenge lies is in the implementation of the learned and understood strategies. The PDS sessions support implementation in the following ways:

- An extended collaborative planning phase (roughly one third to half the time of each PDS), recorded in activity plans.
- Arrangement of peer support during implementation.

- Reflection at the start of each session, based on individual or pair reflections as recorded in the reflection section activity plans.

However, these processes may need strengthening. Moreover, there are very limited opportunities for tutors to be supported, or *coached*, through the implementation process. Through increased coaching, tutors would be supported as they actually try out the newly learnt strategy and with *in the moment* guidance, and post-lesson discussion, the tutor could learn how to keep improving the practice until mastery is achieved. Numerous studies have shown coaching to be successful at changing teacher practice and improving student learning (Showers, 1984; Slinger, 2004; Knight 2007; Batt, 2009; Stephens et al., 2007; Knight and Cornett, 2009).

There is also an issue here of mind set. If tutors do not believe that interactive strategies will improve student teacher and pupil outcomes, then it does not matter if they have heard about the strategy before, they will continue to not "buy in" to the strategy and therefore not implement it, until they are convinced that it will work. To gain a deeper understanding of the mind sets of tutors, this should have been a question in the interviews "Do you believe that these strategies will impact student outcome, and why?" Coaching can provide a process through which to challenge tutors' attitudes to pedagogy, and build evidence with them, of the effectiveness and outcomes of different teaching strategies.

The TPD model will need to be strengthened in terms of developing coaching capacity within the CoEs. TPD would include development for tutors nominated as coaches. College coaches should include Heads of Department, as they are in a position to provide professional support for colleagues, and the sustainability of coaching would be assured beyond T-TEL.

4.1.3 Accessibility and User friendliness: How accessible and easy to use are the *TPD materials*?

Positives

As shown below in Table 10, most PDCs and tutors interviewed stated that the *TPD materials* are accessible and easy to use.

Table 10: Accessibility scores for *TPD materials*

Question: How easy are the TPD materials to use?

Answer	5	4	3	2	1	no answer	Total
Tutors	3	2	2	1	1	2	11
VPs	1	1	2	0	0	0	4
Totals	8	5	6	5	1	2	15

(1= most difficult, 5 very easy)

Interviewees find the structure and organisation of activities easy to use, and they like the way the books flow from one activity to the next. Tutors liked the level of professionalism in the books and felt like they were reading a college textbook. Books are very systematic: In each book, the strategy is introduced through the following sections:

- An introduction to the strategy is given. This covers the **why** of the strategy and the research behind it.
- A practical application of the strategy and points for tutors to consider.
- A section that focuses on gender with the strategy.
- Each PD session has the same structure: Activities, Plan and Practise Together, Teach and Observe and Reflect Together and activity examples.

Challenges

Despite 45% of tutors saying that materials are easy to use, Table 10 shows 18% of tutors stated that the materials were difficult or very difficult to use. The challenges that tutors spoke about were less about the structure and flow of the sections and activities, but more about the density and complexity of language used.

<u>Too much continuous text</u>

Almost 20% of interviewees explained that the *TPD handbooks* contain too much continuous sections of writing and that many find this very difficult to read through and understand. For example, in TPD 3 – Talk for Learning, p20, there are 3 written paragraphs to explain the activity of ordering cards. It is a lot of words, and if one is not comfortable reading dense text one may still not know how to do the activity. This could be reduced to one sentence explaining the reasons behind the strategy, and then a visual picture showing how to do the activity with the example included. This does not even need to be a photograph; a simple drawing would suffice.

Interviewees have suggested that highlighting key information would be preferred, in the form of bullet points, tables, and diagrams. It was also suggested that just one or two sentences were written instead of paragraphs, and just giving the most important information.

<u>Volume of materials is too large</u>

26% interviewee comments about the materials mentioned that they were also discouraged by the number of pages in the books, and the number of books they covered in a short period of time. They have suggested covering less content, and making the books shorter by reducing the text as suggested in the previous paragraph. In addition, it is difficult to get through all the content in a 1.5 or 2-hour session, especially when there is a tendency for PDCs to read through all the text as a whole group.

<u>Complex language</u>

29% of interviewee comments about the materials mentioned that the language was too complex. This was in relation to some technical language that was used in certain lesson examples, the vocabulary of which, is difficult for non-science experts to understand

<u>Too much switching from page to page</u>

14% of interviewee comments about the materials mentioned that there was too much switching between pages, given that activity plans are located at the back of the book. The instruction to cut out the activity plans needs to be reinforced.

<u>Lack of differentiation</u>

Inside the *TPD materials* themselves there is a lack of differentiation for tutors who are coming to the PD sessions with different levels of teaching experience, skills, motivation, and confidence. One tutor raised this as a concern.

See Table 11 below for recommendations to improve the accessibility and ease of use of the materials.

Table 11: Recommendations for improving the *TPD materials*

Suggestions for structure / layout	# of PDCs	# of Tutors	# of VPs	Totals
Simpler language	0	8	2	10

Suggestions for structure / layout	# of PDCs	# of Tutors	# of VPs	Totals
Less volume	1	6	2	9
Less switching around pages	0	4	1	5
More bullet points, diagrams, tables	1	1	1	3
Key parts highlighted	0	2	1	3
Contents Page	1	0	0	1
More summarised writing	0	1	0	1
Differentiated materials - some only need refreshers	0	1	0	1
Less rushed, fewer mistakes	0	1	0	1
Fewer activities in TP handbook	0	1	0	1
Totals	3	20	7	35

It is the evaluators' opinion that some small changes could be made to the materials to make them easier to use and more accessible for some tutors. These small amendments should include:

- more pictorial representations to reduce the amount of text,
- less complex language and
- a reduction of the need to switch from different sections in the book.

These changes, however, are unlikely to improve the implementation rate of tutors, but will make the learning *about* strategies easier. A simplified version of the handbook will also allow the handbooks to be an easier reference guide for tutors who want a quick refresher about a strategy, or to look for a new one to try.

It is also the evaluators' belief, that the materials in their current state are effective for tutors who are confident in their practice, supported by their administration, and motivated to try new strategies. This unfortunately appears to be only about 10 to 15% of tutors. The small changes that we recommend would ideally support those who are weaker in their practice and need some extra encouragement.

4.1.4   Impact

The *TPD materials* are being designed to achieve the following impact (T-TEL, 2016d):

- Tutors routinely use more engaging, interactive, and student-focused instructional methods in their teaching sessions
- Student teachers acquire subject content knowledge and subject pedagogy (especially in English, mathematics, and science) and learn to teach effectively to meet the varied learning needs of school children;
- Student teachers develop the core skills identified in the Policy Framework for Pre-Tertiary Teacher Professional Development and Management (PF-PTTPDM), including using more engaging, interactive, and student-focused instructional methods;
- Materials available in English, mathematics and science that reflect and promote more effective teaching practices in classrooms;

● Coaching programme for College of Education staff to strengthen teacher education, and tutors' ability to teach students how to teach.

Impact of the *TPD materials* on changed tutor practice in their teacher education classrooms

The impact of the *TPD materials* in terms of tutors' use of implementation strategies in class varies. There is a range from never using the strategies in their teaching, to always using some strategies every week. In the opinion of the tutors, more tutors are attempting implementation than are not.

● 18% of tutors interviewed state that they do not use the T-TEL strategies in a typical week.
● 18% of tutors interviewed state that they use the T-TEL strategies between 10 and 20% of a typical week.
● 45% of tutors state that they use the T-TEL strategies between 50 and 80% of the time.
● 18% of tutors interviewed state that they use T-TEL strategies 90 to 100% of a typical week.

The student interviews confirmed that tutors are using new strategies in their class teaching:
● 7% of students interviewed state that tutors are not implementing T-TEL strategies in their classes in a typical week.
● 33% of students interviewed state that tutors are implementing T-TEL strategies in their classes 10 to 40% of a typical week.
● 30% of students interviewed state that tutors are implementing T-TEL strategies in their classes 50 to 80% of a typical week.
● 5% of students interviewed state that tutors are implementing T-TEL strategies in their classes 90 to 100% of a typical week.

An example of the impact that some tutors are seeing in their own classrooms is provided by a PDC interviewed in this evaluation:

> *''It has changed my practice - Initially I would go to the classroom - take a topic - prefer to define concepts, define terms. Now I get response from the students. Now I have realised that they know they know a lot - I have stopped spoon-feeding them. They now do a lot and they learn when they are in charge of their own learning''* (PDC, June 2016, T-TEL Materials Evaluation interview).

Tutors are talking about T-TEL strategies

Two vice-principals who were interviewed said that they could not comment on changes in tutor practice, as they had not seen the tutors teach the T-TEL strategies, but they did mention that they hear tutors talking about T-TEL strategies across the campus. They noted some levels of tutor excitement around the new strategies.

It is encouraging to note that the PD programme supported by the materials is beginning to have an impact on tutor practice. As has been noted earlier in this chapter, however, the possibilities for significant impact on tutors' teaching practice are currently constrained by a range of factors, including the lack of classroom-based coaching for tutors.

Impact of the TPD materials on tutors as professional development coordinators

As noted earlier, PDC recognise the impact that the *TPD materials* and professional development supporting their introduction and implementation have had on PDCs and their capacities to facilitate PD sessions for their colleagues.

Impact of the *TPD materials* on improved learning outcomes for student teachers

Whilst it is not possible to make confident claims about the impact that the *TPD materials for tutors* have had on *student teacher* learning outcomes, from talking with students the evaluation has identified perceived impact on students' participation in learning, which should lead to improvements in learning outcomes, as well as perceptions of increased learning. These should be closely monitored and formally assessed.

Positive impact on student teacher participation in teacher education (% of positive comments out of the total number of **positive** comments)

- Female students are more involved in class (24%)
- Students are talking more in class (13%)
- Students are more responsive in class (10%)
- Students are becoming more independent learners (8%)
- Students are enjoying lessons (7%)
- Students are aware of what they know and do not know (6%)
- Students are more confident in class. (4%)
- Students are learning from each other (1%)
- Student attendance has improved (1%)
- More interaction between males and females (1%)

Positive impact on student teacher learning outcomes (% of stakeholders)

- Students are remembering what they were taught (8%)
- Students are learning more (7%)
- Students want to use the T-TEL strategies in their own classes. (4%)
- Students are using T-TEL strategies, modelled by tutors, outside of class in clubs. (1%)

During one of the interviews at one of the colleges, a student said that she had just approached a difficult question in an exam that very morning, using her memory of a role-play that had occurred in class. She said that she visualised the role-play and then remembered the answer!

The evidence suggesting small changes in student behaviour due to the introduction of more student-centred strategies must be celebrated and shared so that those who are not convinced can start to develop more interest and belief.

4.2   Teaching Practice Handbooks

This section of the report turns to the second set of teaching and learning materials considered by this evaluation: the *Teaching Practice* handbooks.

The *TP Handbook* is organised to support each period of teaching practice in the three years of the DBE. The structure matches the pattern of teaching practice that is already set out by the

DBE curriculum; the first section supports ten days of school placement in DBE Year 1; the second section of the handbook provides activities to implement during six weeks of On-Campus Teaching Practice in Year 2; the third section supports twelve weeks of Off-Campus (school-based) teaching practice proposed for Year 3.

Student teachers are assessed using the Teacher Competencies that are also part of the DBE curriculum, by the mentors at the school level, their tutors at college during visits, and by themselves during informal self-assessments.

4.2.1   Appropriateness and relevance of the *TP Handbooks*

This section discusses whether the *Teaching Practice (TP) Handbook* appropriately supports students in CoEs when they are completing their teaching practice.

Positives

The *TP handbook* supports the students on their teaching practice

Prior to the introduction of the *TP handbook* students were going into schools with no guidance or support. The *TP handbook* has been very well-received and students and tutors have given very positive feedback. During the interviews of students, tutors, PDCs, TPCs and vice-principals, 65 positive comments were made about the *TP handbooks*.

● 26% of those comments state that the *TP handbook* prepared students well for their teaching placements.
● 14% of comments state that the *TP handbook* prepares students to make lively lesson plans.

Teacher competencies are transparent

The general opinion is that the fact that the materials have documented competencies, which though not new had hitherto not been documented in handbooks and textbooks, is a positive development. Each set of activities (day or week) in the handbook has the relevant Teacher Competencies clearly highlighted. This is of key importance to students, who want to know what they are learning. Teaching practice has in the past been a very open exercise, where the experience of the placement is often determined by the motivation of the mentor. With the detailed connections between activities and competencies, even the least supported student teacher can take charge of their learning and understand what they are achieving.

Teaching Practice is supported in all three years of the teacher education programme

Engaging year 1 and year 2 groups in structured activities in the new model is laudable because students are now introduced to the practical component of teacher training from the outset.

The *TP handbook* covers a considerable amount of curriculum content

The course content of Education and Professional Studies (EPS) 211 and Assessment at Basic School is fully covered in the activities in the *TP handbook*. In addition, the *TP handbook* also teaches student teachers about the strategies covered in the student books that are based on TPD handbooks T1, T2, T3, and T4, even if they have not been exposed to the student books yet. The recap lessons serve as a reminder to students, or an introduction to a new idea.

The activities encourage communications with pupils

Many of the activities in the *TP handbook* encourage student teachers to talk to pupils, to work with small groups, and teach parts of, or whole lessons. The first year TP student teachers do not

have much time in school so these activities make sure they make the most of the time they do have and get real experience of working with children.

Peer discussions and reflections build metacognition

Activities that encouraged students to think about what they have learnt, and discuss with a peer, or record in a journal[4] what they have observed, can develop learner autonomy, peer-learning and self-regulation. These skills are particularly important for student teachers entering a teaching force where support and professional development can be extremely limited. Teachers need to be self-reflective and able to learn from their colleagues. The *TP handbook* develops metacognitive skills that benefit students throughout their whole teaching careers.

Support from principals

All the SPAs reported that most principals in their zone support the new teaching practice framework. They estimated that an average of 90% of principals in the Ashanti/Brong Ahafo and Central/ Western zone support the new framework; 85% of them in the Northern zone do; 80% in Eastern/Greater Accra do; and 75% from Volta do.

Challenges

Some of the greatest challenges that prevent the student teachers from getting the most out of the *TP handbook* lie outside the materials themselves.

The timing of the introduction of third year *TP handbook*

Opportunities for the current third year student teachers (2015/2016) to use the *TP Student Handbook Year 3* were extremely limited, and in some cases the books were not made available. This appears to have been associated with the timing of T-TEL's implementation period (June 2015), which only just preceded the new academic year (October 2015).

To ensure a coherent learning programme, T-TEL developed the *TP materials* to support student teachers on Teaching Practice in Years 1, 2 and 3 simultaneously. Given a very tight schedule for materials development and the preparation for implementation, it seemed unlikely from the outset that handbooks for third year students would be in the hands of trained tutors and mentors during the current academic year (2015/2016). However, intense work by writing teams meant that by early January 2016 the *TP Handbooks for Student Teachers* had been prepared and printed for all three year groups. Information provided by writing teams, and field teams indicated that the activities in the *TP Student Handbooks* were directly relevant to third years on Teaching Practice in Semester 2. T-TEL implemented training for TPCs in CoEs, who trained their tutors. The *TP handbooks* were distributed by CoEs to their third years from March 2016 onwards, with tutor training taking place in parallel.

However, this evaluation has found that the *TP Handbooks* were not widely used by third year students. There seem to be several factors that contributed to this.

In many CoEs, the *TP Handbooks* for tutors were introduced too late in the Semester to allow for the students to implement the handbook activities. By April, students were entirely focused on their assessed projects and forthcoming examinations. As one SPA said during a focus group interview for the evaluation: *"because there was some discrepancy with the calendar, some of [students] did not do the activities or go according to the handbook. [For] the year 3 [group] almost 98% did not use the handbook. This is because they were doing their project work, preparing for examination etc. so the book became a white elephant to them."* Therefore, as a consequence of

---

[4]   See Annex 2 for pictures of completed journals Year 1 students

the timing of the introduction of the handbooks within the Year 3 curriculum, most third years that received books, did not find the handbooks relevant or appropriate.

Tutors' reluctance to attend training on the *TP handbooks* and their role in supporting students to implement the activities

There is some evidence that TPCs have found it difficult to encourage other tutors to support third year students on teaching practice. According the SPAs, tutors consider teaching practice to be the responsibility of the TPC. One SPA noted "most of the TPCs are left on their own to take care of for example Year 3 Post-TP and other supervisions". A second SPA observed "when we engaged the TPCs to train their colleague tutors, the tutors were not happy and did not want to partake in the professional development. They were making demands for motivation and explaining that already they are having PD sessions with T-TEL and that they also have their own activities they need to take care of. Some believe T-TEL is wasting their time". Another SPA said "we find it difficult to get other tutors to support our activities."

Tutor resistance to supporting Teaching Practice activities that do not align with the actual TP curriculum at that point in time is understandable. Even so, this finding suggests that T-TEL and Colleges will need to work together more closely in the implementation of all support to TP activities in the academic year 2016/2017.

School Mentors were not trained to support student teachers

A central feature of Teaching Practice within the DBE Curriculum is that the student teacher is supported by a mentor within the teaching practice school. The *TP Handbooks* include a complementary handbook for mentors, and the T-TEL implementation plan includes training for Lead Mentors. However, by the time of this evaluation, the lead mentor training had not yet taken place. As a consequence, mentors were not trained and student teachers reported that many are not prepared to work [5] with students on the activities in the handbook, such as reflecting or planning lessons together.

Additional challenges

- The 'Before Teaching Practice' activities (which are implemented in the CoEs) were too rushed this year. Some of the colleges were very rushed in introducing the *TP materials* to students before they went into school on placement. The first years received their handbooks in the last week of the College term before they went on ten days of school experience during their Semester break in February. Most third years received the books when they were already on teaching practice.
- Some students are in schools on placements without a partner and that prevents them from being able to complete the peer reflection activities.
- Students have also stated that they think the schools should be more involved in assessing the students on their practice.
- Students are under a lot of pressure to pass exams and focus on curriculum content, that their abilities to learn the practical skills of teaching are reduced.
- Students do not have enough time in schools to focus on the practical application of teaching.

It is the evaluators' opinion that the approach and structure of the *TP handbook* is appropriate and relevant for student teachers who are undergoing training in the current teaching practice

---

[5] Student teachers could not comment on whether this was a lack of understanding and training on mentoring these activities, or of motivation.

model in CoEs. The content is relevant, the activities are effective and the student teachers find the handbooks, in isolation, supportive. The external factors, which are not specific to the content of the *TP handbook*, that will support the complete success of the *TP handbook*, need attention. This refers to the training of the mentors, the presence of a peer to work with, and a better-planned introduction of the books to the students, including timetable access for the Year 2 on campus teaching practice.

4.2.2 Accessibility and Use of *TP materials* for students on teaching practice

This section discusses how easy to use and accessible the students found the *Student Teacher TP handbook.*

Positives

Layout/Structure

The feedback from the interviews with regards to the *TP Handbook* was very positive. Students in particular were very happy with the handbook, its layout, structure, and ease of use. As shown in Table 12 below, 17 out of 46 students (37%) rated the *TP handbook* as either "Very Easy" or "Easy" to use.

Table 12: Accessibility scores for *TP materials*

How easy to use are the TP materials?

Answer	5	4	3	2	1	no answer	Total
Students	9	8	7	8	10	4	46

(1= most difficult, 5 very easy)

In addition, when asked about positives about T-TEL programme in general, 12% of positive comments made by students, tutors, PDCs, TPCs and vice-principals, states that the *TP handbook* is easy to use.

Each activity/day/week section, across the three years' teaching practices, follows the same structure of "1) Plan Together, 2) Do, 3) Reflect Together." This makes the books easy to follow once students become familiar with this layout. Simple symbols are used to make these different activities easy to identify. This structure is very similar to the structure in the *TPD handbooks.*

Objectives

The *Teaching Practice handbook* is very logically organised. The objectives at the start of each activity, day, or week, are very clearly stated and linked to the teacher competencies that are set out in the GES Policy 2002 with which the students are already familiar.

Tutor Accountability

Each section explains what the tutors should be doing, or have already done, which gives students great transparency into the larger objectives of the programme and allows them to know what to expect from their tutors and mentors.

Independent Learning

The "Plan Together" sections in Year 1 of the *TP handbook* act like a mini lesson for students, or a reminder of the strategy or pedagogical approach. It explains to the student what the tutor will help students with, but the section then goes on to explain or recap the strategy too, in case the tutor does not. This allows the students to work through the activities, learning about new strategies and ideas, without the tutor.

> **"Your tutor will help you to make a list of the things to look for in a lesson delivery. These include how the teacher organises the class and support the pupils and what the pupils do during the lesson. You will also look out for any differences in participation of the boys and the girls in the class."**
> (*TP handbook*, Year 1, p21.)

Again, this empowers the student teachers to know what their tutor *should* be doing, but also gives them the necessary information if their tutor does not, or is not able to do the teaching.

Challenges

Layout

Suggestions about how to improve the ease of use of the *TP Handbook* were similar across different groups of students interviewed in this evaluation. Despite the easy to follow and repetitive layout of the *TP handbook* and symbols for each activity, these symbols and the flow of the activities are not explained in the introduction. Also, several students suggested that the *TP Handbook* to be less voluminous and written with simplified language.

Untrained Mentors

Many students stated that the mentors who are based in schools need to be trained by the T-TEL programme. In order for the students to complete many of the TP activities they need a supportive and trained mentor to plan and reflect with. At the time of writing, no mentors in schools had yet been trained, and T-TEL plans to support this activity during the forthcoming academic year. About 10% of respondents commented that they would like to see mentors trained, with student groups making this comment slightly more frequently than other types of respondent.

Teaching Practice Handbooks are designed with links to the anticipated Student Teacher handbooks that are not yet available

The *TP handbook* has been written with the assumption that students will have worked through the *PD Guide for Student teachers (STPD)*, and there are 13 direct references to books that students have not seen. There are also many instances of implicit assumptions that the content in the *STPD* will be familiar to students on teaching practice. For example Yr. 1 Pre-TP activity 3 asks students to **"with your class brainstorm all the positive ways of making and keeping good relationships with adults and children"** (*TP handbook*, Year 1, p17.) It is not clear if the students know how to complete a brainstorm activity. This strategy is introduced in STPD3 but the students have not been exposed to these books at this time[6]. The student teacher PD guides have not been printed or disseminated due to the weak 'use case' for the materials in the current context and DBE curriculum.

More time needed to introduce *Teaching Practice* materials

It was also suggested by interviewees that more time is needed to introduce the books to the students before they go off into schools. The books did not arrive in time at some colleges before students left to start their placements, and others had to rush the introduction sessions so felt that students were not as well-prepared as they needed to be.

It is the opinion of the evaluators that the students *TP handbooks* are easy to use and very accessible for students if a few conditions are in place; 1) Mentors need to be trained, 2) Student teachers need to have access to a peer student, 3) More time is given to the introduction of the

---

[6]   The evaluator showed student groups the draft STPD materials and they were surprised they existed, and were excited that they did.

materials, 4) Timetable access is given to Year 2 on campus teaching practice. It is also thought that student teachers would greatly benefit from being exposed to the STPD handbooks to supplement their learning that takes place in schools and in their Education and Professional Studies.

4.3   Gender Equity and Inclusion

Impact of T-TEL materials on inclusion and gender responsive pedagogies

Education research demonstrates that although an explicit focus on gender is needed, it is most effective when it forms part of pre-service education or extended professional development, as opposed to one-off sensitisation meetings or programmes. A focus on improved pedagogy also plays a role in ensuring a gender-responsive learning environment for both teachers and students. As stated in the DFID Review by Unterhalter et al. (2014): "However, the strongest evidence of what works is associated with improved training of teachers, both to higher levels of subject area expertise and professionalisation, and with specific attention to the needs of girls and gender equality, and fostering collaborative learning styles." (Unterhalter et al., 2014:48)

GENDER RESPONSIVENESS and the TP Materials

Development of SP Materials

Topics and Activities in the SP/TP materials are Gender Friendly.

Following are some examples of this;

Gender-Responsive Competencies for Lead Mentors/Mentors:-

There is a Gender-Responsive checklist for Mentors and Lead Mentors which outlines nine competencies (and related actions/strategies) that will ensure that teachers and head teachers stop unfair treatment. This will lead to equal outcomes for girls and boys.

SP/TP Handbooks Years 1-3 cover Gender-Responsive Pedagogy in the following ways. The SP/TP materials:
- give equal chance to females & males to ask and answer questions
- use participatory methods and ensure equal participation of females and males
- pay attention to the composition of females and males during group work and assign females leadership roles
- provide constructive and positive verbal feedback to both females and males in class

In addition the materials cover the following gender-responsive strategies:
- Gender-Responsive Language and Interaction
- Gender-Responsive Teaching and Learning Materials
- Challenging traditional gender roles
- Gender-Responsive Planning
- Gender-Responsive School Management
- Gender-Responsive Treatment of Student Teachers
- Improving Gender-Responsive Mentoring
- Ensuring Protection from Sexual Harassment

Positives

Specific attention is paid in the *TP Handbook* to achieving competence in gender-responsive and inclusive teaching

A number of competencies in the *Descriptor Framework for Year 1 TP Assessment and Evaluation* highlight the role of teaching practice in developing a student teachers' competence in gender-responsive and inclusive teaching. These include the requirement that student teachers should be able to:

● Explain clearly how a teacher they are observing effectively uses questions and answers, discussion, dialogue and demonstration to assess the learning needs of both boys and girls in class

● Observe a teacher and comment clearly about the strategies the teacher uses in their lesson to make the lesson more inclusive and equitable

● Observe and comment on how a teacher involves boys and girls in co-curricular activities

● Discuss with female pupils how safe it is for female pupils to travel to school

TPD Materials include prompts to encourage tutors to consider gender

The *TPD materials* have various sections which encourage tutors to consider gender. In each of the *TPD books*, the introduction has a section called "Focus on Gender". This section serves as a reminder of how to ensure that females are included in the teaching and learning activities. The sections "Using these strategies in a Gender-Responsive way" refers to how to use the new teaching strategy, for example group work, to achieve gender balance.

Many of the example lessons in the *TPD books* have a section that reminds tutors to plan for gender responsiveness in their lessons. In addition, the lesson case studies, where an actual tutor describes how they have used a strategy in class, make many references to issues of gender.

The "Reflect Together" and "Tutor Discussion" sections of the PD session also have some questions and statements that refer to gender responsiveness. For example, p57 of the Group Work manual for Tutors, one of the Reflect Together question is "Did female and male students participate equally? If not, what can you do to improve this situation next time?"

The *TP Handbook* includes prompts to encourage gender-responsive practice

Gender issues are not explicitly written about in the *TP handbook*, but the observation directions and guiding questions prompt student teachers to be looking for signs of gender equality. For example, on p31 of the student teacher TP handbook, in the "Reflect Together" section student teachers are encouraged to think about boys and girls. "From your observation, were there any differences in the responses from the girls and from the boys?" Another example is where the Handbook encourages student teachers to interact with girls**.** "Choose three girls to talk to about their journey to school." p33. Subtle examples of gender responsiveness occur frequently in the *TP Handbook.*

TPD and *TP Materials* focus on collaborative teaching and learning strategies that encourage gender equity

Strategies addressed by the *TPD materials* and built into the *TP materials* encourage collaborative learning. A focus on more talking in class also allows female students to have a more active role, as their tutor asks questions and they are encouraged to present information, and can use their mother tongue with confidence.

During the interviews the evaluation team asked whether interviewees thought the materials and professional development was gender-responsive. Just over 50% of the interviewees at colleges state that the materials are gender-responsive. When asked to give examples of the gender responsiveness, typical answers were "the pictures in the books are of females," and "group work encourages the girls to talk".

Some evidence of impact on gender inclusion may be seen in interviewees' unprompted responses to the ''T-TEL programme in general', in which 24% of respondents commented on how much more female students are participating in, and being involved in, class. In addition, there were also a few comments about how the TPD sessions have increased the capacity and confidence of some female tutors.

Challenges

Gender as an addition, instead of a foundation:

As highlighted above, gender responsiveness is most definitely present in the *TPD materials* and PD sessions but there is a sense that gender is an afterthought, or an add-on, as opposed to a central objective that runs through the whole programme. For example, in the theme 4 guide, only 8 out of the 32 ""Reflect Together" and "Tutor Discussion" points raise questions of gender. These activities are a great opportunity to have discussions and change mind sets around gender inequality yet only a quarter of the discussions make gender responsiveness references.

The "Gender-Responsive" section of each strand in the *TPD handbooks* is a repeated paragraph:

> *"At the end of the planning activity you should have developed an activity plan that you can teach in the coming week. Hopefully, you have also considered how to encourage all of your student teachers, especially females, to participate. Make sure you take a little time now to practise the activity that you have planned with your colleagues. You and a colleague might want to arrange to observe each other when you each do the activity with your student teachers during the week. You may want to use the Group Work Observation Tool introduced in T4-1 introduction." (T4-1, p.33)*

This same paragraph is used twelve times throughout the *Talk for Learning* book for tutors. This does not create an impression of importance, and most likely this paragraph will be skimmed over.

Lack of Female Capacity Building:

There is also an imbalance of female role models in CoEs. More PDCs and TPCs are male and only 16% of trained PDCs are female (12 females out of 76 trained) (Ref: T-TEL Component 1 CoE, Staff details Excel Doc).

It is the evaluators' opinion that T-TEL has made a good start at promoting gender responsiveness but there are some missed opportunities for issues of gender to be a genuine part of the T-TEL materials and professional development activities. Gender does not have a position of priority in the materials. By the very nature of the interactive strategies, female students are finding more of a voice in the classroom, but it is more as a by-product of such activities such as group work, or questioning, rather than a specific focus on females.

4.4   Sustainability of T-TEL's investments in teaching and learning materials

This section considers the longer-term sustainability of T-TEL's investments in the *TPD* and *TP materials.*

Sustainability of capacity built during materials development

There is little evidence to support any claim that the processes used, and capacity built during the development of the materials so far, can be sustained beyond T-TEL. A key author of the materials made it clear that the processes used to develop the materials cannot be sustained without institutional embedding of the materials development and distribution processes.

The processes used to develop T-TEL materials have varied, with some being more successful in developing potential and sustainable capacity than others:

- Writing groups that include the full team of the relevant T-TEL coaching staff *(TP materials)*
- Writing groups that include a small selection of T-TEL coaching staff *(TPD Materials, T3&4)*
- Writing groups that include education experts from Ghana *(TP materials, TPD materials T1&2)*
- Writing groups that include international writers *(TP materials, TPD materials T1, 2, 3,4)*

Unfortunately, valuable links to institutions with sustainable capacity for developing materials have not been maintained. Some respondents to this evaluation felt that T-TEL did not foster strong relationships with UCC in the writing and conceptualisation stage. Some UCC staff who were engaged in the development of the materials claim they were dropped without any reasons. Others noted that T-TEL did not build the capacity of enough Ghanaian writers from conceptualisation. Instead, Ghanaian writers were brought in later, to review ideas and writing. Although stakeholder consultation on the TPD process took place during the inception period, the revision of the TPD content frame and conceptualisation of the materials as themes at the beginning of the implementation phase seems to have been an almost entirely 'internal' process. Whilst this ensured that T-TEL delivered materials to CoEs at the beginning of the academic year, it had an unfortunate negative impact on engaging relevant institutions early in the materials development process, and building in sustainability from the start.

Some writing processes have been more successful in developing sustainable coaching capacity. T-TEL staff commented on the significant value of including T-TEL coaching staff in the writing groups. The SPAs demonstrate significant ownership, familiarity with, and deep understanding of the *TP handbooks*, having been fully involved in the development process from conceptualisation, having written much of the materials, and having experienced an editing process. TLAs selected to participate in materials development also note how confident they felt when training PDCs and also when coaching tutors. TLAs who were not involved in writing asked to be included, seeing it as essential to their capacity to perform their training and coaching roles.

Sustainability of the TPD Model in CoEs

This evaluation supports findings from T-TEL's earlier internal evaluation which highlighted concerns that PDCs and tutors have about the sustainability of training and materials introduced by development programmes. Staff in Colleges are generally pessimistic about sustainability: *"Many PDCs spoke of past pre-service training interventions implemented by the likes of JICA, TESSA and QUIPS, amongst others. One PDC from the north said quite poignantly, "NGOs have come to talk about education, to do 1 year, 2 years, so one asks, 'so, what is so different about this? You are making us come to sit and to do these things. Things we are aware of'. Where is it going to end?"* (T-TEL 2016a, Page 2).

In this evaluation, almost all those asked about sustainability were most concerned about the sustainability of PD sessions. Regular PD sessions are now taking place in 38 Colleges of Education. As a regular practice, this lays the foundations for institutionalising professional development in the longer-term. T-TEL has also built the capacity of 76 PDCs who are able to facilitate professional development sessions at their colleges. However, PD sessions will only be

sustained if they are seen to be relevant to the curriculum (and not 'extra work') and if tutors are able to integrate PD into their career plans. As in earlier evaluations (T-TEL 2016a), tutors asked for certification to have something to show for their involvement in the programme.

Sustainability in the context of a revised DBE curriculum

T-TEL is currently supporting the early phases of the reform of teacher education curricula in Ghana. Draft standards for teachers have been developed to define the required outcomes of initial teacher education. A national review group has been formed with responsibility for developing a teacher education curriculum framework. Although the framework was not finalized at the time of this evaluation, the outline of the framework (four pillars and cross-cutting themes) had been presented at a national stakeholder forum in June 2016.

None of the *TPD* or *TP materials* makes explicit mention of the Teaching Standards, because these had not been officially adopted at the time of writing the materials. However, it is the view of the evaluators that this could very easily be done retrospectively, either with the current curriculum, or when the curriculum review is complete. We understand that the writers are awaiting formal approval of the standards, and that materials are being reviewed against the Teachers Standards in the meantime.

Figure 3: Draft Framework for Curriculum Review (May 2016)
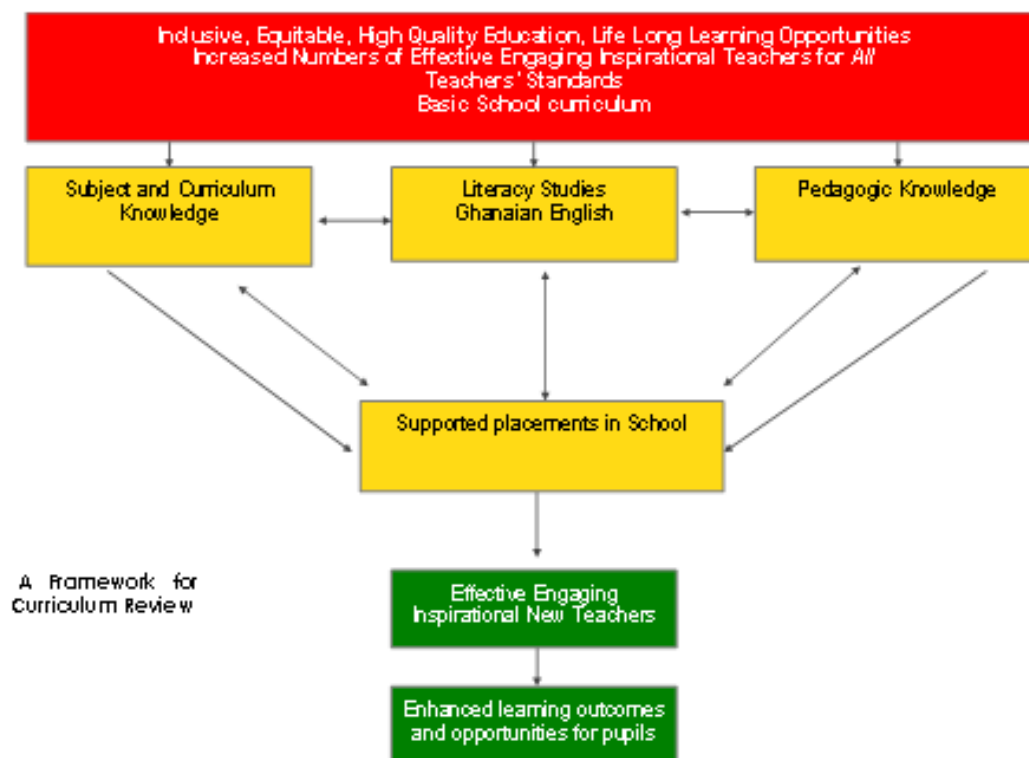
The details of the teacher education curriculum framework are not in place yet, so any meaningful evaluation is not possible, but the themes identified indicate that the *T-TEL materials* are likely to be relevant, and cover the four pillars of the curriculum framework to some extent. The *TP*

materials are relevant to the pillar: *Supported Teaching in School*. The T-TEL materials also contribute towards the cross-cutting issues of inclusiveness and gender equality. This suggests that the existing T-TEL materials could still be of value when the new DBE curriculum becomes operational, and if so, their sustainability improved.

The "new DBE curriculum" which may be produced in the next several months, will undoubtedly determine whether all the existing materials would be relevant and appropriate and the possibility that the authors of the new curriculum might take into account the existing materials seems real. From all indications, the assessment arrangements under the new curriculum might change and with them the content and structure of the various subjects in the curriculum. Nevertheless, T-TEL designed the materials in such a way that they can be modified to fit any revision that may be made to the curriculum. The themes for the materials were based on strong research evidence, which support such effective approaches to classroom practice (e.g. Westbrook et al., 2013; Nag et al., 2014) but which are currently underserved by the DBE curriculum. It is hoped that the new curriculum will be influenced by such research evidence and other evidence of effective approaches that work in contexts similar to the Ghanaian situation.

5   Conclusions and Recommendations

This evaluation has found that T-TEL has developed a set of professional, versatile, and thorough, *professional development guides* for PDCs and tutors, and *Teaching Practice* handbooks for tutors, mentors, and student teachers. These materials, after only being in Colleges of Education for two semesters, are showing early signs of impact on tutor practice, and could potentially impact student teacher learning outcomes.

- **The T-TEL *TPD materials* are being used to structure regular professional development sessions for tutors at all CoEs**

The *TPD materials* have supported the establishment and facilitation of regular, practice-focused, professional development sessions in Colleges of Education. PD sessions are new, are implemented by all CoEs, and have enjoyed 98% completion rates of the PD themes provided by T-TEL this year. PD sessions are interactive. Tutors learn from each other, reflect on their practice, and have learnt about different strategies for engaging their students in the learning process.

- ***TPD materials* and PD have helped PDCs to build their capacity and confidence as facilitators of professional development for their peers**

The PDCs have significantly increased their capacity as facilitators of professional development. The professional development materials have supported and guided this learning of PDCs and tutors.

- **The majority of PDCs are men but more attention must be paid to encouraging women to also become PDCs**

Only 16% of PDC are female. T-TEL must encourage CoEs to include women as PDCs, and make the process itself gender inclusive, and to build the capacities of women as PDCs and coaches.

- **The implementation of PDS and tutor motivation is higher in CoEs where principals are supportive**

The evaluation has confirmed findings by T-TEL's internal evaluation that attendance, participation, and tutor motivation is higher in Colleges where the principal actively supports the PDS and is positive about the programme. T-TEL will need to continue to work closely with and support, principals and vice-principals of colleges that are not implementing the T-TEL strategies. PDCs and tutors from struggling colleges could visit stronger colleges to learn about how to effectively implement the T-TEL strategies.

- **Many tutors are beginning to implement strategies discussed in PDS and *TPD materials* in their teaching, but this is not yet the majority**

Many tutors appear to understand how strategies can be used and why they are effective. 30 to 40% of tutors interviewed in this evaluation have also moved into the implementation stage and are trying out these strategies regularly. Students have noticed that approximately 30% of their tutors have tried to change their practice on a regular basis. This "trialling behaviour" is an important stage in the implementation process. However, at present the materials are effective

for tutors who are confident in their practice, supported by their administration, and already motivated to try new strategies. This is not yet the majority of tutors.

The evaluation found that changes in tutors' teaching methods are not occurring in the majority of classes, and there is still a long way to go to achieve full implementation, and mastery of practice. Implementation of the learned and understood strategies remains a significant challenge.

● **Student teachers enjoy the new strategies introduced by their tutors**

The evaluation found evidence of some small changes in student learning behaviour as a result of the introduction of more student-centred strategies. For the most part the new strategies introduced through the *TPD materials* have had positive influences on the student teachers, especially in relation to participation and enjoyment levels. A key assumption of the T-TEL model is that student teachers will begin to emulate teaching practices that they have seen modelled well. Greater participation and enjoyment by student teachers may translate later into improved teaching by student teachers. These small changes in student behaviour and tutor practice must be celebrated and shared so that those who are not convinced can start to develop more interest and belief.

● **Assessment plays a crucial role in the implementation of T-TEL approaches**

Assessment of the DBE has a strong influence on how tutors work with the *T-TEL materials* and approaches. There is therefore a need to synchronise assessment practices with the T-TEL strategies.

● **Opportunities for coaching for tutors remain far too limited to fully support the implementation process**

The current T-TEL model has limited opportunities for tutors to be supported, or *coached*, through the classroom implementation process. Coaching supports tutors as they actually try out the newly-learnt strategy and provides *in the moment* guidance, and post-lesson discussion. This way, the tutor could learn how to keep improving the practice until mastery is achieved. Coaching can also provide a process to challenge tutors' attitudes to pedagogy, and build evidence with them, of the effectiveness and outcomes of different teaching strategies. The PD model must strengthen the structured support available inside the classrooms (peer to peer, or mentor) to support tutors through the various stages of trying out and implementing the strategies.

● **The *TPD materials* should be amended to make them more accessible for those tutors that are not yet implementing the strategies**

Some adjustments need to be made to the *TPD materials* to make them more accessible and easy to use, particularly for those who have a low skill set, poor reading skills, low confidence, low motivation, poor support networks, or are just not convinced that student-based strategies work. Small changes would make the materials easier to use and more accessible and will support those who are weaker in their practice and need some extra encouragement. The small changes include:

● More pictorial representation instead of text
● Reduce the amount of text that tutors are expected to read.
● Use more diagrams, simple pictures, and photographs.
● Use bullet points and highlighted information (e.g. boxes).
● Use simplified language, especially in the core parts of the materials.
● The pace of the activities needs to be checked so that session or lesson goals are realistic.
● Limit the need to switch from different sections in the book.

A simplified version of the materials will also allow them to work more easily as reference guides for tutors who want a quick refresher about a strategy, or to look for a new one to try.

- **The pace set by the TPD themes is too fast, and does not allow sufficient time for practice and mastery before new strategies are introduced.**

TPD materials content needs to be structured to suit the time available for the PDS. The materials are currently overloaded with activities, and cannot be completed during the session. The content for each PDS should be reduced. That said, principals should ensure PDS start promptly so that the time available is used fully. PDCs should be prepared, and not use the session to do their pre-reading, and must facilitate well to ensure that discussions do not go off topic. These changes will all allow tutors the opportunity to practise and improve their skills through a longer implementation process of each strategy. More repetition of strategies is needed, and tutors should become effective at using a strategy before moving on to a new one. All materials trials must evaluate the intensity and pace of activities.

- **The *TPD materials* are highly relevant to tutors of methods courses, but subject tutors do not easily recognize the relevance and value of the materials**

The relevance of the *TPD materials* is more obvious for tutors of teaching methods courses because the content of the *TPD materials* matches the content they teach. T-TEL should increase the clarity of messaging about the *purpose* of the activity examples. By providing coverage across the curriculum tutors can begin to understand how to use the activity examples in their own subject.

- **More time needs to be given to the process of applying a strategy to a tutor's own content area.**

Although the *TPD materials* and PD sessions already encourage tutors to produce their own activity plan, study the strategy being used, and then apply that same strategy to a lesson or activity they have to teach with their own content and students, more practice time needs to be given to this activity.

- **_TPD materials_ are relevant to CoEs in Ghana, and priority should be given to strategies that are relevant for large classes**

Priority should continue to be given to the strategies that are easily applied to large classes, where furniture is hard to move and teaching and learning materials are minimal. Extension activities can be provided for those who are ready to try more varieties of a strategy.

- **The approach and structure of the *Teaching Practice handbooks* is appropriate and relevant for student teachers in the current TP system in CoEs**

The evaluation found that the *TP materials* covered a lot of curriculum content. The approach, as well as the structure, is appropriate and relevant for student teachers that are training in the current teaching practice model in CoEs. The activities are effective and the student teachers find the handbooks supportive, even without the planned support from tutors or mentors. The *TP Handbooks* have been well-received by the 1st year students, who used the handbook on their teaching observation. The handbook organised their time, and guided their learning, and encouraged students to become independent and reflective learners to make the most of their time in schools. The students found the books easy to use.

- **Confusion over the on-campus teaching practice requirements limited the use of the *TP Handbook* for the second year students**

There has been some confusion about College requirements for on–campus teaching practice. At the time of writing the *TP materials* in 2015, guidelines for second year on-campus teaching practice had been developed. However, the evaluators are aware that the second year on-campus teaching practice guidelines were not used last academic year. CoEs have recently decided to implement on-campus teaching practice for three weeks prior to the commencement of the third year off-campus teaching practice. Whilst an unambiguous decision on implementation will certainly help, it remains possible that T-TEL may need to provide Colleges with more guidance on how to implement the 2nd year on-campus teaching practice.

- **The use of the third year *TP Handbooks* was compromised by the timing of their introduction at CoE**

Although T-TEL made enormous efforts to finish all three years of *TP Handbooks* in time for implementation in 2016, the introduction of the *TP handbooks* for third years was poorly timed. The books arrived at most Colleges after students had left for their teaching practice, and although T-TEL hoped tutors could deliver the books to students when visiting schools or when students came into the College, this largely did not happen. Many third years who received books did not use them as they were more focused on their project and forth-coming exams.

- **More time needs to be given to the introduction of the *TP handbooks* to students**

The introduction of first and third year handbooks took place under significant time pressures. Students felt it was too rushed, and needed more time for introduction of materials.

- **The *TP materials* are most effective if implemented as part of the system of supported teaching practice**

It is the opinion of the evaluators that the students *teaching practice handbooks* are easy to use and very accessible for students if a few conditions are in place; 1) Mentors need to be trained, 2) Student teachers need to have access to a peer student, 3) More time is given to the introduction of the materials, 4) Timetable access is given to Year 2 on campus teaching practice.

- **Mentors in schools will require training in the new strategies introduced by the *TP handbooks***

T-TEL has not yet implemented mentor training to introduce the *TP materials* and train mentors to support their student teachers. The evaluators note that the mentors in schools should undergo professional development in the T-TEL strategies and in how to support students on teaching practice.

- **The strategies covered by the *TPD themes* and *TP handbooks* improve gender equity and inclusion in classrooms, however, the evaluation considered that the materials still tend to treat gender as an ''add on''**

Gender equality is promoted in both the *TPD materials* and the *TP handbooks*. Throughout the *TPD materials*, tutors are reminded to consider how gender may be operating in their classroom, to plan for gender responsiveness in their lessons, and in PD sessions. However, the evaluators consider that the issues of gender equity inclusion still tend to be presented as an ''addition to think about''. Gender and inclusion should be made an integral part of the programme and materials. The *TP materials* should explicitly require mentors to model and reinforce learner-centred and gender-responsive pedagogy.

- **T-TEL has mixed success in building sustainable capacity for materials development for the CoE sector in Ghana**

T-TEL materials have been developed through different processes. Ghanaian writers have been involved with some materials, offering Ghanaian perspectives, but have also been dropped without explanation. The sustainability of the materials development process could be improved through the following:

- Ensure that materials are published as word documents, which will allow use and editing by others.
- Work on longer timescales that allow the involvement of more local professionals in the initial stages (e.g. planning) of the writing. This will ensure that everybody can comment and adjustments made to materials before publishing. This will also encourage more Ghanaian perspectives.
- Longer timescales will make room for all materials to be trialled.
- When books/handbooks are written, T-TEL should have time to explain how the handbooks/books are to be used. They should involve the writers of the books/handbooks in explaining some of the concepts to the users.
- Student teachers should be seen as major stakeholders that T-TEL must listen to. Their views are important and should be considered. The involvement of student teachers in the writing process could also be beneficial.
- The evaluation should be seen by stakeholders as a contribution to the DBE curriculum review. The curriculum review should build on the CPD model piloted by T-TEL, and use it to pilot the new curriculum and materials that will be developed in line with the new curriculum.
- The evaluation suggests that there is potential for a lot more research and investigation into what would make the *TPD programme* more effective. Teacher education universities are very likely to make use of the materials in teacher education research and development. T-TEL should donate the materials to universities as this would enhance the sustainability of the materials and strategies that the latter promote.

- **Including T-TEL staff (TLAs and SPAs) in materials development provides a significant professional development opportunity and prepares staff well for their coaching role**

T-TEL staff that were involved in materials development and writing expressed greater ownership of the materials and confidence in coaching tutors to use them.

- **The effectiveness and sustainability of the tutor professional development will be significantly enhanced through the development of a professional qualification for tutors that includes content and expertise in the PD themes and on how to support student teachers on TP.**

This evaluation confirmed the critical importance of strategies that will strengthen tutors' ownership of the PD activities, which is necessary if they are to internalise the new approaches. It is essential that PD is integrated into their career plans. The evaluators recommend that T-TEL designs and implements a certification and/or credit system towards further education and/or career progression to serve as a sustainable motivator. The programme, as designed, has about 90 hours of contact time over 3 years so the need for certification is strong. Assessment of tutors' implementation in their classroom practice could form part of certification if in-class observation of lessons forms part of the system. Principals may be required to confirm implementation as part of the requirements for certification.

T-TEL could invite teacher education universities to look at the PD programme and explore ways of turning it into a qualification.

5.1   Key Recommendations

1. The Tutor Professional Development model piloted by T-TEL should be continued but strengthened with a greater focus on coaching support to tutors to implement new strategies. Coaching should be provided by peers in a CoE (including senior managers, Heads of Departments, and PDCs), supported by T-TEL.

2. Small adaptations are required to the *TPD materials* to make them more effective for all tutors but in particular the less confident tutors. The pace at which new content is covered needs to be slowed to allow more time for tutors to plan how to use strategies in their own curriculum area, to practise them, to receive coaching and feedback from peer-coaches, and improve mastery before moving on to the next strategy. This will help change the perception of some tutors that the materials are only suitable for 'methods' lessons.

3. The *TP handbooks* are well designed but must be introduced into CoEs with all parts of the support system, including adequate introduction to materials prior to TP, mentor training and tutor support.

4. Collaboration between T-TEL, UCC and other stakeholders should be continued, so that the lessons learned through T-TEL can inform the review of the DBE curriculum (as a blueprint for effective teacher education). This evaluation provides evidence that the TPD materials are already starting to have a positive impact on teaching by tutors in CoEs, and on student teachers' experience and appreciation of effective teaching methods. It also demonstrates the effectiveness of structured materials for student teachers on teaching practice. These lessons will be valuable for the forthcoming review, and must be shared. Working closely with UCC and other stakeholders on the upcoming curriculum review will ensure that the T-TEL strategies and approaches can be fully embedded into the colleges' curriculum, timetables and assessment.

5. Tutors and students put a great deal of emphasis on assessment practices overseen by UCC. Collaboration between T-TEL and UCC in this regard will help synchronise assessment practices in the DBE curriculum with the approaches developed in the programme to support both initial teacher education and tutor professional development.

6. More local professionals should be employed in the planning stages of the production of T-TEL materials so that the latter would be owned locally to ensure that T-TEL strategies live beyond the life of the programme.

7. Tutors who take an active part in the programme and who demonstrate their new skills in their teaching should be rewarded through career-relevant qualifications. Tutor qualifications could be based on a credit system towards further education and/or career progression. Collaboration between T-TEL and universities can help accelerate internalisation of the processes.

8. As universities are the main providers of higher education qualifications in teaching, T-TEL should invite teacher education universities to look at the programme and explore ways of turning the latter into a qualification. Sustainability of the materials and approaches could be enhanced if they were embedded into an appropriate professional qualification.

9. The materials are useful in many ways, and T-TEL should make donations of these materials in both digital and hard copy to all universities for inclusion in their libraries. Universities that deliver teacher education programmes could use them in research, and teaching qualification programmes while "non-teaching" universities could use them to support internal faculty professional training and development programmes.

10. Colleges must be strongly encouraged to include at least one female member of staff amongst their PDCs. T-TEL will also need to pay attention to the gender balance of its field staff. Senior female tutors could be encouraged to understudy the TLAs and SPAs to

prepare them for similar positions in future. That way female capacity building will be achieved.

References

Anamuah-Mensah, J. (2002) National Education Review Committee Report. Report of the President's Committee on Review of Education Reforms in Ghana. Accra: Ministry of Education.

Banilower, E. (2002). Results of the 2001-2002 study of the impact of the local systemic change initiative on student achievement in science. Arlington, VA: National Science Foundation.

Batt, E. G. (2010). Cognitive coaching: A critical phase in professional development to implement Sheltered instruction. Teaching and Teacher Education, 26 (2010), 997-1005.

Black, J. S., & Hal, B. G. (2002). Leading strategic change. New Jersey: Financial Times, Prentice Hall

Blank, R., de las Alas, N., & Smith, C. (2007) Analysis of quality of professional development programs for mathematics and science teachers: Findings from a cross-state study. Washington, DC: Council of Chief State School Officers.

Bush, R. (1984). Effective staff development. In Making our schools more effective: Proceedings of three state conferences. California Staff Development Study.

Carpenter, T., Fennema, E., Peterson, P., Chiang, C., & Loef, M. (1989). Using knowledge of children's mathematics thinking in classroom teaching: An experimental study. American Educational Research Journal, 26(4), 499–531.

Cohen, D. K., & Hill, H. (2001). Learning policy: When state education reform works. New Haven, CT: Yale University Press.

Darling-Hammond, L., Chung Wei, R., Andree, A., & Richardson, N. (2009). Professional learning in the learning profession: A status report on teacher development in the United States and abroad. Oxford, OH: National Staff Development Council.

Ermeling, B. (2010). Tracing the effects of teacher inquiry on classroom practice. Teaching and Teacher Education, 26 (3), 377-388.

French, V. W. (1997). Teachers must be learners, too: Professional development and national teaching standards. NASSP Bulletin, 81(585), 38–44.

Government of Ghana (2012) Colleges of Education Act, (Act 847)

Jaworski, B. (1994). Investigating mathematics teaching: A constructivist enquiry, London: Falmer Press

Joyce, B., & Showers, B. (1982). The coaching of teaching. Educational Leadership, 40(1): 4–9.

Knight, J. (2007). Instructional coaching: A partnership approach to improving instruction. Thousand Oaks, CA: Corwin Press.

Knight, J. & Cornett, J. (2009). Studying the impact of instructional coaching. Lawrence, KS: Kansas Coaching Project for the Center on Research on Learning.

Lieberman, A., & Wood, D. (2001). When teachers write: Of networks and learning. In A. Lieberman & L. Miller (Eds.), Teachers caught in the action: Professional development that matters (pp. 174–187). New York: Teachers College Press.

Marek, E. A., & Methven, S. B. (1991). Effects of the learning cycle upon student and classroom teacher performance. Journal of Research in Science Teaching, 28(1), 41–53.

McGill-Franzen, A., Allington, R. L., Yokoi, L., & Brooks, G. (1999). Putting books in the classroom seems necessary but not sufficient. Journal of Educational Research, 93(2), 67–74.

Nag, S., Chiat, S., Torgerson, C., & Snowling, M. J. (2014). Literacy, foundation learning and assessment in developing countries. Retrieved from https://www.gov.uk/government/uploads/system/uploads/ attachment_data/file/305150/Literacy-foundation-learning-assessment.pdf

Saxe, G. B., Gearhart, M, & Nasir, N. S. (2001). Enhancing students' understanding of mathematics: A study of three contrasting approaches to professional support. Journal of Mathematics Teacher Education, 4, 55–79.

Showers, B. (1984). Peer coaching: A strategy for facilitating transfer of training. Eugene, OR: Centre for Educational Policy and Management.

Slinger, J. L. (2004). Cognitive coaching: Impact on student and influence on teachers. Dissertation Abstracts International, 65 (7), 2567. (University Microfilms No. 3138974)

Smith, A. (2004). Making Mathematics Count The report of Professor Adrian Smith's Inquiry into Post-14 Mathematics Education. London: Stationery Office Limited

Stephens, D., Morgan, D., Donnelly, A., DeFord, D., Young, J. Seaman, M., et al. (2007). The South Carolina Reading Initiative: NCTE's Reading Initiative as a state-wide staff development project. Urbana, IL: National Council of Teachers of English.

Swan, M (2005) *Improving Learning in Mathematics: Strategies and Challenges.*

London: Department of Education and Skills Standards Unit

Swan, M (2005) *Improving Learning in Mathematics: Strategies and Challenges.*

London: Department of Education and Skills Standards Unit

Truesdale, W. T. (2003). The implementation of peer coaching on the transferability of staff development to classroom practice in two selected Chicago public elementary schools. Dissertation Abstracts International, 64 (11), 3923. (University Microfilms No. 3112185).

T-TEL (2016a) T-TEL M&E Report: Focus Group Interviews with PDC, February 2016

T-TEL (2016b) Draft Annual Programme Evaluation Report, May 2016

T-TEL (2016c) The Tutor Professional Development Programme Year 1 (2015/2016). Component 1 M&E Report. 21 July 2016.

T-TEL (2016d) T-TEL Resources to be considered. Presentation to the National Steering Committee on DBE Curriculum Review. May 2016 (PowerPoint Presentation)

T-TEL (2016e) Monitoring and Evaluation and Research Strategy updated July 2016

T-TEL (2016f) Mini-Survey Results. July 2016. Report delivered by JMK Consulting.

T-TEL Component 1 CoE, Staff details Excel Doc (PDC Data)

Unterhalter E, North A, Arnot M, Lloyd C, Moletsane L, Murphy-Graham E, Parkes J, & Saito M (2014) *Interventions to enhance girls' education and gender equality. Education Rigorous Literature Review*. London: Department for International Development

Westbrook, J., Durrani, N., Brown, R., Orr, D., Pryor, J., Boddy, J., & Salvi, F. (2013). Pedagogy, curriculum, teaching practices and teacher education in developing countries: final report. (No. 2110). Retrieved from https://eppi.ioe.ac.uk/cms/Default.aspx?tabid=3433

Watson A., De Geest E. & Prestage, S. (2003) *Deep Progress in Mathematics*, University of Oxford.

Wenglinsky, H. (2000). How teaching matters: Bringing the classroom back into discussions of teacher quality. Princeton, NJ: Educational Testing Service.

Yoon, Kwang Suk, Teresa Duncan, Silvia Wen-Yu Lee, Beth Scarloss, and Kathy L. Shapley. Reviewing the Evidence on How Teacher Professional Development Affects Student Achievement. Issues and Answers Report, REL 2007 – No. 033. Washington, D.C.: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest, 2007.

Appendix