Talk for Learning

HANDBOOK FOR **PD COORDINATORS**

Transforming Teacher Education and Learning

T-TEL Professional Development Programme

Theme 3: Talk for Learning
Handbook for Professional Development Coordinators

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Tutor Professional Development
About These Resources

Welcome to the *Transforming Teacher Education and Learning* Professional Development Guide for Tutors.

Transforming Teacher Education and Learning (T-TEL) is a Government of Ghana programme seeking to improve learning outcomes - for tutors in Colleges of Education, (student) teachers, and above all for pupils in school. To that end, we are creating a set of professional development resources for use by you, the tutor, to enhance college-based and school-based teacher education.

The present set of resources are organised into twelve themes focusing on pedagogy and effective college classroom practice, such as creative approaches, questioning, group work, Assessment for Learning, Leadership for Learning, enquiry-based learning, gender, inclusion, and many more (see table below). The themes have been chosen because of their relevance to improving learning outcomes through the use of active pedagogies. In each of the twelve themes there are a number of different teaching strategies (or teaching approaches). For instance, the teaching strategies in Theme 1 Creative Approaches include songs, role-play, games, and storytelling.

For each of the teaching strategies within a theme, the resources provide

- an introduction to the teaching strategy (including a group activity that you can do);
- three 'Example - Plan and Practice - Teach - Reflect' (EPTR) sequences; and
- activity plan templates (at the end of the book).

Within each 'EPTR' sequence there is an **example** for the use of the strategy (e.g. an example for using songs in English), followed by a section to support you in **planning** an activity using the strategy (e.g. planning the use of modelling in mathematics, or planning the use of role-play to illustrate an idea in science). You can then try out your activity (by **teaching** it to your students) after which you will find a number of activities for **reflection**, prompting you to think about your experience. For example: *Did the song achieve the intended learning outcomes? Did everybody (including female and male* students*) participate in the activity? What can I do to involve learners with special needs?*

Because each teaching strategy (such as types of group work) has many different aspects (such as same-task group work, different-tasks group work, and carousel-type group work) we have provided **three EPTR sequences**. The examples provided in these are usually in English, mathematics, and science, while the **Plan and Practise Together** section draws on examples across the college syllabus, covering all subjects.

The materials are designed so that they can be used with peer facilitation. In the T-TEL model, the tutor professional development programme is facilitated by so-called professional development coordinators. In addition to the PD Guide for Tutors, a Handbook for Professional Development Coordinators is available.

For each theme, the teaching strategies are presented together in a single book (in print), but they are also available online on the T-TEL website in various formats (such as HTML, ePub, PDF, see oer.t-tel.org) alongside supporting information. All T-TEL resources are Open Educational Resources (OER), available under a Creative Commons Attribution Share-Alike licence. This means that you are free to use and adapt them as long as you attribute T-TEL and retain the same licence. In fact, we have used that same process to develop these materials from other OER that are available, such as the OER4Schools programme (www.oer4schools.org), the TESSA Ghana materials (www.tessafrica.net), and even materials originally developed for India (www.tess-india.edu.in).

Theme number	Theme
1	Creative Approaches
2	Questioning
3	Talk for Learning
4	Group work
5	Leadership for Learning
6	Finding, creating, and using teaching and learning materials
7	Assessment for Learning
8	Gender and inclusion
9	Project work and investigation
10	Teaching reading, writing, and numeracy across the curriculum
11	Using digital and mobile technology for effective teaching and learning
12	The tutor as a researcher

Figure 1. The themes covered in the professional development programme.

Key Elements of the Programme

There are a number of ideas that cut across the PD programme that are worth drawing out.

The Plan - Teach - Reflect cycle. The Plan-Teach-Reflect cycle is built into our materials as part of our sequences of Example - Plan and Practise Together - Teach - Reflect Together.

The Reflect Together section, while presented logically at the end of the teaching strategy, takes place at the start of the next session. The reflection should bring up some interesting and perhaps even surprising issues. However, do not be despondent if the reflection does not always go well: continue with it! Being a reflective practitioner takes time to develop, and this will all fall into place.

The Activity Plan. Each teaching strategy closes with a few activity plans, which are used during the sessions to plan activities. Perhaps some participants do not not want to "spoil" their books, by writing in them. However, your own additions are important, and part of your learning journey. They are more important than what is written in the books, so just write them straight into your books. Remember also that the activity plan has a section for post-lesson observation. Please fill this in, and use it during the reflection.

The Learning Journal. The learning journal is an important tool, and we encourage all participants to keep one. It allows you to make notes, so that you can look back at earlier sessions, to see how your thinking and practice have developed.

Digital copies of the materials. Also note that digital copies of all materials are available at http://oer.t-tel.org.

The T-TEL Materials and Their Uses

The PD Guide for Tutors

The PD Guide for Tutors are materials for tutors in College of Education, to expore interactive approaches to subject teaching.
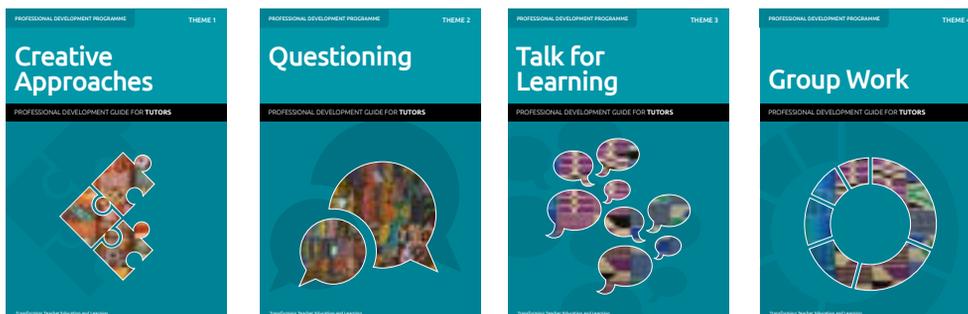
The Handbook for PDCs

The PD Guide for Tutors is accompanied by the Handbook for PDCs, which provides further details on running professional development sessions.
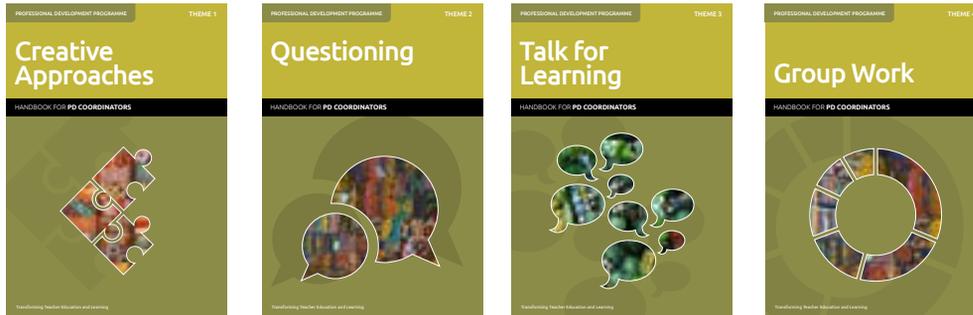
The Student Teacher versions, Methodology Lessons, and Teaching Practice

In addition to the PD Guide for Tutors, there is a student teacher version available: The PD Guide for Student Teachers.
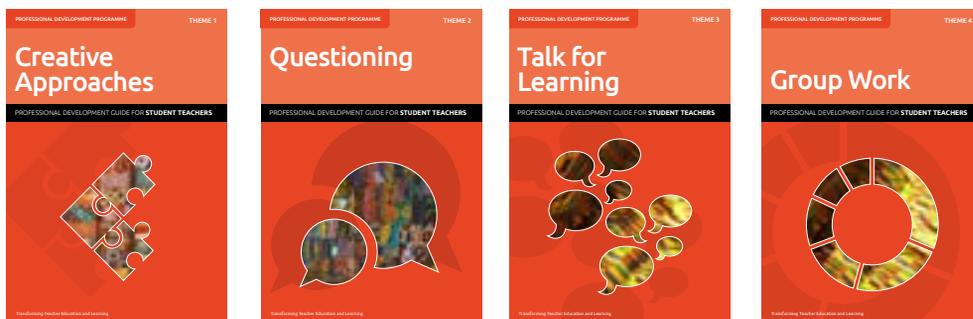
The PD Guide for Student Teachers follows the PD Guide for Tutors very closely. However, while the PD Guide for Tutors is aimed at tutors teaching student teachers in college, the PD Guide for Student Teachers is aimed at student teachers teaching pupils in school (primary or JHS). The PD Guide for Student Teachers may be of interest to methodology tutors, and could easily be used as a textbook for practice-oriented methodology lessons. You may want to make student teachers aware that these versions are available digitally.

	Participants in professional development sessions	Focus	Professional development sessions led by
PD Guide for Tutors	Tutors	Teaching at college (in particular subject teaching)	PDCs
PD Guide for Student Teachers	Student Teachers	Teaching in primary or JHS	Tutors, school-based mentors, other teachers (peer facilitation)
Teaching Practice Materials	Student Teachers	Teaching Practice in college (Years 1-3)	Tutors and mentors

Figure 2. Overview of materials relating to tutor professional development, student teacher education, and teaching practice.

Also note that a separate series of books is available focusing on teaching practice. They focus on similar pedagogical approaches, but approach these in the setting of the teaching practice within colleges.

The Student Teacher Versions and Local Teachers

The PD Guide for Student Teachers could also be used for self-study by (groups of) in-service teachers. Research shows that such extended professional development programmes are an effective means of achieving improved learning outcomes, and we encourage you to review the additional materials available, detailing the elements of the professional development programme itself. If you happen to be reading these materials as a teacher, already working in a school, we hope that you will find these materials useful. We do use the terms 'student teacher' and 'teacher' interchangeably - please simply substitute 'teacher' for 'student teacher' - and the materials should make sense to you.

If no college-wide or school-wide programme is available to you, we recommend that, at the very least, you work together with other (student)

teachers in self-organised study groups. There is good evidence for the importance of learning together in 'communities of practice', and you will be able to gain the most from the materials in that way.

Professional Development Coordinators
About These Resources

The Handbook for Professional Development Coordinators

Welcome to the new format Handbook for Professional Development Coordinators (PDCs). For Themes 3 and 4 we are taking a different approach in a number of ways, including the format for the PDC Handbook, as well as for the structure of the Professional Development (PD) Guide for Tutors.

The Materials in the PD Guide vs. the PDC Handbook

For Themes 3 and 4, there is a new format for the PDC handbook, which now consists of the PD Guide for Tutors, with integrated PDC notes. The first element that has changed is the amount of material contained in the PD Guide. Previously, there were some session activities that were only in the PDC Handbook (in particular during the introductory sessions, with activities like "Find Someone Who"). For those activities, the tutors would not have had any notes (in their PD Guide). Now all activities for the PD sessions are contained in the PD Guide. In particular, the Introduction chapter to each teaching strategy now contains an activity that you would do at the start of the PD session (following the reflection on the previous session).

The materials that were previously in the PDC Handbook, and meant only for PDCs, now appears in PDC notes like this:

> **PDC Notes**
>

Overall, the new format of the PDC Handbook means that as a PDC, you now only need to have one book (per theme). In one book, you have everything that is in the PD Guide for Tutors, integrated with all the additional information you need to have as part of the PDC Notes. We hope that this will make it easier to run the sessions, and give detailed advice. Please let us know what you think!

The Structure of the Strands: EPTR

Also, based on feedback from the professional development sessions and as seen in the list above, we have restructured the English, mathematics, and science chapters. We no longer have chapters for English, maths, or science.

Instead, there are now simply three strands (Strands A, B, and C) that focus on different aspects of the overall teaching strategy.

Within each of these strands, you may find that the initial example still has a focus on English, maths, and science, though other subjects are now also included. However, the major change is in the **Plan and Practice Together** section, which now includes a broad range of activity ideas across all subjects and departments. We made this change in response to tutors (particularly from subjects other than English, mathematics, and science), who felt there was not enough for them. Note that the **Plan and Practice Together** section was always intended to be applicable across all subjects, and we have made this a lot more explicit now.

This also has an important consequence: You, as the PDC, can now decide whether all tutors will do a specific strand (A, B, or C; "same task group work"), or whether different groups should focus on different strands ("different tasks group work"). If you find that the PD session is difficult to manage, and that tutors are struggling with the materials, it may be better to have all tutors work on one strand. In that case, you could consult the tutors on which strand they would like to do.

However, if you find that tutors are doing well in the PD sessions and more variety is desired, you can proceed as for previous themes. Tutors for groups, and each group, decide which strand to do. **In that case be very clear that any tutor can do any strand, irrespective of their subject. Tutors should select a strand because they are interested in the particular aspect of the teaching strategy being covered, not because the example matches their subject.**

Tutor Preparation

Because all material is now contained in the PD Guide, tutors can also prepare more for the session. **In particular, the tutors should read the introduction to the teaching strategy prior to the session.** For example, for the first session, the tutors should read the overall introduction to Talk for Learning, as well as the introduction to T3-1.

Running Professional Development Sessions

Prior to the first session, distribute the books to the tutors, and ask them to read the overall introduction to Theme 3: Talk for Learning, and the introduction to Teaching Strategy 1 (Initiating Talk for Learning). The overall pattern follows the outline provided in the table.

Before and after PDS	Within PDS
Distribute PD Guides for Tutors. Tutors read introduction to T3, and T3-1.	
	PDS 1 - T3-1
	Take attendance record. Clarification of any issues arising from reading the introduction to T3-1. Tutors do introductory activity for T3-1. Tutors choose one Example - Plan - Teach - Reflect strand (A, B, or C), and develop an activity plan. Session closes with brief discussion of any outstanding issues.
Tutors teach according to their activity plan. After teaching, tutors annotate their activity plan with personal reflections. Tutors read the next introduction (T3-2).	
	PDS 2 - T3-2
	Take attendance record. Tutors reflect together on T3-1 at the start of the session (on the basis of their notes in their activity plans). Clarification of any issues arising from reading the introduction to T3-2. Tutors do introductory activity for T3-2. Tutors choose one Example - Plan - Teach - Reflect strand, and write activity plan. Session closes with brief discussion of any outstanding issues.
(etc.)	(etc.)

Figure 3. Running Professional Development Sessions

Important Reminders

Attendance Records. Please continue to take attendance records, in the spaces indicated in this PDC handbook. Please do also keep an independent record of attendance, in a register or similar, that we would like you to bring along to the next PDC workshop.

The Activity Plan. Please make sure that all participants fill in the activity plans in their books. As you know, the activity plans are a key feature of the professional development programme. If participants do not want to "spoil" their books, please convince them otherwise. Take the lead by writing into your own book.

Syllabus and forecasts. The activity plans need to align with the syllabus and the forecast for that week - please make sure that tutors actually bring those to the PD sessions.

The Learning Journal. By now, the tutors should all have their own learning journal, and should bring it with them to every session. Again, take the lead. Have your own journal ready, and use it. We will ask you to bring your own journals with you to the next workshop - not to check them, but just for your own personal reference.

Surveys. As before, please note that there are a number of surveys that greatly help us in supporting the programme. These are available here http://tiny.cc/TTELsurveys. As a PDC, please fill in the Post-PDC survey after each PDS, and encourage tutors to fill in the Post-PDS survey as well. After tutors have taught a lesson planned during PDS, they should fill in the post-lesson survey for tutors, and encourage their students to fill in their post-lesson survey as well.

Pictures. Similar to surveys, it is incredibly helpful to see pictures of the PD sessions. Thank you very much for actively posting pictures on the T-TEL PDC Facebook group (https://www.facebook.com/groups/TTELPDC/). Keep it up. It would also be very helpful if you (the PDC) and the tutors take pictures of their lesson plans (as well as any other drawings or diagrams), and send them to us by email. We would love to see them. (Contact details are unchanged, and also available through the surveys.)

Based on the suggestions of several PDCs, we now also have a Facebook group for tutors (https://www.facebook.com/groups/TTELTutors/). Please encourage tutors to join this group.

Digital copies of the materials. Also note that digital copies of the material are available at http://oer.t-tel.org.

The conditions for learning: A safe environment. Bear in mind that the environment for PD sessions should continue to be such that it makes people feel safe, using appropriate language. Are there any tutors who need additional encouragement to feel welcome? Are there any new tutors that have recently joined, who may need a bit more support?

Right level of challenge and co-facilitation. It is also important that the programme has the right level of challenge, so that the programme is neither too challenging, nor does it become boring. The option for tutors to just do one strand together, or to all do different strands should help with this. If there are tutors that are keen to try their hand at facilitating some activities, you could also try this.

A Few Questions to Think About

Video is an important tool in tutor and teacher professional development. How can you integrate video into supporting tutor professional development?

Mobile technology can support professional development, as well as classroom teaching. What mobile technologies do your student teachers have access to? How are they using them? What more use could they make? What are the constraints, what are the opportunities?

Figure 4. Mobile phones charging during lessons

Introduction to Theme 3
Talk for Learning

This theme focuses on exploring Talk for Learning as an effective pedagogical tool for learning. It will give you insights into:

- How encouraging student teachers to talk in the college classroom can help them to learn more effectively.

- Teaching Strategies to encourage your student teachers to use talk for learning.

- How these teaching strategies help English Language Learning student teachers.

Talk for Learning means encouraging student teachers to engage in their learning through talking. The talk should be meaningful and enable student teachers to progress from recall and memorisation, to thinking and understanding, analysis and creativity.

This theme continues on from our previous two themes (Creative Approaches and Questioning). Questioning is a particular form of talk, and you might want to review the classroom ideas that you have encountered previously.

PDC Notes
Remind tutors to read the whole introductory section prior to the first session.

Why Use Talk for Learning in Your Teaching?

Education research has shown that talking purposefully is an effective tool for learning. For example, in the Education Endowment Foundation's teaching and learning toolkit, 'oral language interventions' has one of the highest impacts for low cost, based on extensive research evidence. Some of the reasons for this are that talk for learning can help you to:

- **Develop understanding**. Verbalising your thinking means you have to organise your thoughts and you have to become actively involved. Some (Bruner, 1990; Lacan, 1986) even argue that the mind is actually structured as language and so talking for learning activities support your mind in making sense and developing understanding.

- **Learn through social interaction** because it requires you to interact and talk about what you are thinking with one another in a specific learning context. Questions can be posed, ideas can be challenged and misunderstandings can be heard and corrected. In this way it fits with the learning theories of constructivism and social constructivism.

- **Better recall** of something you have been actively involved in (remembering). Talk for Learning activities require you to do so by thinking about ideas and communicating them.

- **Rehearse and express yourself in English**. Talk for Learning activities give English Language Learning student teachers the opportunity to rehearse and practise expressing themselves in English language learning.This might involve identifying words and expressions, using them in different contexts and phrases, and giving meaning to the words and expressions. To learn a language effectively you need to regularly hear it, see it, read it, write it, and practise speaking it repeatedly.

Will Any Talking in the Classroom Do?

Sometimes tutors will be reluctant to use talking for learning activities because they fear the student teachers might be talking, but not actually learning. That is a valid concern that can be addressed by planning activities using teaching strategies that initiate effective talk. You and your colleagues might have experienced different kinds of talking in the classroom. A common classification used in Talk for Learning considers the three different types of talk usually shown:

1. disputational talk,

2. cumulative talk,

3. exploratory talk.

These are explained in more detail in the following box.

Three Different Types of Talk

(1) Disputational talk, in which

- There is a lot of disagreement and everyone just makes their own decisions.
- There are few attempts to pool resources, or to offer constructive criticism.
- There are often a lot of interactions of the 'Yes it is! - No it's not!' kind.
- The atmosphere is competitive rather than co-operative.

(2) Cumulative talk, in which

- Everyone simply accepts and agrees with what other people say.
- People use talk to share knowledge, but do so in an uncritical (i.e.unquestioning) way.
- People repeat and elaborate each other's ideas, but don't evaluate them carefully.

(3) Exploratory talk, in which

- Everyone listens actively.
- People ask questions.
- People share relevant information.
- Ideas may be challenged.
- Reasons are given for challenges.
- Contributions build on what has gone before.
- Everyone is encouraged to contribute.
- Ideas and opinions are treated with respect.
- There is an atmosphere of trust.
- There is a sense of shared purpose.
- The group seeks agreement for joint decisions.

Attribution: Neil Mercer (2008), "Three kinds of talk", available under Creative Commons Attribution ShareAlike 4.0. Extracted from Neil Mercer (2008), "5 examples of talk in group", http://thinkingtogether.educ.cam.ac.uk/resources/5_examples_of_talk_in_groups.pdf.

PDC Notes

The types of talk are based on classroom observations and some are more useful than others in terms of their effectiveness. For example, consider these two points in Cumulative Talk:

- People use talk to share knowledge, but do so in an uncritical way.
- People repeat and elaborate each other's ideas, but don't evaluate them carefully.

PDC Notes

The reason student teachers may not be critical of, and may not evaluate, each other's ideas when they begin to talk to each other in the classroom is so that they can talk harmoniously and all get along well together. This type of talk is limited in terms of getting to the 'truth' of a matter but is useful for building group cohesion. The new knowledge that can come from student teachers sharing ideas may not be critically grounded but it can be useful as a step towards developing understanding.

Planning Talk for Learning

To create lessons that encourage student teachers to talk about their learning will not always be easy. However, if successful, they will be stimulating for both student teachers and tutors alike. The lessons will require tutors to:

- develop a clear plan and structure for the lessons;

- accept changes in their own roles from 'controller' to 'facilitator';

- know when and how to use Talk for Learning;

- be able to fully engage with their student teachers;

- give guidance to their student teachers;

- establish routines with their student teachers to learn co-operatively.

Figure 5. Talk in the classroom

Theme Overview: Talk for Learning

The teaching strategies discussed in this theme aim to give you lots of ideas to develop and use Talk for Learning effectively in your college classroom. They are:

- T3-1. Initiating talk for learning;
- T3-2. Building on what others say;
- T3-3. Managing talk for learning;
- T3-4. Structuring talk for learning;
- T3-5. Expressing yourself with new words.

Our starting point is to see how you might **initiate Talk for Learning (T3-1)**, bearing in mind that many of your student teachers may not be used to talking to each other in the classroom. We will consider strategies like talking tokens, and Think-Pair-Share, that will help your students to start talking. As we mentioned above, we then want to channel talk in a constructive direction, so we will consider how students can **build on what others say (T3-2)**. Once your students are talking, we will consider how you can **manage talk (T3-3)** as well as **structure the talk (T3-4)**, so that learning objectives are not lost, and all students can follow. Finally, we will consider how to support students in learning **new words (T3-5)**. Further details can be found in the tables at the end of this section.

Working Across the Curriculum

The present material is suitable for tutors from all departments in Colleges of Education. Currently, Ghanaian Colleges of Education are divided into the following departments (with some of the subjects in brackets):

1. Language (English, GHL, French)
2. Mathematics and ICT
3. Sciences (Physics, Chemistry, Biology, Physical Education)
4. Social Sciences (Social Studies, Religious and Moral Education, Music & Dance and HIV/AIDS)
5. Arts & Vocational studies (Arts, Catering, Sewing, Bead making and Leather work)
6. Educational Studies

Each introduction to a teaching strategy is followed by three Example-Plan-Teach-Reflection sequences (Strands A, B, C), that focus on different aspects of the teaching strategy. Each section is suitable for all tutors, and you should select one according to your preferences. You will of course still find some examples for English, mathematics, and science, among many examples from other subjects.

3

Focus on Gender

As discussed, many of your student teachers may not be used to talking in the classroom. This is particularly the case for females as much of the teaching that they experience during their basic and secondary education is largely biased towards males. For example, many teachers call on boys because they put their hands up first. Unfortunately, teachers do not stop to think about how girls are often socialised to not be assertive, to not speak out or make mistakes. This leaves girls fearful or reluctant to speak and boys dominating the learning process. This situation is made worse when girls sit at the back of the class, making them even less likely to participate. When girls speak less, teachers tend to consciously or unconsciously think that boys are more clever and able. This belief can come out in teachers' attitudes and behaviours in class, further reinforcing boys' dominance and girls' lack of confidence. If you find that the female student teachers in your class are less vocal, it could be because they have experienced this type of treatment for the last 12 years of their schooling.

That said, the teaching strategies discussed in this theme will not only help you to facilitate learning through student talk, but they will do so in a way that breaks the cycle of male bias in the classroom, and brings out the best in your female student teachers.

Theme 3: Talk for Learning Teaching Strategies		
Teaching Strategy		**Main points**
T3-1	Initiating Talk for Learning	To use talk as an effective tool for learning you need something to talk about. This teaching strategy explores developing activities that will encourage good quality discussion. For example: Talking tokens; Activity ball or magic microphone; Think-Pair-Share; changing partners.
T3-2	Building on What Others Say	This teaching strategy explores how to involve all student teachers in learning from each other and to build on what is said. For example brainstorming, concept cartoons.
T3-3	Managing Talk for Learning	This teaching strategy looks at how to develop ways of working together and regulating talk to help you manage talk for learning in your classroom. For example think-pair-share, talking tokens.
T3-4	Structuring Talk for Learning	This teaching strategy introduces strategies to structure the many ideas that are being shared by your student teachers when using talk for learning. For example concept mapping, diamond nine.
T3-5	Expressing Yourself With New Words	This teaching strategy discusses strategies to deal with language learning aspects of new vocabulary in talk for learning. This is relevant to any student teacher but particularly for those who are English Language Learners (ELL). For example talk like an expert, word walls.

Where to Find Various Aspects

Theme 3: Talk for Learning Teaching Strategies and Aspects			
Teaching Strategy	**Strand A**	**Strand B**	**Strand C**
T3-1 Initiating Talk for Learning	Ordering Matching	'Always, Sometimes, Never True' "Convince Yourself"	Talking Points
T3-2 Building on What Others Say	Pyramid	Brainwriting and Brainstorming	Concept Cartoons
T3-3 Managing Talk for Learning	work arrangements	Think-Pair-Share	Talking Tokens
T3-4 Structuring Talk for Learning	KWL	'Three things we know/we do not know'	PMI
T3-5 Expressing Yourself With New Words	Dealing with new words	Developing a personal mathematical dictionary	Talk like an Expert

Further Reading

OER4Schoos, *Dialogic Teaching*, http://oer.educ.cam.ac.uk/wiki/Teaching_Approaches/Dialogic_teaching

OER4Schoos, *Whole Class Dialogue*, http://oer.educ.cam.ac.uk/wiki/Teaching_Approaches/Whole_class

Education Endowment Foundation Toolkit, *Oral Language Interventions*, https://educationendowmentfoundation.org.uk/toolkit/toolkit-a-z/oral-language-interventions/

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TESS-India, "Cooperative learning and mathematical talk: triangles", http://www.open.edu/openlearnworks/pluginfile.php/134983/mod_resource/content/1/SM06_V2_PDF.pdf, available under Creative Commons Attribution-ShareAlike (http://creativecommons.org/licenses/by-sa/3.0/; unless identified otherwise).

OER4schools, Dialogic Teaching, http://oer.educ.cam.ac.uk/wiki/Teaching_Approaches/Dialogic_teaching, available under Creative Commons Attribution-ShareAlike 4.0

Els De Geest (2007), "Many Right Answers: Learning in Mathematics through Speaking and Listening" http://shop.niace.org.uk/media/catalog/product/m/a/manyrightanswers.pdf (Crown Copyright)

Neil Mercer (2008), "Three kinds of talk", available under Creative Commons Attribution ShareAlike 4.0. Extracted from Neil Mercer (2008), "5 examples of talk in group", http://thinkingtogether.educ.cam.ac.uk/resources/5_examples_of_talk_in_groups.pdf.

Introduction to Teaching Strategy 1
Initiating Talk for Learning

PDC Notes

This session is the beginning of a new theme: Theme 3 – Talk for Learning.

Prior to this session, tutors should have read the overall introduction to Talk for Learning, as well as the introduction to Teaching Strategy 1.

As always, please make sure you keep a record of attendance.

To start this session:

- Say that that we are now starting *Theme 3: Talk for Learning.*
- Please briefly read out the Learning Objectives.

The introduction

- Check that everybody has read the overall introduction, and the teaching strategy introduction, and ask whether there are any questions.
- Do say that the introduction provides a lot of additional detail, which tutors should read prior to the session.

The activity

- Now skip the Introduction, going straight to the activity below.

Suggested time: 15 minutes

T3-1 i 1 Learning Objectives

By the end of the session tutors will be able to:

- Plan activities that can be used in any subject to encourage Talk for Learning with their student teachers, especially females.

- Use/practise these teaching strategies to help their student teachers learn more effectively.

- Engage student teachers in their own learning.

T3-1 i 2 Introduction

PDC Notes

Remember to skip this section, and go straight to the activity below.

To use talk as an effective tool for learning you need something to talk about. This teaching strategy explores some activities that can help you in developing activities with your student teachers that will trigger good

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quality discussions that allow for 'learning through talking' to happen, whatever the subject area or topic.

Getting your student teachers to talk in a way that really helps their learning can be challenging and requires good planning of activities that will stimulate such focused discussions and learning.

In the table below are ideas for such activities that will be considered more closely. They can be used and adapted for many topics, and all subjects. They fall mainly into three categories: activities that ask student teachers to:

- Agree or disagree with given statements, e.g. 'Talking Points'; 'Sometimes, Always, Never True'

- Develop and refine a narrative, eg 'Convince Yourself, Convince a Friend, Convince a Scholar'; 'Being a Radio Reporter'; 'Finish Stories / Narratives'; 'Predict What Happens Next'

- Negotiate and persuade through working together on activities that require finding connections / collocations.

Theme 3: Talk for Learning Teaching Strategy 1: Initiating Talk for Learning		
Aspect	**How it works**	**Strand**
Always, Sometimes, Never True	Statements are listed and student teachers have to decide whether these statements are always true, sometimes true or never true.	T3-1B
Convince Yourself, Convince a Friend, Convince a Famous Scholar	Student teachers re-visit their arguments and re-phrase them with increasing sophistication and precision.	T3-1B
Cumulative Talk	In cumulative talk student teachers repeat and elaborate each other's ideas, in an uncritical (i.e.unquestioning) way.	T3-1i
Matching Cards	Student teachers are asked to work in pairs or small groups to match cards and discuss why they match.	T3-1A
Ordering Cards	Facts that can be ordered, but do not always have a straightforward answer are written on cards. Student teachers, working in groups or pairs, have to order these.	T3-1A
Talking Points	Talking points are deliberately thought-provoking statements for discussion and reasoning in small groups	T3-1C
You, the Radio Reporter	This is a variation on writing a newspaper article: this time the student teachers are radio reporters so they need to talk.	T3.1i

The strands give examples and ideas for using the aspects with a wide range of subjects, including

- Educational Studies
- English
- Environmental and Social Studies
- ICT
- Integrated Science
- Mathematics
- P.E.
- Pre-Vocational Education
- Religious and Moral Education
- Social Studies

The aspects covered can be used and adapted for many topics, and all subjects. Here are some possibilities to consider.

Always, Sometimes, Never True

Statements are listed and student teachers have to decide whether these statements are always true, sometimes true or never true. For example, ask student teachers which of the following statements are always, sometimes, or never true:

- Mammals can fly.

- N chords of a circle divide the circular region into N + 1 non-overlapping regions.

- If a number is odd, it is also a prime number.

- Molecules are also compounds.

- Liquids freeze at 0°C.

Convince Yourself, Convince a Friend, Convince a Famous Scholar

This works well as a follow-up to the previous activities. It requires the student teachers to re-visit their arguments and re-phrase them with increasing sophistication and precision. For example: Ask student teachers to "Convince yourself, convince your neighbour in the class, convince Prof Allotey" of your views on the mathematical and science statements from activity 'Always, Sometimes, Never True' (T3-1B).

Cumulative Talk

In cumulative talk student teachers repeat and elaborate on each other's ideas, in an uncritical (i.e.unquestioning) way. Everyone accepts and agrees with what other people say. It promotes whole class harmony and allows student teachers to increase in confidence as they speak without being challenged at first. For example: Try out cumulative talk by asking student teachers to create a class story, contributing one line each about welcoming a new student teacher to the class who is deaf. The first sentence could be "Yesterday, I met a dedicated new student teacher, Mary."

Matching Cards

Student teachers are asked to work in pairs or small groups to match cards and discuss why they match. This activity is commonly used in language and literature lessons and is called 'Pelmanism'; it can be used to show relationships between words. Good discussions come from having examples that have multiple or not straightforward answers.

For example: Give student teachers a card sort that consists of two types of cards: some with graphs and some with descriptions. Ask the student teachers to look at a graph card, and to discuss and agree with which descriptor card it can be paired.

Ordering Cards

Facts that can be ordered, but which do not always have a straightforward answer, are written on cards. Student teachers have to order these, working in groups or pairs. Ordering is an excellent way to help student teachers understand sequencing and signposting in language so can be very useful for storytelling, debate, presentations, reading and writing.

For example:

- Ask student teachers to order the following in terms of the probability that they will happen: tomorrow it will rain; getting tails when tossing a coin; getting an 'A' for my English essay; eating fufu this week;....

- Use cut up stories with useful signposting language that can help student teachers re-order the story. To encourage Talk for Learning, do not finish the story, the student teachers will have to make up the ending or discuss what happens next in the story.

Talking Points

Talking points are deliberately thought-provoking statements for discussion and reasoning in small groups. For example, you can ask student teachers to discuss whether the following statements are 'true', 'false' or 'not sure'. Ask the student teachers to explain their reasoning. Here are the statements:

- The next president of Ghana will be female.

- Girls are naturally inclined to be better at languages and worse at science and maths than boys.

- Volume and capacity are the same.

- The number -4 is greater than -3.

PDC Notes

This activity will be done during the session. There are some notes about taking care not to reinforce gender stereotypes following the activity. It is important to think about these issues when designing talking points. Note that there is an extensive PDC Note on the gender-related talking point "Girls are naturally inclined to be better at languages and worse at science and maths than boys" below.

You, the Radio Reporter

This is a variation on writing a newspaper article: this time the student teachers are radio reporters so they need to talk. For example: Give a distance-time graph of the final two competitors (one male, one female, female winning) racing each other in the Tro Tro Racing Championships. Ask the student teachers to provide the life commentary of the race for the radio.

Figure 6. Talk for Learning among students

T3-1 i 3 Using These Aspects in a Gender-Responsive Way

Many of the strategies discussed above involve some sort of small group work, pair work and/or calling on individual student teachers. Here are some tips on how to use these strategies while building female students' confidence and opportunities to speak.

1. Be conscious of the number of questions asked/answered by males and females and the amount of attention you give: if males speak more, you should make an extra effort to encourage females to speak more.

2. Be patient with females and males who may be shy or afraid to talk: understand that this is often due to low levels of self-confidence, so ensure that students, especially females, are given time to think and answer a question before moving on to another student.

3. Experiment with different student groupings to find which are the most comfortable and effective.

In terms of the last point on experimenting with different student groupings to find which are the most comfortable and effective, you can try:

• All female groups - females tend to enjoy and benefit from a non-competitive, collaborative dynamic of working with other females. However, females and males should still learn to participate and work together equally. One strategy is to start with separate female and male groupings and transition into mixed groups gradually, while also setting ground rules for equal speaking and leadership roles.

• Groups in which there are mostly females, and 1 or 2 males – as you transition towards mixed groups, make sure to establish the rule that

all members of a group should be able to speak and participate – no-one (female or male) should dominate.

- Mixed groups – ensure equal speaking and participation rules are followed and make sure to assign leadership roles to females (especially if there are fewer females in the class).

Please bear these points in mind across all the teaching strategies in this theme, and throughout your teaching.

T3-1 i 4   Activity: Talking Points

PDC Notes

You should skip straight to here from the learning objectives.

As a PDC, you now need to decide whether to do this activity as 'whole class dialogue', or whether to form smaller groups. If you think stronger guidance is needed, then do the activity as a single group. If you think the tutors are going to benefit from smaller groups, then form smaller groups (that can discuss different statements).

PDC Notes

Outcome. At the end of this activity, tutors should have

- discussed at least some of the activity types suggested above;
- had a go at trying out and experiencing the strategy 'talking points' for at least one of the statements;
- discussed how the strategy of 'talking points' in particular, and Talk for Learning in general, can improve learning.

Suggested time: TT

In small groups, talk to your tutor colleagues about each of the activity types suggested. Then choose two of the following Talking Point statements and discuss these one by one in your groups:

- The next president of Ghana will be female.

- Girls tend to perform poorly at science and maths because they are not encouraged or supported as much as boys are.

- Volume and capacity are the same.

- The number -4 is greater than -3.

Tutor Discussion

PDC Notes

You need to be careful about reinforcing gender stereotypes. For example, consider this statement?

- Girls are naturally inclined to be better at languages and worse at science and maths than boys.

How is it different from the statement that we used above? In your discussion of such Talk Points, see what comments are made. Tutors that have been sensitised as to why and how maths and science performance is shaped by socialisation/teacher attitudes (and not by intelligence), will be a critical voice in the discussion.

Listen out for and be prepared to challenge comments like this:

"Yes, all I've seen through school is boys doing better at maths than girls...so it must be true."

Have a brief general discussion following the activity and if you think tutors would benefit from it, share your thoughts on the above issue.

An alternative talking point that addresses similar issues could be:

- Girls tend to perform poorly in science and maths because they are not encouraged or supported as much as boys are.

or this simpler version:

- All girls are better at languages and worse at science and maths.

Tutors should choose the version of the talking point that they think is least likely to bring about gender stereotypes (in the ensuing discussion) when doing this activity with their student teachers.

Suggested time: TT

After the activity, discuss with your colleagues:

- Do these activities make you talk?
- Do you think they make you talk in such a way that it helps learning?

Make notes of your ideas in your learning journal.

T3-1 i 5 **Plan and Practise Together**

PDC Notes

It is now time for group work, to Plan and Practise Together.

Suggested time: 45 minutes

The next three sections have examples of different activities to initiate Talk for Learning that can be used in all subjects. In your own planning, please use the introduction above if you need further information on the various aspects. Also note that the example provided in each section is just for guidance. Do not spend too long on it, but move straight on to your planning activity.

You can also find more classroom ideas that offer good talking for learning ideas in our previous themes (Creative Approaches, Questioning).

PDC Notes

There are three different sections that follow, each focusing on different aspects of Initiating Talk for Learning.

If you want to keep the planning simpler, you could keep the group of tutors together, and select one of the sections that all tutors can do (e.g. the section on Talking Points). The example focuses on science, but the Plan and Practice Together sections have ideas for several sections.

However, if you would like to challenge your tutors a bit more, then refer them to the above table, and let them choose which aspect to cover. Note that this will also make the reflection (at the start of the next session) more complicated.

As tutors start with the following sections, do remind them to not spend too much time on the Example, but to really focus on planning their own activities.

During the different task group work, you should circulate, and support the groups where needed.

T3-1 i 6 Prepare for Teach and Reflect

PDC Notes

After about 45 minutes (with about ten minutes left in the session), bring the tutors back together, and see whether anything needs to be discussed. Make sure that everybody has a concrete plan for teaching, and has recorded this in their activity plan.

Then close the session.

Suggested time: 10 minutes

Once you have planned your activity, come back together as a whole group, to see what issues arose. Make a note in your learning journal. After you have taught, write down your own observations and reflections on your activity plan and in your learning journal, and be prepared to share these with others at the start of the next session.

T3-1 i 7 Sources

TESS-India, *Developing mathematical reasoning: mathematical proof*, http://www.open.edu/openlearnworks/pluginfile.php/134971/mod_resource/content/3/SM02_V2_PDF.pdf, available under Creative Commons Attribution-ShareAlike (http://creativecommons.org/licenses/by-sa/3.0/; unless identified otherwise).

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OER4schools, *Talking Points*, http://oer.educ.cam.ac.uk/wiki/OER4Schools/activities/Talking_points, available under Creative Commons Attribution-ShareAlike 4.0.

OER4schools, *Cumulative Talk*, http://oer.educ.cam.ac.uk/wiki/OER4Schools/Introduction_to_whole_class_dialogue_and_effective_questioning, available under Creative Commons Attribution-ShareAlike 4.0.

Teaching Strategy 1 – Strand A
Initiating Talk for Learning with Ordering and Matching

T3-1 A 1 Example

Using Ordering and Matching to Initiate Talk for Learning in English

In this example section, we are going to look at two teaching activities that you can use in the classroom, called 'Ordering' and 'Matching'. 'Ordering' and 'Matching' can be used as prompts for Talk for Learning, in that they encourage talk for…

- negotiating e.g. I think this should go there because it will ….

- agreeing/disagreeing e.g. I think this is a match because … yes so do I; no, I don't because…

- explaining e.g. This has to go next because…

In addition, these activities can be expanded upon to extend the Talk for Learning, for example:

- In **'Ordering'** use stories where student teachers have to create the ending, or use processes where student teachers have to describe each stage of the process.

- In **'Matching'**, extend the Talk for Learning by getting student teachers to talk further about their 'matches' e.g. advantages/disadvantages; likes/dislikes; giving more examples of similar 'matches' and so on.

Both activities can be organised as whole class (using the board as the prompt with cards stuck on the board); teams (competition); pair work (if you have smaller classes this will mean more resources); group work. While planning, think about how you will group female and male students, and how you can ensure that all student teachers participate equally.

Now let's first look at 'Ordering'. Here is a story that can be used for an 'Ordering' activity. Read the story and instructions, then discuss the questions after the text either in pairs or groups.

Ordering

Preparation: You will need to copy the story below several times, one for each group of student teachers. Cut up each copy of the story into strips and mix them up. You might want to use paper clips to keep each set of strips together, so that they do not accidentally mix.

Instructions for the classroom activity:

- Organise your student teachers into small groups.

- Give each group the mixed up story.

- Ask the groups to re-order the strips to make a story.

It was a dark, dark night.
The Mensah family was fast asleep.
Their little boy, Halifax, woke up because he heard a noise.
He got up and walked into the living room.
When he got there
he found a man sitting in a chair.
The man was friendly and they played a game together.
In the game, they put all the valuable things in the house, in the man's bag.
Halifax thought it was fun
So he helped the man a lot.
Then the friendly man said goodbye.
Halifax went back to bed and fell fast asleep.

Tutor Discussion

- How can you make this activity promote Talk for Learning?

- How can you make sure that everyone participates equally in the activity and discussion, especially females?

- What further questions might you ask your student teachers to stimulate further Talk for Learning using the re-ordered story?

- How can this be used in English language lessons to practise grammar items? What other areas of the English syllabus could you use it for?

- What other subjects could you use this re-ordering activity with? What topics for discussion might come from the story?

Matching

Here are the instructions for a game. Read them, and then do the tasks following the game. (Note that this activity was also introduced in 'Games', T1-1 E, and is called 'Pelmanism'[1].)

_____

1 Originally devised as a memory system in the 1890s by William Joseph Ennever, the system was taught via correspondence from the Pelman Institute in London (named after Christopher Louis Pelman). https://en.wikipedia.org/wiki/Pelmanism_(system)

Pelmanism

Prepare 10 cards with numbers on one side and sentence patterns on the other, as follows:

Front of cards

1	2	3	4	5
6	7	8	9	10

Back of cards

SV	SVC	SVO	SVOO	ASVOC
Grandmother bought me a toy.	She arrived.	Immediately his face turned pale.	He is a nurse.	She kicked the ball.

Instructions

- Stick the cards on the blackboard so the student teachers can only see the numbers.

- Divide the student teachers into two teams and ask them to choose two numbers.

- Turn the cards over and see if they have guessed a match e.g. SVO (Subject, Verb, Object) = She kicked the ball. (Make sure everyone can see the cards when you turn them over.)

- If they have, give the pair to the team. If not, turn the cards over again and continue until all the cards are finished.

The idea is that the student teachers have to remember what is where and then create more original sentences using the syntax (different structures). It could be made into a competition where, after they have completed the matching, the groups have to come up with as many different sentences as possible using the different syntax. In this way they have to think of the structure of the sentence and sentence patterns, thereby Talk for Learning.

Tutor Discussion

How can this 'Matching' activity stimulate more Talk for Learning? Write some of your ideas in your learning journal.

> **PDC Notes**
>
> **Please note:** There are two activities introduced in this session (and two sets of 'Tutor Discussion'), so make sure you time it well. If you want to do the activities in full , you may have to choose one over the other and get the tutors to read one activity for themselves.

T3-1 A 2 Plan and Practise Together

Ordering and Matching

We are now going to plan our own 'Ordering' or 'Matching' activity. If the above examples fit what you are teaching, you can use them. However, you may well be teaching something else, so here are some more ideas from various subjects that lend themselves to 'Ordering or Matching'.

Managing an Enterprise in Assemblage and Construction (Pre-Vocational Education - FVA 221)

Put the stages of 'Managing an Enterprise' (planning, organising, costing the enterprise, marketing, controlling, customer relation) on cards and ask each group of student teachers to organise them in the order they think they should be. Some may come up with a linear arrangement, some might make a cyclical one. Whichever approach and order they take, it should be a rational order. Ask student teachers to give their rationale for their order and say what happens at each stage. This will help them in Talk for Learning as they have to give their reasoning for each order/stage and how they link together.

Morality (Religious and Moral Education - FDC 119)

Take statements/concepts from the text on Morality and ask student teachers to order them in order of importance. They have to give reasons (and discuss them) as to why they have chosen such an order. This can be done individually, in pairs or in groups, so you can feedback as a whole class or in pair/group work.

Religious Bodies (Educational Studies - EPS 111)

In groups plan how to use 'Matching' to initiate Talk for Learning using the steps given at the example stage.

After the 'Matching' activity either:

1. Ask each group to note down the pros and cons of having religious bodies as educational agents or

2. Ask student teachers to discuss the similarities and differences between state run institutes and religious run institutes.

THE RELIGIOUS BODIES	SCHOOLS/COLLEGES ESTABLISHED
The Basel Missionary The Wesleyan Missionary The Anglicans The Bremen Missionary The Catholic Missionary The Ahamadiyya Moslems	Presbyterian CoE, Akropon Mfantsipim College, Wesley College, Kumasi Adisadel College, Cape Coast E.P. College of Education, Amedzofe O.L.A. College of Education Nusrat Ahmadiyya Jahan CoE, Wa

The Peopling of Ghana - Origin of Different Ethnic Groups (Environmental and Social Studies - FDC 118)

In groups plan how to use 'Matching' to initiate Talk for Learning using the steps given at the example stage.

Ask each group to chose one of the ethnic groups to present a short talk on their customs and traditions.

NAMES OF MAJOR ETHNIC GROUPS	EXAMPLE TRIBES OF THE ETHNIC GROUPS
AKANS EWE GA/ADANGBE GUANS MOLE/DAGBANI	FANTI, ASHANTI etc ANGLO, WEDOME etc. GA, SHAI, KROBOS etc KARACHI, EFUTU etc. MAMPRUSI, DAGOMBA, etc.

Continents and Oceans (Environmental and Social Studies - FDC 118)

Use a map of the world and match the countries to the continents and put the five oceans in the correct place.

Ask student teachers in groups to take one continent and write five questions for another group to answer. The questions have to relate to the continent e.g. the countries/capitals/rivers/etc.

South America	North America	Asia	Africa	Europe	Australasia	Antarctica
Colombia, Brazil,	The USA, Canada	India, Russia, Turkey	South Africa, Ghana	Russia, Turkey, France	Australia, New Zealand	

Five Oceans: Pacific, Atlantic, Indian, Arctic, Antarctica

Plan Your own Activity

Can you use any of the above ideas? Hopefully the above topics give you an idea of how you can use design an activity for use in your classroom. But, as usual, it is possible that those ideas do not fit, and you will need to identify a topic that fits into your weekly lesson forecast.

At the end of the planning activity you should have developed an activity plan that you can use in your teaching 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.

> **PDC Notes**

T3-1 A 3 Teach and Observe

It is important for your professional learning that you actually teach the activity that you have planned. Please make sure that you have your activity plan available when you teach. Any issues that arose during the lesson should be written down immediately after you have taught, and remember to fill in your observations section of the activity plan immediately after you have taught. If possible arrange with a colleague to observe each other when you each do the activity with your student teachers during the week.

T3-1 A 4 Reflect Together

Ordering and Matching

Now that you have taught the lesson, using either or both 'Ordering' and 'Matching' with your student teachers, get into different subject groups to share your experiences. Use the questions below to guide your reflective discussion:

- Did you write any notes after your lesson as a self assessment and to recall the 'Ordering' or 'Matching' activities?

3

- Can you say what percentage of time was tutor talking time and how much was student talking time during the activity you used/chose?

- Did you think male students were talking/participating more than female students? If so, did you do anything to make things more equal?

- How did the 'Ordering' and 'Matching' activities help student teachers to talk and learn more? Share the different ideas from the different subjects and record them either on a poster or in your learner journals.

PDC Notes

The following explain the abbreviations in the 'Example' for 'Matching':

| SV | SVC | SVO | SVOO | ASVOC |

- SV = subject + verb
- SVC = subject + verb + complement
- SVO = subject + verb + object
- SVOO = subject + verb + indirect object + direct object
- ASVOC = Adjunct (e.g. adverb/adverb phrase) + subject + verb + object + complement

You can explain that these are sentence patterns in English. Ask your tutors to discover what some of the sentence patterns in their own languages look like.

T3-1 A 5 Further Resources

Initiating Talk for Learning

Here is an old, but very good book for more activities to get your student teachers/pupils to talk more, in a meaningful way, in your English classes. It is still in publication.

Klippel, F. (1985), *Keep Talking - Communicative fluency activities for language teaching*, Cambridge University Press.

Teaching Strategy 1 – Strand B
Initiating Talk for Learning with Always, Sometimes, Never True and Convince Yourself, Convince a Friend

T3-1 B 1 Example

How Tutor Hamida Convinced Professor Allotey in Mathematics

In this example, tutor Hamida uses 'Always, Sometimes, Never True' and 'Convince Yourself, a Friend, Prof Allotey' to initiate talk for learning in her classroom. There are many statements (in life, and in mathematics) that are always true, sometimes true, and never true. It can be difficult to figure out which category a statement belongs to, and mathematicians spend a lot of their time trying to work this out. For some hard problems in mathematics, this can take many years to work out, and for many problems we do not know for sure. In working this out, it helps to talk to others, and to try to convince others. Often, we may be convinced ourselves, but talking it through with a friend may change that. Talking to an eminent scholar like Professor Allotey may make us think about arguments even harder.

Tutor Hamida teaches in a College of Education in the northern region of Ghana. She thinks her student teachers get little opportunity to practise their mathematical reasoning and some of her students find giving explanations in English not straightforward. She decides that it would be a good idea to give them more opportunities for talking about maths. She uses two activities in succession: 'Always, Sometimes, Never True' followed by 'Convince Yourself, Convince a Friend, Convince Prof Allotey'. These are her reflections.

I wanted to revise some concepts about numbers and number systems (FDC112, 'Number and Basic Algebra', Unit 3), and wrote down statements related to that. Finding the statements was not too difficult. Some of them I got from the textbook, some were related to exam questions, some I invented myself.

I told my student teachers to read the statements I had written on the board. I asked them to discuss which of these are always true, sometimes true or never true, and why.

Here are the statements:

- If p is a prime number, then p + 1 is a composite number (not a prime number).
- If a number is odd, it is also a prime number.
- N chords of a circle divide the circular region into N + 1 non-overlapping regions.
- The quotient of two rational numbers is an irrational number.
- There are an infinite number of pairs of integers whose sum is 0.

After about 15 minutes I moved them onto the 'Convince Yourself, Convince a Friend, Convince Prof Allotey' activity. I told them:

- Remember that Professor Allotey will try and pick holes in your reasoning.
- Redo the activity, but instead of simply discussing your reasoning with your partner, you now have to come up with justifications that will:
  - convince yourself;
  - convince a friend;
  - convince Prof Allotey.
- You will be invited to share your most convincing justification with the class. Will the other student teachers be convinced by your argument?

After the teaching, Tutor Hamida reflects on how it went.

I was a bit scared about trying out this activity for several reasons:

- the unusual structure of the activity;
- requiring the student teachers to develop their own reasoning;
- student teachers talking to each other when this is not usually allowed in my classroom;
- my fear that they might not remember anything about numbers and number systems at all!

To my surprise it worked really well! The classroom did not end in chaos. There was noise from the talking in pairs, but it was not loud. What I liked very much was that the conversations were about mathematics, and that disagreements led to pointed discussions about the mathematical properties. When the student teachers were invited to share their best arguments to convince a room full of Professor Alloteys, I was impressed with the quality of the mathematical language and reasoning used. What I found very hard in this lesson was my changed role as tutor: I was no longer standing at the front explaining and telling them what to do. However, it meant that this was now their learning and their thinking, which was a powerful experience.

$$12 = 3 \cdot 4$$

$$11 = 2 \cdot 4 + 3 \qquad 11 = 2 \cdot 5 + 1 \qquad 11 = 3 \cdot 3 + 2$$
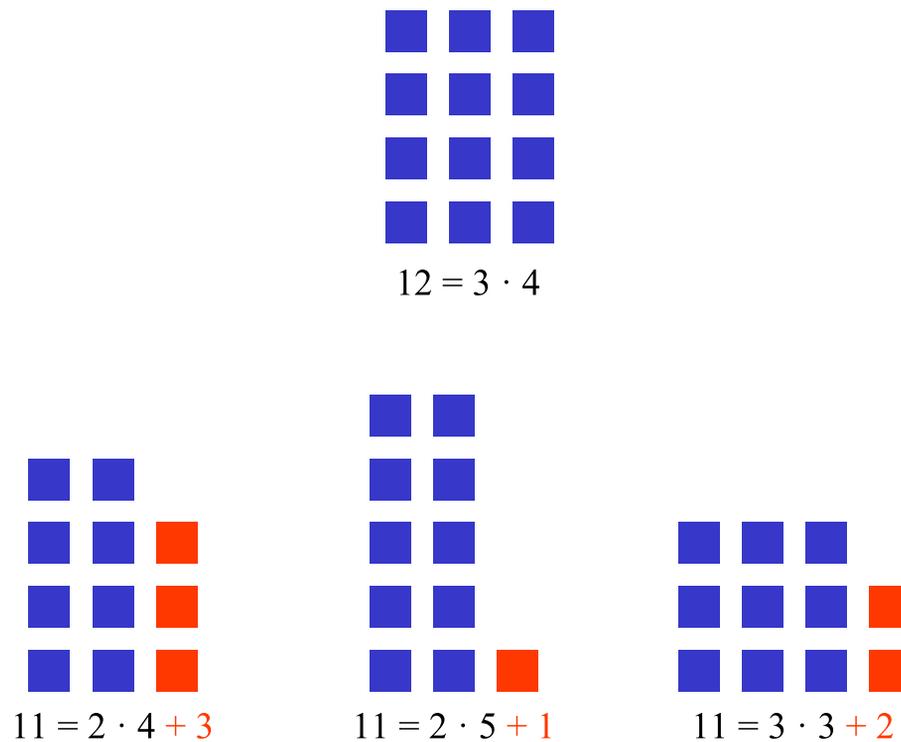
Figure 7. The number 12 is not a prime, as 12 items can be placed into 3 equal-size columns of 4 each (among other ways). 11 items cannot be all placed into several equal-size columns of more than 1 item each without some extra items leftover (a remainder). Therefore, the number 11 is a prime.

Tutor Discussion

Discuss with your tutor colleagues:

- What do you think about the activities Hamida selected to work on getting her student teachers to learn through talking? Would they work with your student teachers? Would you have changed anything?

- What are the advantages and disadvantages of using talk for learning approaches for mathematics learning?

- Do you think everyone will participate equally, especially females? If not, what can you do?

- Make a note of your thoughts in your learning journal.

PDC Notes

For this activity, make sure that the tutors discuss the mathematical examples given, and are clear about whether they are 'Sometimes, Always, Never True'. Can the tutors easily devise additional statements?

If this activity is undertaken by students teachers, whose mathematical knowledge may not be comprehensive, you might ask them to unpack the terms first and maybe do it together as a whole group: What is a prime number? What is a composite number? What is a rational number? What is an irrational number?

Here is an extended reflection from Tutor Hamida, that will help you gain additional insights:

Before we started on this activity, I was very uncomfortable about allowing the student teachers to talk to each other as I thought it would become very noisy with 45 student teachers in the classroom; I would not be able to control what was discussed and it could become chaotic. What if the principal happened to walk past at such a chaotic moment! On the other hand I do believe that talking helps learning, because when you talk, you have to organise your thinking – otherwise the listener will not understand you.

So I pushed myself to be brave and started the lesson: I asked the student teachers to work the answers out for themselves in silence and to write down their reasoning. Then I asked them to discuss their thoughts and reasoning in pairs. But they had to do it quietly, so the others could not overhear what they were saying and steal their ideas! I told them that after some time I would select at random someone to explain what the thinking of the pair had been. Other student teachers could then comment in a constructive way, just like we sometimes do in whole-class discussions. To address my fear that they would not be able to remember anything, I wrote the page numbers of their textbook where they could find information about the topics on the board – and they were free to refer to these.

To my surprise it worked really well! The classroom did not end in chaos. There was noise from the talking in pairs, but it was not loud: they seemed to like the sense of competition and secrecy. I listened into the conversations by walking around and by standing quietly against the wall, observing. What I liked very much was that the conversations were about mathematics, and that disagreements led to pointed discussions about the mathematical properties, flicking through the textbook to check their reasoning and using a number line to illustrate what they were saying. When the student teachers were invited to share their best arguments to convince a room full of Professor Alloteys, I was impressed with the quality of the mathematical language used and their responses showed me they seemed to really understand the mathematical concepts.

What I found very hard in this lesson was my changed role as tutor: I was no longer standing at the front explaining and telling them what to do. Actually, I talked very little, and it was difficult not to interfere in the discussion and show them how to do it. However, it meant that this was now their learning and their thinking, which was a powerful experience.

T3-1 B 2 Plan and Practise Together

Always, Sometimes, Never True and Convince Yourself, Convince a Friend

The above example might not work for you, so here are six more statements that lend themselves to using the same strategies of 'Always, Sometimes, Never' and 'Convince Yourself, a Friend, a Scholar' to initiate Talk for Learning:

Ratio and Proportion (Mathematics)

Investigate the statement: *'When two quantities are proportional to each other, then one quantity is a multiple of the other'.*

Reference: 2014 DBE Mathematics (Number and Basic Algebra), FDC 112, Unit 2, p. 206.

Shape and Space (Mathematics)

Investigate the statement: *'Diagonals in quadrilaterals cross each other at right angles'.*

Reference: 2014 DBE Mathematics (Geometry and Trigonometry), FDC 122, Unit 1, p. 208.

Relations and Mappings in Functions (Mathematics)

Investigate the statement: *'The sum of n odd numbers is n2'.*

Reference: 2014 DBE Mathematics (Number and Basic Algebra), FDC 112, Unit 5, p. 207.

On Meaning of Artwork (Pre-Vocational Skills)

Investigate the statement: *'Every symbol in a piece of artwork conveys a particular meanings in a cultural context'.*

Reference: 2014 DBE Fundamentals in Visual Arts, FVA 111, Unit 2, p. 247.

Rules of Football (P.E.)

Investigate the statement: *'In a game of football, anytime the ball touches a player's hand there a foul against him/her'.*

Reference: 2014 DBE Game Activities for Basic Schools I, PRA216, Unit 2, p. 62.

Input Devices (ICT)

Investigate the statement: *'A touch screen is an example of an input device'.*

Reference: 2014 DBE Introduction to Information Technology 2 (ICT 2), GNS 221, Week 3, p. 307.

Mammals (ICT)

Investigate the statements:

- Mammals give birth to their young, and feed their young with milk.

- Mammals can fly.

- Mammals live on land.

Plan Your Own Classroom Activity

Can you use any of the above ideas? If not, consult your syllabus and choose a topic from a lesson you will teach next week where you can use 'Always, Sometimes, Never' and 'Convince Yourself, a Friend, a Scholar'.

Here are your planning tasks. Use the activity plan template found in the appendix.

Planning tasks:

1. In groups think of a lesson and a topic that you will teach in the coming week. If the above examples fit, you can use them. Otherwise, pick your own from the syllabus.

2. Come up with statements suitable for 'Always, Sometimes, Never True' and 'Convince Yourself, a Friend, a Scholar'. Remember the aim is to stimulate Talk for Learning with your student teachers.

3. Plan the activities in detail.

Please make sure that you have noted down everything you need to remember for your lesson in your activity plan. 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.

> **PDC Notes**
>
> The activity 'Always, Sometimes, Never True' is particularly good for working on mathematics topics, because it requires the student teachers to think about some essential mathematical processes. For example:
>
> - to think about the validity of a statement;
> - to be precise when such statement is valid;
> - to develop logical arguments.

When tutors plan and try this activity with other tutors, they will have to go through the same processes. Overall, 'Always, Sometimes, Never True' is an introduction to working on mathematical proof.

T3-1 B 3 Teach and Observe

It is important for your professional learning that you actually teach the activity that you have planned. Please make sure that you have your activity plan available when you teach. Any issues that arose during the lesson should be written down immediately after you have taught, and remember to fill in your observations section of the activity plan immediately after you have taught. If possible arrange with a colleague to observe each other when you each do the activity with your student teachers during the week.

T3-1 B 4 Reflect Together

Always, Sometimes, Never True and and Convince Yourself, Convince a Friend

Now that you have taught the lesson activity, reflect on how it went. If at all possible, do the reflection together with a colleague who has also tried the activity.

In your reflection, consider the following questions:

- Did these activities help your student teachers to talk mathematically (or to reason better if you did the activity in other subjects)?

- Is there any difference in the learning of the student teachers from the strategies you tried out in these lessons from what you normally do?

- If you did the activity in mathematics: How does 'Always, Sometimes, Never True' relate to the idea of mathematical proof?

- Was there any challenge when you tried this activity; if yes, how can you improve next time?

- Did you think male students were talking/participating more than female students? If so, did you do anything to make things more equal?

Remember to write down your thoughts in your learning journal. Note down one or two items which you learned from this section.

> **PDC Notes**
>
> In the reflection, see whether you can bring out the connections between 'Always, Sometimes, Never True' and mathematical proof.

T3-1 B 5 Sources

TESS-India, *Developing mathematical reasoning: mathematical proof*, http://www.open.edu/openlearnworks/pluginfile.php/134971/mod_resource/content/3/SM02_V2_PDF.pdf, available under Creative Commons Attribution-ShareAlike (http://creativecommons.org/licenses/by-sa/3.0/; unless identified otherwise).

Image: Prime rectangles, by Fredrik Johansson (original); Ryan Wilson (derivative work) - File:Prime rectangles.png, Public Domain, available at https://en.wikipedia.org/wiki/Prime_number#/media/File:Prime_rectangles.svg. Image caption: https://en.wikipedia.org/wiki/Prime_number, Creative Commons Attribution-ShareAlike 3.0 Unported License.

Teaching Strategy 1 – Strand C
Initiating Talk for Learning with Talking Points

T3-1 C 1 Example

Using a Talking Points Activity to Initiate Talk in Science

Have you seen a programme on Ghanaian television called 'Talking Point' where politicians and other influential people discuss topics in the news? Opinions are often strongly held and articulately expressed and the discussions can get quite heated at times when ideas clash. This is especially true when a controversial topic is being discussed.

Tutor Sadiq uses the idea of talking points to stimulate discussion in a similar way with his student teachers because he knows that if he can get the student teachers talking effectively about science topics he can begin to improve their learning in science.

Tutor Sadiq's Talking Points Activity With Student Teachers

Tutor Sadiq asks his student teachers if they have ever seen the TV programme 'Talking Point'. Some of them have and others said that their parents watch it. After briefly telling his student teachers about the programme he writes some talking points related to digestion (their new topic) on the board. He gives the student teachers a few minutes to get organised into groups of four or five before instructing them to work through the talking points one at a time in their groups. He tells them they have 15 minutes to work on the activity.

These are the talking points he writes on the board. Example of talking points for digestion:

- All living things have a digestive system which breaks down complex substances into simpler substances.

- Blood is part of the digestive system.

- Teeth are essential for digestion.

- You cannot breathe when swallowing.

- The stomach is the most important organ in digestion.

- Your intestines are 50 metres long.

- The appendix is part of the digestive system.

DBE syllabus reference: "Digestion in humans" (FDC 224, *Integrated Science 3*, Biology, Unit 3).
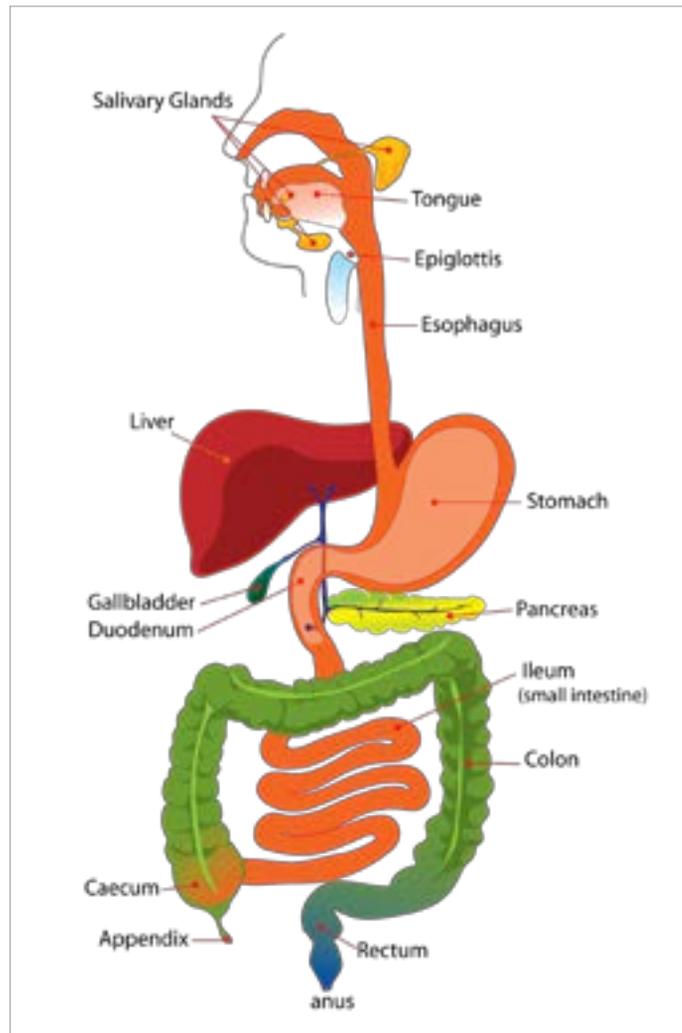
Figure 8. The digestive system in human beings

Tutor Sadiq describes how he does the activity as follows:

> I notice the following when watching one group:
>
> - Each student teacher takes a turn to give their opinion.
> - When everyone in the group says something about the first talking point they decide together if they agree, disagree or are unsure about it and then they move on to the next one.
> - They are prepared to justify their ideas when another member of the group questions them. For example, one student teacher asks another 'Why do you think that the intestines are less than a metre long?'.

> As I walk around the classroom I can see that not every group talks about all the talking points on the list or talks about them in order. However, as long as everyone expresses their opinion and the group reach a consensus before moving on that does not matter. Across the groups, the student teachers generally talk about each point for as long as the discussion continues to be productive. However, one group rather rushes through the talking points without exploring them fully. Because that group finishes very quickly, I divide up the members of this group and assign them to be silent observers of another group each so that next time they have a better idea of how to contribute to the discussion.

After the activity Sadiq holds a whole class plenary session and he asks individuals how their group found the activity and about any interesting points that arose.

Figure 9. Student teachers doing a talking points activity

Tutor Discussion

You will have noticed this statement in the previous extract about tutor Sadiq: *"he knows that if he can get student teachers talking effectively about science topics he can begin to improve their learning in science."*

Share your thoughts on how talking about science in groups or during whole class dialogue can lead to improved outcomes for student teachers.

When you do a talking points activity with your student teachers:

- How will you make them aware of the steps of the activity? Can you write the steps in bullet point form?

- How will you take feedback from groups after the talking points activity? What questions will you ask? Why?

- How will you make sure that everyone participates equally in the activity and discussion, especially females?

- What, if anything, will the student teachers write during the activity? Why?

Sadiq wrote the talking points for this activity on the board. What are the advantages and disadvantages of doing it that way? What are the alternatives to writing them on the board?

PDC Notes

Here is some of the science behind the digestion talking points activity. When tutors plan their activity they should also think about the responses that the student teachers may make and how to gently guide the group discussions to help resolve any contentious points that might arise.

- All living things have a digestive system which breaks down complex substances into simpler substances. = NO, plants do not, they make and store their own food; however the venus fly trap does have a digestive system of sorts.

- Blood is part of the digestive system. = NO, although it does play a major part in digestion by transporting its products (nutrients) to organs in the body - blood is considered part of the circulatory system although it is a tissue, not an organ.

- Teeth are essential for digestion. = NO, not essential (babies and some older people don't have them) but very useful to break down food and get the process started.

- You cannot breathe when swallowing. = NO/YES, in most cases you actually breathe out when you swallow but it depends on what you are swallowing and your position, however there is a brief pause in breathing when swallowing.

- The stomach is the most important organ in digestion. = YES/NO, it is very important but other organs that are part of the digestive tract are also important i.e. intestines, tongue.

- Your intestines are 50 metres long. = NO, the small intestine in adults is about 7m long and the large intestine is 1.5m long.

- The appendix is part of the digestive system. = NO, not officially although it is thought to act as a storehouse for 'good' bacteria that can be used to repopulate the digestive system after diarrhoea.

When tutors are sharing their thoughts on how talking about science could lead to improved outcomes for student teachers, they may consider the following ideas:

- By talking, student teachers may reveal misconceptions that can be addressed sooner rather than later.
- Student teachers may use scientific terms incorrectly; these can be addressed and corrected.
- Talking about what you think helps you to clarify your ideas.

Some anticipated problems may be dealt with by the group discussion but how will the tutor know if there are any outstanding issues that need attention when they do the activity? [These can be addressed in the plenary.]

Tutors should consider writing some simple bullet point instructions, that they can share with their class, on how to do the talking points activity.

T3-1 C 2 Plan and Practise Together

Talking Points

You are now going to plan your own talking points activity. The previous example will only work for you if you happen to be teaching about the digestive system, so here are some more ideas from various subjects that lend themselves to the talking points technique:

Acid, Base, Salt and Indicators (Integrated Science - FDC 224)

Explore the following talking points:

- All acids are corrosive.
- A concentrated weak acid has a lower pH than a dilute strong acid.
- Your stomach contains hydrochloric acid.
- Salt is an essential commodity in life.
- Acids, bases and salt are the same.

Sound Energy (Integrated Science - FDC 224)

Explore the following talking points:

- Light and sound travel at the same speed.
- The moon is an example of artificial source of light.
- Light is not itself energy.
- Light can travel around corners.
- Sound can travel around corners.

The Concept of Money (Social Studies - FDC 218)

Explore the following talking points:

- There is no need to save money as it will never run out.

- Money does not play any role in life.

- It is not important to save money.

- With money all things are possible.

- What could you change about life when given GH.

Tourism, Leisure and Development (Social Studies, FDC 218)

Explore the following talking points:

- All tourists should have access to information in their native language at tourism sites.

- There is no need to travel around in your own locality or country.

- Why should people engage in tourism in their locality?

- Tourism helps people to know more about other people and communities [this does not always happen eg some people stay with only their fellow travellers and are only interested in the beach].

- Tourism increases social vices (eg prostitution, pick pocketing etc) in local communities where tour sites are.

- Roads to most tourist sites in Ghana are very deplorable and this is bad for tourism.

What Computers Do (ICT, GNS 211)

Explore the following talking points:

- Information literacy is the same as computer literacy.

- Data and information can be used interchangeably.

- Machine cycle is the same as information processing cycle.

- Computer security is the same as computer security risk.

- It makes more sense to rent computer software (on subscription) than to buy it outright.

Planning Your Own Talking Points Activity

Come up with some talking points (between 5 and 8) on a topic from a lesson you will teach next week. Write them in an activity plan; you can find the activity plan template in the appendix. Also write in your plan other planning details (resources needed etc.) that will help you to do the activity successfully with your student teachers.

Plan to take feedback from your student teachers after they do the activity. If possible, ask them:

- Which talking point/s generated the most discussion?
- Which talking point/s generated the least discussion?

Make a note of these and we will discuss them as a group in the next session.

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.

PDC Notes

Make sure tutors have anticipated and addressed these problems in their planning:

- how to formulate good provocative statements
- mobilising resources for the activity e.g handouts
- purpose of the activity (revise, introduce)
- tutor's role before, during and after the activity
- learning environment
- willingness of student teachers to talk about the issues

T3-1 C 3 Teach and Observe

It is important for your professional learning that you actually teach the activity that you have planned. Please make sure that you have your activity plan available when you teach. Any issues that arose during the lesson should be written down immediately after you have taught, and remember to fill in your observations section of the activity plan immediately after you have taught. If possible arrange with a colleague to observe each other when you each do the activity with your student teachers during the week.

T3-1 C 4 Reflect Together

Talking Points

Now that you have done the talking points activity with your student teachers, reflect on how it went. Do the reflection together with colleagues who also tried the activity.

In your reflection, consider the following questions:

- How effective was the talking points activity in getting your student teachers talking?

- Did the talking points that you used engage the student teachers in the way that you thought they would?

- Did you think male students were talking/participating more than female students? If so, did you do anything to make things more equal?

- Did the talking points activity move your student teachers' learning on? How do you know?

- What makes a good talking point?

Complete the following table with colleagues in your group. Alternatively you can draw this table in your learning journal.

Most successful talking point	Least successful talking point

- Looking at your completed table, are there any patterns ? Can you see why some talking points were more successful than others?

- Will you use talking points in the future with your student teachers? Will you do anything different next time?

Remember to write down your thoughts in your learning journal. Also note down what you learned from this session that was most effective in improving your teaching.

PDC Notes

A good talking point needs to be pitched at the right level, use accessible language and have a range of possible responses. Some of the talking points that did not work well may just need to be changed a little to make them work. Have a look at what the groups have written in their tables and facilitate the rewriting.

Idea for adapting the talking points activity to keep it fresh - student teachers could pick out a talking point (from a hat) to read out for the group to discuss. The person who picks it out could be the first one to say what they think.

T3-1 C 5 Sources

Image: "The digestive system in humans" - originally named 'sistemo digestivo' by author Leysi24 and available under CC-BY-SA-3.0 here: https://commons.wikimedia.org/wiki/File:Digestive-system-for-kids.png#file.

Introduction to Teaching Strategy 2
Building on What Others' Say

PDC Notes

Prior to this session, tutors should have read the introduction to Teaching Strategy 2.

As always, please make sure you keep a record of attendance.

To start this session:

- Please briefly read out the Learning Objectives.

The introduction

- Check that everybody has read the overall introduction and ask whether there are any questions.
- Do say that the introduction provides a lot of additional detail, which tutors should read prior to the session.

The activity

- Now skip the Introduction, going straight to the activity below.

Suggested time: 10 minutes

T3-2 ⋮ 1 Learning Objectives

By the end of the session tutors will be able to:

- Plan activities that can be used in any subject to support student teachers to build on what is said by their peers using Talk for Learning.
- Use these teaching strategies to help student teachers learn more effectively.

T3-2 ⋮ 2 Introduction

PDC Notes

Remember to skip this section, and go straight to the activity below.

Good, effective talk for learning, such as exploratory talk, requires your student teachers to engage critically with each other, listen to what their peers are saying, and to build constructively on each other's ideas. Both females and males are actively involved, participate in sharing ideas and feel happy in asking questions and being challenged in order to help develop understanding and learning. This means establishing a classroom ethos where people listen, are non-judgmental, have skills in communicating in a non-threatening way and feel free to contribute ideas. Sometimes it can

---

be helpful to explicitly establish ground rules like these with your students before starting.

The table below offers an overview of strategies that can help you in developing activities that encourage good quality discussions. The activities will invite your student teachers to share their ideas, listen to each other and build on what they are saying. They can be used and adapted for many topics, and all subjects. More details about these strategies are given after the overview table.

Theme 3: Talk for Learning Teaching Strategy 2: Building on What Others Say		
Aspect	**How it works**	**Strand**
Brainstorming and Brainwriting	The aim of Brainstorming is to quickly share as many ideas or opinions as possible by saying them out loud and having someone write them all down. Brainwriting involves writing ideas down before discussing them.	T3-2A
Concept Cartoons	Concept Cartoons are drawings in the format of a cartoon that show different characters (people, animals,...) arguing about a situation that refers to a concept they are learning about. They aim to provoke discussion and thinking.	T3-2B
Pyramid Discussion	The tutor asks student teachers to discuss the topic first in pairs, then in fours, then in groups of 8, 16 etc until the whole class is involved in the discussion.	T3-2C
Participatory Feedback	Participatory Feedback strategies make student teachers listen actively and add to what others are saying during feedback.	T3-2C

Brainstorming and Brainwriting

The aim of 'Brainstorming' is to quickly share as many ideas or opinions as possible by saying them out loud and having someone write them all down. Here are some potential pitfalls with 'Brainstorming':

- Some people in the group might dominate.

- Early ideas can direct and limit what is offered later – the result of a brainstorm is often 'groupthink' instead of many original ideas. To

avoid this, 'Brainstorming' could be done in smaller groups first, and then shared.

- If you have different levels of professional hierarchy in your group, not everyone might be willing to shout out what they really think in the presence of their boss, for example if your student teachers are in a group with teachers/heads of department at school.

There is also 'Brainwriting', where you ask each individual to write down their ideas (for example, on Post-it notes); these are then discussed and categorised in small groups and only then shared with the whole group.

Concept Cartoons

'Concept Cartoons' are drawings in the format of a cartoon that show different characters (people, animals,...) arguing about a situation that refers to a concept they are learning about. They aim to provoke discussion and thinking. They are experienced as non-judgemental by your student teachers because they are asked to pretend to be one of the characters and argue from their point of view. Here is an example of a 'Concept Cartoon' for a plant growth lesson, called "Heavy Plants" with the following statements:

- As the plant grows its extra weight comes from the soil.

- It's extra weight comes from the water it takes in through the roots.

- It's extra weight comes from the air.

- I think it gets bigger but not heavier.
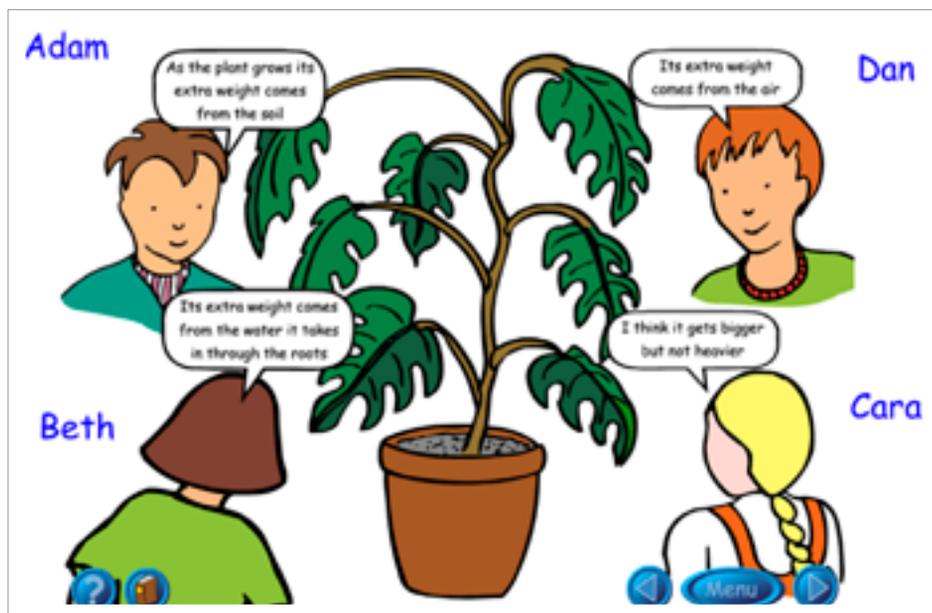

Figure 10. A Concept Cartoon about plant growth

Pyramid Discussion

This is where a topic is given in class, for example, 'Pollution'. The tutor asks student teachers to discuss the topic first in pairs, then in fours, then in

groups of 8, 16 etc until the whole class is involved in the discussion. In this way student teachers build positively and uncritically on what others' say.

Participatory Feedback

Thinking carefully about how ideas and feedback will be shared is important. Asking groups to report or present their findings will mean that the others are simply listening, or even not listening at all. It can also be very time-consuming. 'Participatory Feedback' helps student teachers listen actively and add to what others are saying. For example:

- Ask only two of the groups in your class to present their findings. Do not say in advance which groups will report – this will keep all of the groups engaged. When the two groups present their findings, the other groups then have to add their own ideas, but they are not allowed to repeat what has already been said. This will mean that all the groups have to listen actively and identify what has been said already.

- Ask the groups to report back in the style of a 'Twitter feed'. You decide the limitations: five sentences, one minute, 140 characters …

- Ask the groups to identify one issue or aspect that they want to focus on in their group feedback. At the same time you request that this feedback is done in an interactive way, involving all the other participants. At the end of the feedback, the extent of how interactive this was is discussed so that everyone gets ideas about how to make a workshop interactive.

- Groups write their ideas on a poster that is put on the walls. Give time for everyone to walk around, read these posters and add comments and thoughts, either by writing them on the posters or on Post-it notes added to the posters. As the tutor, you can then pick out the ideas that you want to refer to or discuss further.

Please refer back to the gender section in the introduction to T3-1, and bear in mind the number of questions asked/answered by males and females, the amount of attention you give, being patient with students who may be shy or afraid to talk, and, when doing group work, experiment with different student groupings.

T3-2 i 3 Activity: Concept Cartoons

PDC Notes

Outcome. At the end of this activity, tutors should have

- discussed at least some of the activity types suggested above
- had a go at trying out and experiencing the strategy 'Concept Cartoons' about plant growth as described above
- discussed how the strategy of 'Concept Cartoons' help to instigate discussion and Talk for Learning.

In small groups, first talk to your tutor colleagues about each of the activities suggested. Then try out the 'Concept Cartoon' activity in your group.

Tutor Discussion

Discuss with your colleagues:

- Did you feel happy sharing your ideas as one of the characters?
- Did the activity make you listen to each other and build on what your colleagues were saying?
- In what way did the concept cartoon help to develop discussion?

Make notes of your ideas in your learning journal.

T3-2 ¡ 4 Plan and Practise Together

> **PDC Notes**
>
> It is now time for group work, to Plan and Practise Together.
>
> Suggested time: 45 minutes

The next three sections have examples of different activities for Building on What Others' Say that can be used in all subjects. In your own planning, please use the introduction above if you need further information on the various aspects. Also note that the example provided in each section is just for guidance. Do not spend too long on it, but move straight on to your planning activity.

> **PDC Notes**
>
> There are three different sections that follow, each focusing on different aspects of Building On What Others' Say .
>
> If you want to keep the planning simpler, you could keep the group of tutors together, and select one of the sections that all tutors can do.
>
> However, if you would like to challenge your tutors a bit more, then refer them to the above table, and let them choose which aspect to cover. Note that this will also make the reflection (at the start of the next session) more complicated.
>
> As tutors start with the following sections, do remind them to not spend too much time on the Example, but to really focus on planning their own activities.
>
> During the different task group work, you should circulate, and support the groups where needed.

T3-2 i 5 **Prepare for Teach and Reflect**

> **PDC Notes**
>
> After about 45 minutes (with about 10 minutes left in the session), bring the tutors back together, and see whether anything needs to be discussed. Make sure that everybody has a concrete plan for teaching, and has recorded this in their activity plan.
>
> Then close the session.
>
> Suggested time: 10 minutes

Once you have planned your activity, come back together as a whole group, to see what issues arose. Make a note in your learning journal. After you have taught, write down your own observations and reflections on your activity plan and in your learning journal, and be prepared to share these with others at the start of the next session.

T3-2 i 6 Sources

TESS-India, *Running an effective participatory interactive workshop*, http://www.open.edu/openlearnworks/pluginfile.php/159529/mod_resource/content/3/TEGN_Workshop.pdf, available under Creative Commons Attribution-ShareAlike (http://creativecommons.org/licenses/by-sa/3.0/; unless identified otherwise).

Cartoon Concept "Heavy Plans" from: Primary science teaching trust, http://www.pstt.org.uk/ext/cpd/argumentation/unit3-concept_cartoons.php. Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License.

3

Teaching Strategy 2 - Strand A
Building on What Others Say with Pyramid Discussion and Participatory Feedback

T3-2 A 1 Example

How Ms Mensah Got Her Students Talking in English

In this teaching strategy Building on What Others Say, we are linking two activities: 'Cumulative Talk' and 'Participatory Feedback'. For 'Cumulative Talk' we introduce the 'Pyramid Discussion' and for 'Participatory Feedback' we look at the use of posters. Therefore there are two scenarios and two associated discussion points. Make sure that you divide your time evenly.

Firstly, read the following scenario about the tutor, Ms Mensah, and then discuss the questions under Tutor Discussion.

Cumulative Talk: Pyramid Discussion

Ms. Mensah prepares a lesson in a literature class on the prose 'Burning Grass'. Before reading the story, she decides to encourage Talk for Learning using a 'Pyramid Discussion.'

She then asks the class to discuss in pairs one of the themes of the prose 'Magic and Superstition'. She asks them to think about the role they play in their society (community).

She asks the pairs to join another pair to share their ideas. After a few minutes, she asks the group of four to join another group of four to have eight members. She encourages them to pool their ideas and build on them. This activity goes on until the whole class forms one big group to share all the ideas formed from the pair to the larger group.

Tutor Discussion on Cumulative Talk

- How did using the 'Pyramid Discussion' help Ms Mensah's student teachers build on each others' ideas?

- How could you adapt this strategy for your own subject area?

- How can you make sure that all students participate equally, even as the pyramid grows?

Figure 11. Reaching a consensus in a pyramid discussion

Participatory Feedback: Using Posters

Secondly, read about what Ms Mensah does in her next lesson and discuss the questions that follow it. In the next lesson Ms Mensah wants to develop the five themes (superstition, marriage, hard-work, betrayal, industrialisation) in 'Burning Grass' further. She organises her student teachers into five groups and gives each group a theme from the story. She asks them to:

- Brainstorm ideas about their theme.

- Create a poster to present the key concepts in their theme and how they are relevant today. Use words and pictures/design.

- Stick their posters on the wall.

- Walk around the classroom, read the other posters and add their own ideas if they have any. They can also pose questions to other groups for clarification or more information.

Tutor Discussion on Participatory Feedback

What are the benefits of using posters as a form of giving/getting feedback? Think of the question both in terms of the tutor and the student teacher. Make a note of the benefits in your learning journals.

PDC Notes

The PDC should bring out these points about the 'Pyramid Discussion':

- It is a way of collecting a consensus from the group, or a pool of facts. The group starts off by working on their own, brainstorming a certain topic and writing down their own list of ideas. Then, individuals are put into pairs. They compare their two lists, copying any new ideas from their partner. Pairs are then put into groups of four and the process is repeated. Groups of four are put together into groups of eight and so on. A final list of facts or ideas, solutions or whatever the 'product' was intended to be, is arrived at by majority consensus.

- The process is democratic and works on the principle of co-operation and building on what everyone has to offer. It shows the group that, as a team, they are more powerful than as an individual thinker; as a group they hold much more knowledge between them; one plus one is greater than two, and that they can learn from each other. 'Pyramid' is often used as a reviewing technique where participants must recall discrete items, concepts, principles, decisions, guidelines, that they have learnt or decided on so far.

Here are some additional points to consider about 'Cumulative Talk' and 'Participatory Feedback', that may help you answer questions from tutors.

- The benefits of 'Cumulative Talk' and 'Participatory Feedback' are many but it requires tutors to become '**facilitators of learning'.** What does this actually mean in a practical sense?

  - It means focusing on **how** your student teachers learn rather than simply **what** they learn.

  - It involves facilitating your student teachers' learning through different stages, for example through: **engagement; exploration; transformation; presentation; reflection.**

- During '**Cumulative Talk**' your student teachers may go through the stages of engagement, exploration and transformation. In other words they **engage** with the new information which is the basis of their learning; the student teachers then **explore** this new information; they then have to work with this new information (ideally through an activity/ task of some kind) to use their understanding of it and **transform** it into making decisions/solving problems etc.

- The **presentation** stage would include the **'Participatory Feedback'** when student teachers present their findings either to their peers or a wider audience.

- Finally, as you do in your Professional Development sessions, your student teachers should **reflect** on what they have done; they can deconstruct the process to see what they have learnt at each stage

T3-2 A 2 Plan and Practise Together

Cumulative Talk and Participatory Feedback Across the Curriculum

We are now going to plan our own 'Pyramid Discussion'/'Cumulative Talk' activity. If the above examples fit what you are teaching, you can use them. However, you may well teaching something else, so here are some more ideas from various subjects that lend themselves to 'Pyramid Discussion'/'Cumulative Talk'.

Output Devices and Medium (ICT - GNS 211)

Use these questions in planning your lesson on the topic to increase Talk for Learning in ICT

1. What is output ? How might you use it?

2. What are the common types of output generated by the computer?

3. What are output devices and what are their uses?

Remember the tutor facilitates the discussion from pair work to whole class. In your next lesson use 'Participatory Feedback' with posters on Input and Output Devices.

Game Activities for Basic School (Physical Education - PRA 225)

Plan and practise 'Participatory Feedback' after your student teachers have practised the games (Handball, Volleyball and Table Tennis) by doing the following:

Divide your student teachers into 3 groups: Handball; Volleyball; Table Tennis.

Ask them to think about skills needed for the games they have just experienced/practised.

Create a poster of the Basic Skills needed for their particular game.

Production in Ghana (Environmental and Social Studies - FDC 218)

Plan and practise a lesson that puts your student teachers into three groups to brainstorm and discuss the types of production in Ghana (eg. primary, secondary, and tertiary) using 'Participatory Feedback', like posters.

Plan Your Own Cumulative Talk and Participatory Feedback Activity

Hopefully the above topics give you an idea of how you can use 'Cumulative Talk' and 'Participatory Feedback'. But, as usual, you should identify a topic that fits into your weekly lesson forecast.

Remember when you first try this, do not make it too complex - your students will need time to understand what is happening and become comfortable with the ideas.

At the end of the planning activity you should have developed an activity plan that you can use in your teaching 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 with your colleagues the activity that you have planned. 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.

> **PDC Notes**

T3-2 A 3 Teach and Observe

It is important for your professional learning that you actually teach the activity that you have planned. Please make sure that you have your activity plan available when you teach. Any issues that arose during the lesson should be written down immediately after you have taught, and remember to fill in your observations section of the activity plan immediately after you have taught. If possible arrange with a colleague to observe each other when you each do the activity with your student teachers during the week.

T3-2 A 4 Reflect Together

Cumulative Talk and Participatory Feedback

Now that you have tried out activities for 'Cumulative Talk' and 'Participatory Feedback', use the 'Pyramid' to discuss the following reflective questions:

- Did you observe any stages when your student teachers were using 'Cumulative Talk'? What did you notice?

- Did the student teachers achieve what you hoped they would achieve in terms of 'Cumulative Talk'? What was that?

- How did the student teachers give/receive feedback? Was it participatory? How was it participatory?

- Did you think male students were participating more than female students? If so, did you do anything to make things more equal?

- If you taught the lesson again, what would you do the same/differently to encourage 'Cumulative Talk' and get/receive feedback effectively?

PDC Notes

3

Teaching Strategy 2 - Strand B
Building on What Others Say with Brainwriting and Brainstorming

T3-2 B 1 Example

How Ms Amina Used Brainwriting and Brainstorming to Get Her Pupils to Listen and Build on Each Other's Ideas

This section gives some examples on how to use activities to support your pupils to build on what their peers say. You can find more ideas that can be adapted to a mathematics learning context in the overall introduction section of Talk for Learning, and in the science and English units.

Ms Amina teaches mathematics in a school in the Volta Region. She has been thinking about ways of finding out more precisely what her pupils know about the relevant previous knowledge (RPK) for a mathematical topic before she starts teaching it. Although she has many years' experience of being a maths student teacher, she still feels she sometimes ends up spending time teaching her pupils what they already know, and at the same time, she can still be surprised by what they do not know. She also would like her pupils to learn more from each other and engage with each other's thinking. If they could learn more from each other, that would mean she could free up some more of her teaching time to try out new teaching strategies while still feeling confident that she is 'covering' all the topics she has to teach. To address these issues she decides to use the strategies of brainstorming and brainwriting. Brainstorming is to quickly share as many ideas or opinions as possible by saying them out loud and having someone write them all down. Brainwriting is where you ask each individual to write down their ideas first; these are then discussed and categorised in small groups and only after that shared with the whole group.

These are Ms Amina's reflections:

> I had looked up 'brainstorming' on the internet and read that to start off the brainstorming activity, you use a brainstorm prompt which can be in the form of a question, a word, a statement, a photograph or a picture. I decided to go with the prompt 'What is involved in solving equations?'.
>
> To help my pupils to get used to brainstorm in a constructive way, without interruption and to get a wide variety of ideas, I wrote some expectations on a poster beforehand and stuck it on the wall which we then discussed before we started. It read:

Brainstorming and brainwriting rules:

1. Criticism is not allowed: all ideas relevant to the topic are welcome.

2. Being unconventional is welcomed: The wilder the idea, the better. Inappropriate ideas can be rejected later.

3. Quantity is good: The greater the number of ideas, the better the process works. So everyone should try to participate. At the same time do not repeat what has been said already.

4. Combination and improvement are sought: In addition to contributing ideas of your own, you can also suggest how the ideas of others can be turned into better ideas, or how two or more ideas can be joined into yet another idea.

I then discussed some of the issues of brainstorming: how some people in the group might dominate and how early ideas can direct and limit what is offered later – potentially losing original ideas. To address this I told them I first wanted them to brainwrite in pairs.

What is involved in solving equations?	What is involved in solving equations?
equal sign - balancing - what you do to one side, you do to the other as well	what to get rid off first -> order of operations -> doing those in reverse order
variable - number in front of the variable (coefficient) - different operations	finding solutions in the form of x=… or …=x
	dealing with brackets -> expanding brackets -> factorising
Figure 12. Student teacher 1	**Figure 13. Student teacher 2**

When we moved on to doing the brainstorming with the whole class, I recorded all their ideas on the board, whether I thought them to be good or not. These are some of the ideas that were mentioned: factorisation, multiplying out brackets, variable, unknown, constant, linear, quadratic, order of operations, indices. To focus more on building what their peers said I asked them at times when something generic was said, for example 'factorisation' to brainstorm 'factorisation' for a little while. To finalise the brainstorming activity I asked the students in groups to pick out three of the ideas that they would like to get to understand better.

> **What is involved in solving equations?**
>
> equal sign - balancing - what you do to one side, you do to the other as well
>
> variable - x, y, s, t, etc -> number in front of the variable (coefficient) - different operations
>
> order in solving equations -> order of operations -> doing those in reverse order-> 'weakest' operation goes first -> inverse operations
>
> write solutions as x=... or ...=x -> variable = ... or .... = variable
>
> dealing with brackets -> expanding brackets -> factorising -> find common factor -> put in brackets -> algebraic identities

Figure 14. Ideas written on the board

Figure 15. A group of student teachers working on a brainstorm

Tutor Discussion

What do you think Ms Amina liked about doing this activity? How do you think it could help your teaching, and your students learning?

> **PDC Notes**
>
> In your discussion, what are the ideas that are brought up? You might like to compare them to some of the things that student teacher Amina liked about doing this activity. The activity helped her to get a much better insight into:
>
> - what the pupils already know and do not know which helps her to use her teaching time more effectively;
> - how the student teachers might approach solving an equation;
> - misconceptions they have;
> - how they can learn from each other; and
> - how much they learn through talking mathematically with each other.
>
> Tutor Amina also liked that it does not require a lot of setting up or advance preparation for her.

T3-2 B 2 Plan and Practise Together

Brainwriting and Brainstorming Across the Curriculum

Given the topics that you are teaching this week, the topic in the above example is not likely to work for you. Here are five more ideas that lend themselves to brainstorming and brainwriting:

Properties of Quadrilaterals (Maths - FDC 122)

Investigate the following statement: *'How can quadrilaterals be categorised by using their properties?'*

Reference: 2014 DBE Mathematics (Geometry and Trigonometry), FDC 122, Unit 1, p208.
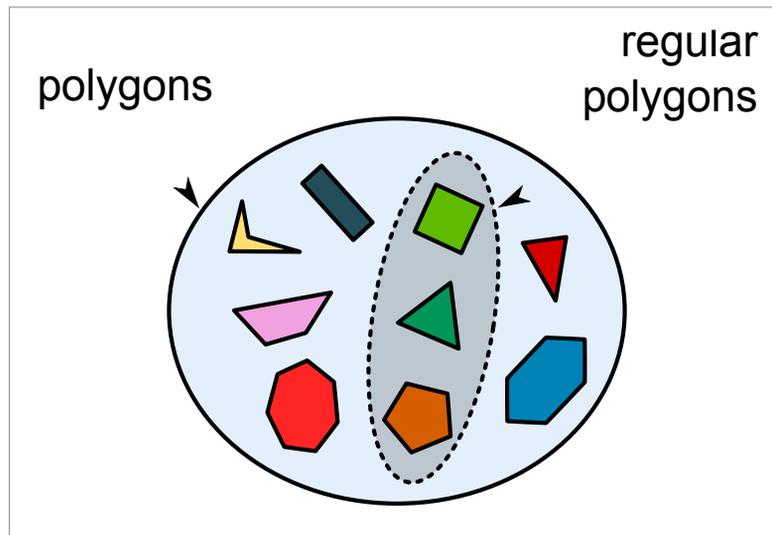
Figure 16. Set of polygons, with a highlighted subset of regular polygons.

Sets and Subsets (Maths)

Investigate the following statement: *'What is involved when forming subsets?'*

Reference: 2014 DBE Mathematics (Number and Basic Algebra), FDC 112, Unit 1, p206.

Representation of Data (Maths - FDC 312)

Investigate the following statement: *'How can we represent statistical data?'*

Reference: 2014 DBE Statistics and Probability, FDC 312, Unit 1, p215.

Costing and Pricing (Vocational Studies - FVA 225)

Investigate the following statement: *'What do we know about calculating a profit margin?'*

Reference: 2014 DBE Weaving and Stitching, FVA 225, Unit 10, p266.

Number Bases (ICT - GNS 211, p. 302)

Investigate the following statement: *'What do we know about the binary system?'*

Plan Your Own Brainwriting and Brainstorming Activity

Can you use any of the above ideas? If not, consult your syllabus and choose a topic from a lesson you will teach next week where you can use brainstorming and brainwriting. Make detailed plans. At the end of the planning activity you should have developed an activity plan that you can teach in the coming week. Please make sure that you have noted down everything you need to remember for your lesson in your activity plan.

Hopefully, you have also considered how to encourage all of your student teachers to participate, especially females. 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 pupils during the week.

PDC Notes

If you are stuck with planning, you could do the same brainwriting and brainstorming activity that Ms Amina did with her pupils. Limit your time to five minutes in total, just so you have some idea of what ideas your pupils could come up with.

Discuss afterwards:

- Did you pick up ideas from each other?
- How were you building on what others said?
- Would you change anything if you were doing this in your classroom?

Then proceed to plan your own activity.

In planning activities, sometimes the difficulty is that the brainstorm prompt that is given has to be quite succinct. One way to help with this is to give the student teachers the instruction "pretend you are in the classroom and you say to your pupils 'today we are going to do a brainstorm on.......'"

T3-2 B 3   Teach and Observe

It is important for your professional learning that you actually teach the activity that you have planned. Please make sure that you have your activity plan available when you teach. Any issues that arose during the lesson should be written down immediately after you have taught, and remember to fill in your observations section of the activity plan immediately after you have taught. If possible arrange with a colleague to observe each other when you each do the activity with your student teachers during the week.

T3-2 B 4   Reflect Together

Brainwriting and Brainstorming

Here are some prompts for reflection.

- What did you learning by using the brainwriting and brainstorming activity? Did you learn something new about the thinking and knowledge of your pupils?
- Did the activity help your pupils to learn from talking? If yes, how?
- Is there anything you could do further to improve this?

- Did you find that male students were participating more than female students? If so, did you do anything to make things more equal?

PDC Notes

The focus of the reflection should be in thinking about pedagogy.

T3-2 B 5 Sources

TESS-India, *Brainstorming: forces and laws of motion*, http://www.open.edu/openlearnworks/pluginfile.php/145522/mod_resource/content/2/SS11_Using%20brainstorming%20to%20teach%20forces%20and%20laws%20of%20motion.pdf, available under Creative Commons Attribution-ShareAlike (http://creativecommons.org/licenses/by-sa/3.0/; unless identified otherwise).

TESS-India, *Running an effective participatory interactive workshop*, http://www.open.edu/openlearnworks/pluginfile.php/159529/mod_resource/content/3/TEGN_Workshop.pdf, available under Creative Commons Attribution-ShareAlike (http://creativecommons.org/licenses/by-sa/3.0/; unless identified otherwise).

Image: Set of polygons, with a highlighted subset of regular polygons, by kismalac; derivative work: Stephan Kulla, https://commons.wikimedia.org/wiki/File:PolygonsSet_EN.svg, Creative Commons CC0 1.0 Universal Public Domain Dedication.

Teaching Strategy 2 - Strand C
Building on What Others Say with Concept Cartoons

T3-2 C 1 Example

Using Concept Cartoons to Build on What Others Say in Science

We all have favourite cartoons and comics that you enjoy reading. You might be surprised to know that you can use cartoons in science as a tool to improve your student teachers' engagement in lessons. If the cartoons are well designed, you can also use them to probe your student teachers' subject knowledge and conceptual understanding. These well designed cartoons are referred to as 'Concept Cartoons' and they have been used in classrooms all around the world since the late 1990s. They have been around long enough for research into their impact to have been done and they really do work (see the reference at the end of this section).

Tutor Serwaa plans to do a 'Concept Cartoon' activity with her student teachers. Her reasons for using the 'Concept Cartoon' activity are twofold:

- She wants them to get some more experience of Talk for Learning, specifically *building on talk*, and the 'Concept Cartoon' is a good choice for this. Group members are encouraged to build on the idea written in their speech bubble whilst trying to convince the other group members of its validity.

- Also, as what they are talking about is not necessarily their own viewpoint, this makes it easier for the student teachers to speak freely without being afraid of making mistakes.

Serwaa hopes that she can probe her student teachers' subject knowledge too during the activity. As they will be studying heat energy next lesson, and knowing that student teachers sometimes forget to think about heat being transferred from the room rather than a heat source, she uses the scenario of ice cubes melting in a room. She makes her cartoon more challenging by choosing different materials on which to place the ice but she is careful to keep the shape, colour and size of the materials the same so as not to complicate matters.

Tutor Serwaa's Concept Cartoon Activity With Student Teachers

When planning for the 'Concept Cartoon' activity, Serwaa makes these notes in her activity plan:

- Student teachers work in small groups so that everyone gets the opportunity to speak.

- Remember to show the whole class the 'Concept Cartoon' before the class breaks up into groups.

- Ask the student teachers to think on their own first about the information in the speech bubbles and whether or not they agree with it.

- Group work: Student teachers talk about all of the viewpoints and try to reach agreement about which is the most accurate one and why.

- Remind student teachers that they can choose to agree with any viewpoint but they must also consider the other viewpoints that are expressed and say why they disagree with them.

She sketches her cartoon on a large sheet of paper. It shows a white plastic plate and a same sized white metal plate with some same sized ice cubes on them (one on each plate) along with several student teachers with speech bubbles (similar to the image below) containing the following statements:

- I think that the ice cubes will melt at the same rate.

- Because the metal feels cold, I think that the ice cube on it will not melt very quickly.

- Because the plastic feels warmer than the metal I think the ice cube on it will melt faster.

- The plastic will insulate the ice cube so it will not melt.

- I think that the ice cube on the metal will melt faster.

DBE syllabus reference: "Heat Energy" (FDC224, *Integrated Science 3*, Physics, Unit 2).
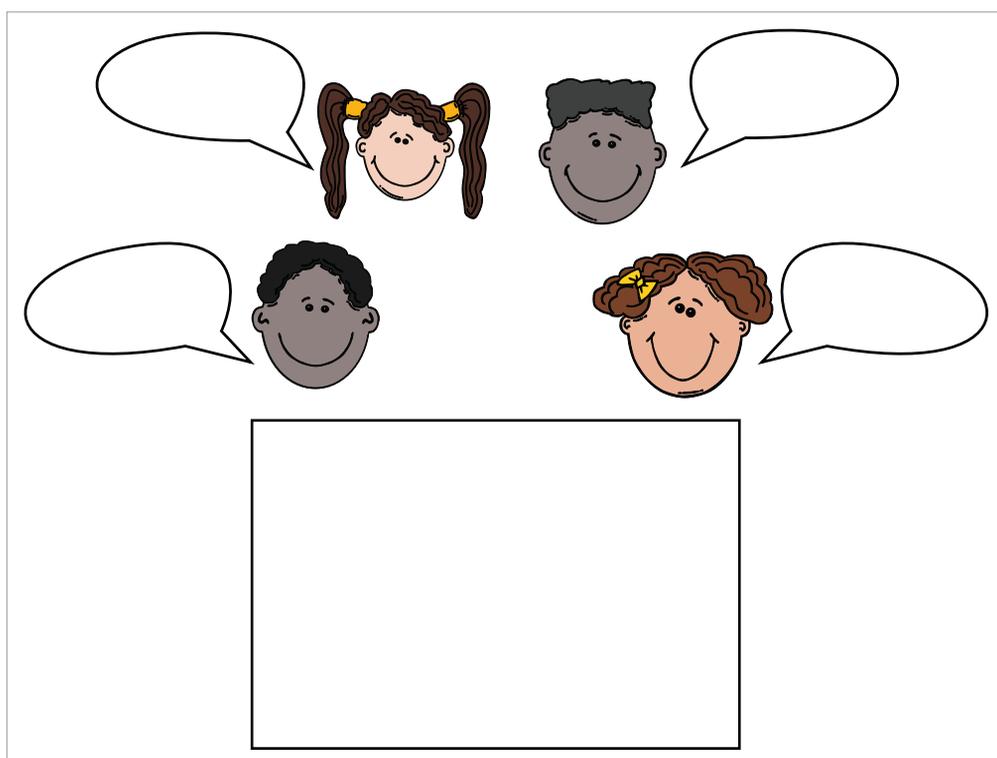
Figure 17. A basic 'Concept Cartoon' template

I remind the student teachers that *all* of the ideas have equal status and that they are *all* legitimate and plausible points of view. They should each take on a viewpoint and build on it during the group discussion using their own scientific knowledge and understanding. I tell them that it is a good idea if each person in the group takes on a different viewpoint (even one that they may not be completely aligned with) and I explain to them that as the focus of the activity is Building on What Others Say in Science, by ensuring that all of the viewpoints are expressed, they will stimulate a discussion that allows all of the group members to explore their thinking and to challenge their own and each other's ideas. This is preferable, I tell them, to the situation where they are just confirming what they think.

I am so pleased to see that the student teachers in some groups are co-constructing arguments during their discussions and I am very impressed with the level of engagement in the activity by all of the student teachers - it is quite surprising how quickly the discussions get going. I am glad that many of the groups are concluding that the ice cube on the metal plate will melt faster because the metal conducts the heat from the room to the ice - phew!

At the end of the activity Serwaa asks all the student teachers to write in their books, three things they enjoyed about the activity, two things they would do differently in their group next time and one thing that they changed their thinking about.

Tutor Discussion

Here are some questions to discuss in your groups after you have read through the 'Concept Cartoon' example:

- What do you think of the choice of cartoon?

- What affect do you think using something familiar (ice cubes) will have on the talk outcomes?

- What are some of the challenges that you anticipate when doing this activity?

- How will you ensure that all students, especially females, participate equally?

- How will you ensure that as well as building on talk, student teachers get the scientific concepts right?

- What resources will you use to prepare yourself for the types of questions that might arise during the activity?

- Would you like to use one large cartoon on the board or would you like to provide handouts of the cartoons for the various groups? Why?

- What feedback will you take from the various groups after they have completed the activity?

You can use the 'Concept Cartoon' technique in groups or as a whole class dialogue activity. Think about the following:

- What will Serwaa be doing during the group work version of the activity (the example)?

- How will Serwaa's role be different when she does a whole class dialogue version of a 'Concept Cartoon' activity?

PDC Notes

Make tutors aware that by choosing everyday topics for the 'Concept Cartoon', student teachers are more likely to contribute to the discussion as they are not put off/intimidated by thinking that they don't know enough about the particular subject area.

Student teachers can also speak freely without worrying if their explanation is correct as all the viewpoints have equal weight and are seen as legitimate.

Depending on the size of the classroom, a single 'Concept Cartoon' poster can be used (small classroom so all will be able to see it) or individual 'Concept Cartoons' can be printed on hand outs and one can be given to each group. Research has shown that one way is as effective as the other. (Reference: http://www.academia.edu/1323201/Effectiveness_of_Teaching_via_Concept_Cartoons_from_the_Point_of_View_of_Constructivist_Approach.)

T3-2 C 2 Plan and Practise Together

Concept Cartoons

You are now going to plan your own 'Concept Cartoon' activity. The previous example will only work for you if you happen to be teaching about heat transfer, so here are some more ideas from various subjects that you can develop a 'Concept Cartoon' around:

Concept Cartoons for Chemistry and Biology (Integrated Science - FDC 124)

Investigate the following three statements:

- *"Condensation of water droplets on the sides of a cold glass of water - why?'*

DBE syllabus reference: "Elements , compounds and mixtures" (FDC124, *Integrated Science 2*, Chemistry, Unit 1).

- *"Cooking oil in beaker and some salt being added - what will happen?"*

- *"A peeled yam that has been scooped out to make a cup has some water in it and it is sitting in a basin of salty water - what will happen to the water levels in the yam and basin?"*

DBE syllabus reference: "Diffusion and Osmosis in plants and animals" (FDC124, *Integrated Science 2*, Biology, Unit 3).

While these ideas focus on science, there is nothing about 'Concept Cartoons' that is specific to science lessons or scientific activities. So if you are finding it difficult to make a science connection - that's no problem at all. Simply pick a topic from the syllabus that you are about to teach, where you think you might be able to use 'Concept Cartoons'. It is not even necessary to use a cartoon, an image will work equally well, just as long as there are speech bubbles with different legitimate viewpoints in them.

Here are some other examples from different subject areas:

Concept Cartoon on the Student-Centered Approach to Teaching and Learning (Educational Studies - EPS 211)

Investigate the following statement: "*A student-centered approach to teaching and learning helps students develop learning skills better than a teacher-led approach to teaching and learning - what do you think?*"

A suitable image here might be a group of students sitting in a circle with the teacher on the outside of the circle (having nothing to say/no speech bubble for the teacher).

Statements in the speech bubbles might be :

- Most teachers think students do not know anything so they cannot learn on their own.

- The student-centred method of teaching makes the class noisy and class control becomes difficult.

- A student-centred approach shows that the teacher is not knowledgeable.

- Teachers who cannot speak English use the student-centred approach.

DBE syllabus reference: Pupil-centered methods of teaching (*Educational Studies*, EPS 211, "Principles and Methods of Teaching in Basic School", Unit 2).

Concept Cartoon on Music as a Tool for Communication (Music and Dance - PRA 121)

Student teachers studying music may wish to design a 'Concept Cartoon' around the idea that *music has become a major tool for communication in all the spheres of life in Ghana*.

DBE syllabus reference: 2014 DBE *Music and Dance*, PRA 121, unit 3, p. 48

Planning Your Own Concept Cartoon Activity

Choose a topic from a lesson you will teach next week that has a concept that you can make a cartoon about. It should be something that student teachers can have different ideas about. Come up with these ideas and make sure they are typical of what a student teacher might actually think about the concept (at least three ideas so that there will be enough to talk about). You can include a blank speech bubble in your cartoon to encourage student teachers to explore alternative ideas.

Sketch a simple scene (that the students are looking at and commenting on) in your activity plan; you can find the activity plan template in the appendix. Student teachers can be hand drawn or represented using simple clipart characters as shown in the example above.

Also write in your plan other planning details (resources needed etc.) that will help you to do the activity successfully with your student teachers.

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.

> **PDC Notes**
>
> Concept Cartoons are based around three things:
>
> - cognitive conflict - when new ideas are different from and challenge old ideas
> - metacognition - checking your understanding against other viewpoints (in this case) and
> - social construction of ideas - by developing a joint understanding with others.
>
> They draw together the eliciting (drawing out) and restructuring (moving understanding forward) phases of the constructivist teaching sequence. The cartoon is the starting point for the discussion and in many scenarios of their use, no further input to stimulate a change in ideas has to be made by the tutor.
>
> Make sure that the 'Concept Cartoon' statements are plausible. They should not be deliberately provocative (as 'Talking Points' can be) but should be typical of responses that student teachers make on the subject.

T3-2 C 3 Teach and Observe

It is important for your professional learning that you actually teach the activity that you have planned. Please make sure that you have your activity plan available when you teach. Any issues that arose during the lesson should be written down immediately after you have taught, and remember to fill in your observations section of the activity plan immediately after you have taught. If possible arrange with a colleague to observe each other when you each do the activity with your student teachers during the week.
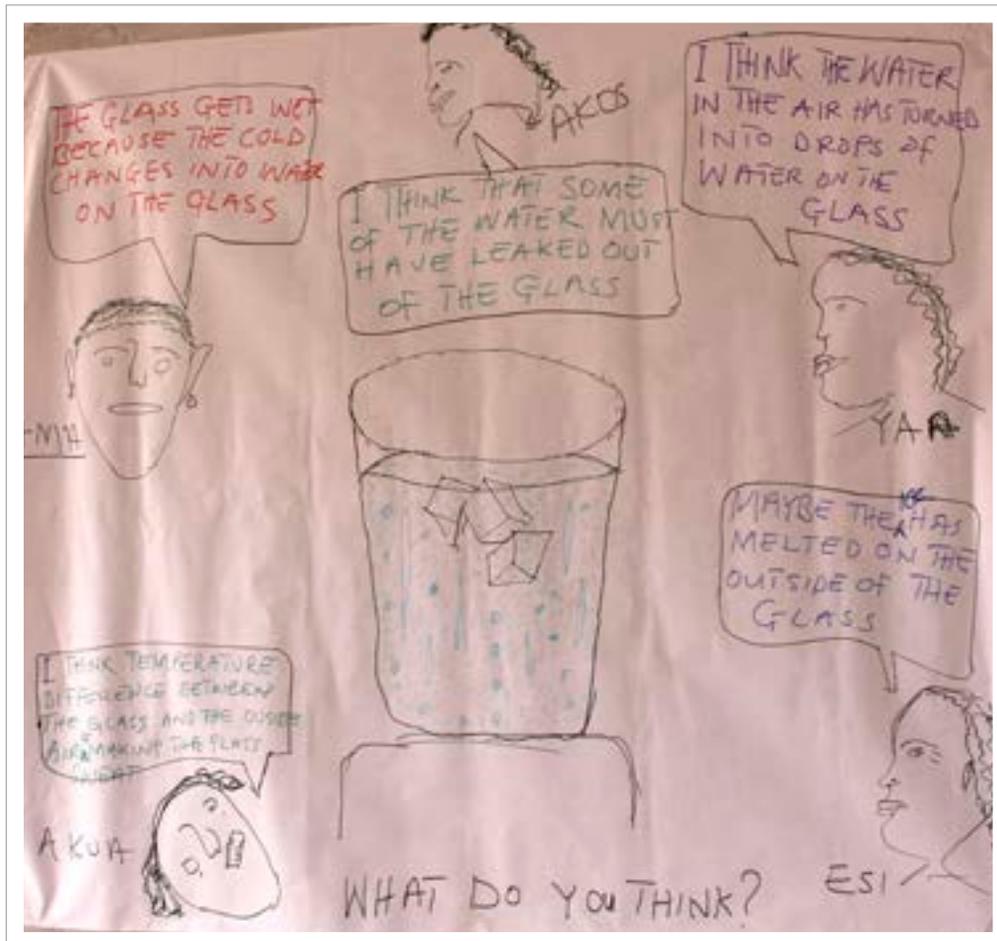
Figure 18. Hand drawn Concept Cartoon displayed on the board

T3-2 C 4 Reflect Together

Concept Cartoons

Now that you have done the 'Concept Cartoon' activity with your student teachers, reflect on how it went. Do the reflection together with colleagues who also tried the activity.

In your reflection, consider the following questions:

- How useful was your cartoon for getting student teachers to build on what each other said?

- Did student teachers engage with the concept at the right level?

- Did anyone use a blank speech bubble in their cartoon? How did that go?

- Did anything surprise you during the activity? If yes, what?

- What will you do differently next time you do a 'Concept Cartoon' activity? Why?

Remember to write down your thoughts in your learning journal. Also note down what you learned from this session that was most effective in improving your teaching.

> **PDC Notes**
>
> Student teachers can do a simple investigation to see if their ideas are correct. Or there may be other questions they now want to find answers to following their discussions eg for the cartoon used in this activity they may want to investigate the effect of different sized plates on the rate of melting.

T3-2 C 5 Further Resources

The following links provide further information:

- Research - Concept Cartoons, http://conceptcartoons.com/research. html

- Useful list of common misconceptions in science: http://amasci.com/ miscon/opphys.html.

- Useful overview of Concept Cartoons: http://www.conceptcartoons.com/.

T3-2 C 6 Sources

Image: "A basic concept cartoon template" - pupils clip art faces, by Gerald_G https://openclipart.org/detail/857/boy-face-cartoon (public domain).

Introduction to Teaching Strategy 3
Managing Talk for Learning

PDC Notes

As always, please make sure you keep a record of attendance.

To start this session:

- Please briefly read out the Learning Objectives.

The introduction

- Check that everybody has read the overall introduction and ask whether there are any questions.
- Do say that the introduction provides a lot of additional detail, which tutors should read prior to the session.

The activity

- Now skip the Introduction, going straight to the activity below.

Suggested time: 10 minutes

T3-3 i 1 Learning Objectives

By the end of the session tutors will be able to:

- use strategies that help all student teachers to participate and increase the amount of classroom talk;
- use strategies that help you to regulate talk;
- organise your classroom to encourage talking;
- recognise students being on-task and off-task;
- distinguish between 'good noise' and 'bad noise'; and
- handle low-level disruption.

T3-3 i 2 Introduction

PDC Notes

Remember to skip this section, and go straight to the activity below.

As we saw in the introduction to this theme, not just any talk that happens in your classroom is effective talk, i.e. talk that supports student learning. To make talk effective, you need to first plan activities to initiate Talk for Learning (T3-1). Once you have encouraged your student teachers to talk, you then support them in building on what is being said (T3-2). However, you will soon find that this requires management: as a tutor, you need to be able

to steer the classroom talk, so that it remains effective (and focused on the learning objectives). In this teaching strategy, we are introducing a few tools that can help you do that.

The table below suggests a number of ways of helping you manage Talk for Learning with your student teachers so that they can share their ideas, listen, challenge each other constructively and ensure that everybody is participating. They fall mainly into four categories and are activities that relate to:

- Establishing ways of working together, e.g. 'Ground Rules for Talk'

- Classroom organisation, e.g. 'Seating Arrangements'

- Patterns of talk, e.g. 'Think-Pair-Share, Changing Partners'

- Regulating participation in talk, e.g. 'Talking Tokens', 'Activity Ball' or 'Magic Microphone'.

Theme 3: Talk for Learning Teaching Strategy 3: Managing Talk for Learning		
Aspect	**How it works**	**Strand**
Activity ball or magic microphone	An item (such as a ball) is passed around, and only the person who has the ball can speak.	T3-3i
Changing partners	Prepare sets of cards with matching pairs or with groups/families of words. Ask the student teachers to find their partner/group and sit with them.	T3-3i
Ground rules for talk	Student teachers work together to establish a set of rules that allow them to express themselves freely during talk activities.	T3-3i
Seating Arrangements	Choose the seating arrangement that will help to facilitate the interactive nature of an activity and support Talk for Learning.	T3-3A
Talking Tokens	Each student teacher receives a number of tokens, and gives one up each time they speak.	T3-3C
Think-Pair-Share	Student teachers think on their own first, then talk to another student, before sharing with the class.	T3-3B

You might also want to look back at the ideas in Initiating Talk for Learning, that can be used to increase the amount of talk (such as the use of talking points). Sometimes you may need to direct talk, to make sure everybody's voice is heard, and you can refer back to the Theme 2: Questioning for this. For instance "no hands up" can be used to simply ask students to speak.

Regulating Participation in Talk: Talking Tokens and Activity Ball or Magic Microphone

As your student teachers engage more and more in Talk for Learning in the classroom it will become necessary for them to regulate their participation to ensure that their talk remains effective. There are many techniques that you can use to structure talk , including

- **Talking Tokens:** Each student receives a number of tokens, and gives one up each time they speak.

- **Activity Ball or Magic Microphone.** An item (such as a ball) is passed around, and only the person who has the ball can speak.

By structuring talk in this way the hope is that student teachers will make more meaningful contributions to discussions by having to think first before they speak and having to listen well so as not to repeat points made by others.

Patterns of Talk: Think-Pair-Share and Changing Partners.

Talk can take place in different ways, such as between two student teachers, in smaller or larger groups, as well as whole class dialogue (involving all student teachers). It is also possible to mix these:

- **Think-Pair-Share.** You can vary the way students talk to each other through techniques like Think-Pair-Share, where student teachers think on their own first, then talk to another student, before sharing with the class.

- **Changing Partners.** This is a way of getting student teachers who have never sat next to each other to sit together. Prepare sets of cards either with matching pairs or with groups/families of words and hand these out. Ask the student teachers to find their partner/group and sit with them.

Having set patterns like this adds structure to the way student teachers talk to each other, and can be helpful in managing talk. Be aware that it will take time for student teachers to get used to these new ideas. You will find that once you have tried them a few times, they will go more smoothly.

Classroom Organisation: Seating Arrangements

You also need to think about your classroom organisation: what to do from an organisational point of view to create an open and supportive classroom environment. What physical changes can be made to the classroom environment that will help your student teachers to communicate with each other. When you require your student teachers to talk and listen to each other, they have to be seated in such a way that this is physically possible. Sitting in rows works fine for individual work, or for working in pairs, but conversations involving more people become difficult.

Of course, in environments where student talk in the classroom does not always happen, the desk arrangements may be inflexible. Asking your student teachers in the odd row numbers to turn around and then work in fours is often an easy solution, especially if the classroom furniture is fixed. Equally, when you decide to put some tables together so groups can work around these 'group tables', you still have to think about acoustics of the room and whether you are able to move around the classroom so you can listen to and support the groups.

Tips for Work Arrangements and Seating Arrangements

Changing seating or work arrangements can help your student teachers in the following way:

- student teachers will interact with other student teacher;

- it changes the focus away from the tutor to student teachers;

- student teachers will experience different situations to be recreated in the classroom;

- there is variety in the lesson/classroom;

- it changes the environment of the classroom; and

- student teachers move and have a chance to stretch their legs!

Other tips:

- remain aware of how you can use the space you are working in;

- sometimes a complete change in the room can make all the difference to the atmosphere of a class;

- mixing female and male students, as well as vocal and shy students, creates new dynamics. Just make sure that these dynamics enhance participation and that no one dominates; and

- even with the most immovable of furniture it is possible to be creative in some way.

Establishing Ways of Working Together: Ground Rules for Talk

A classroom community of student teachers, explicitly establishing ways of working together, is very helpful, and can be done in a participatory way. For example, the student teachers in the class can discuss the way their own group is working:

- Are both females and males in the group participating equally?

- Are there some people who dominate the discussions?

- Is the learning that takes place good? Can it be improved?

- What can be done to make the groups operate better?

The discussion: Writing the agreed ways of working on a big sheet and sticking it on the wall works well as it can be referred to, revisited and adjusted on a regular basis, and this helps to manage talk. Sometimes this process is referred to as establishing 'ground rules'.

Please refer back to the gender section in the introduction to T3-1, and bear in mind the number of questions asked/answered by males and females, the amount of attention you give, being patient with students who may be shy or afraid to talk, and, when doing group work, experiment with different student groupings.

T3-4 i 3 Activity: Think-Pair-Share

> **PDC Notes**
>
> **Outcome.** At the end of this activity, tutors should have
>
> - had a go at trying out and experiencing the strategy 'Think-Pair-Share' about the statement 'Open mining is beneficial for Ghana'
> - discussed and thought about the effectiveness of 'Think-Pair-Share' to involve everyone in the discussion and the sharing of ideas
> - An alternative statement that you may choose to use is:
> - *It is unjust that working women should also take responsibility for caring for the family and the home.*

Here is a statement for you to consider:

Open mining is beneficial for Ghana.

Now do the following:

1. **Think.** First think about your views and ideas about this on your own.
2. **Pair.** Share your ideas with another colleague.
3. **Share.** Share your collective ideas with the rest of your colleagues.

Tutor Discussion

Afterwards discuss with your colleagues:

- Did everyone in the group participate?
- Is the learning that takes place good? Can it be improved?
- What can be done to make the groups/pairs operate better?
- What can be done to ensure that females and males participate equally?

Make notes of your ideas in your learning journal.

T3-3 i 4 Plan and Practise Together

PDC Notes
It is now time for group work, to Plan and Practise Together. Suggested time: 45 minutes

The next three sections have examples of different activities for managing Talk for Learning that can be used in all subjects. In your own planning, please use the introduction above if you need further information on the various aspects. Also note that the example provided in each section is just for guidance. Do not spend too long on it, but move straight on to your planning activity.

PDC Notes
There are three different sections that follow, each focusing on different aspects of Managing Talk for Learning . If you want to keep the planning simpler, you could keep the group of tutors together, and select one of the sections that all tutors can do. However, if you would like to challenge your tutors a bit more, refer them to the above table, and let them choose which aspect to cover. Note that this will also make the reflection (at the start of the next session) more complicated. As tutors start with the following sections, do remind them to not spend too much time on the Example, but to really focus on planning their own activities. During the different task group work, you should circulate, and support the groups where needed.

T3-3 i 5 Prepare for Teach and Reflect

PDC Notes
After about 45 minutes (with about ten minutes left in the session), bring the tutors back together, and see whether anything needs to be discussed. Make sure that everybody has a concrete plan for teaching, and has recorded this in their activity plan. Then close the session. Suggested time: 10 minutes

Once you have planned your activity, come back together as a whole group, to see what issues arose. Make a note in your learning journal. After you have taught, write down your own observations and reflections on your activity

plan and in your learning journal, and be prepared to share these with others at the start of the next session.

Teaching Strategy 3 - Strand A
Managing Talk for Learning with Seating Arrangements

T3-3 A 1 Example

How Ms Amina Managed 'Talk for Learning' in Her Class

Classroom Seating Arrangements

Ms Amina decides to have a debate on one of the themes from 'Burning Grass', 'Industrialisation' in the DBE English class. She wants to encourage Talk for Learning in her class but she is not sure about how to arrange and manage her class for interactive teaching and learning.

Look at the pictures of different seating arrangements in the figure and help Ms. Amina to decide on the appropriate classroom arrangement and management, bearing in mind that she wants to involve as many of her student teachers as possible in Talk for Learning through this debate on the book.
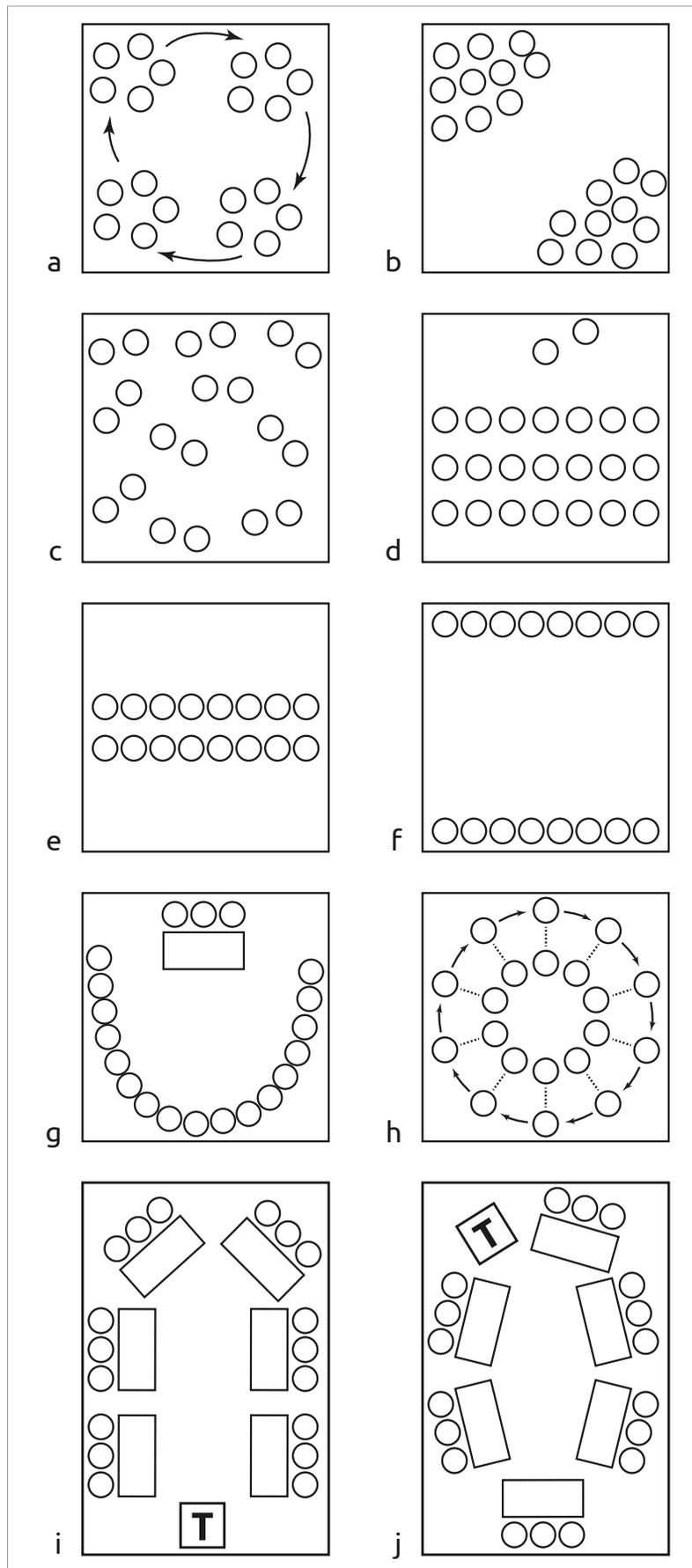
Figure 19. Seating arrangements for interactive teaching and learning

Tutor Discussion

1. In trying to manage Talk for Learning in her class, what class arrangements would you consider appropriate for Ms Amina to use?

2. Why do you think such arrangements are appropriate and necessary?

3. How would such arrangements support Talk for Learning in Ms Amina's class?

4. Would you encourage such arrangements in your class? Why?

More questions specific to English:

- Why might a 'circle' or a 'horseshoe' work arrangement be more effective for language teaching than straight rows?

- What difference does it make if the tutor sits in a circle with the student teachers rather than standing in front of them?

PDC Notes

T3-3 A 2 Plan and Practise Together

Managing Talk for Learning Across the Curriculum

We are now going to plan our own Talk for Learning activity by thinking about the management of the activity and specifically the seating arrangements. If the above examples fit what you are teaching, you can use them. However, you may well be teaching something else, so here are some more ideas from various subjects that lend themselves to Talk for Learning activities with different seating arrangements.

Have a look back at the 'Tips for Work Arrangements and Seating Arrangements' in the introduction to this teaching strategy to help you with your planning.

Philosophy and History of Performing Arts Education in Ghana (Music and Dance - PRA 211)

Plan a lesson on how you would arrange your class to talk more about the philosophy and history of performing arts. Think about how you would arrange your class to encourage and maximise Talk for Learning.

Meaning and Functions of Management (Education and Professional Studies - EPS 222)

As you plan your lesson on 'Meaning and Functions of Management in Education', think about the reasons why you picked that class arrangement and how it will help in managing talk for learning in your class.

Health, Tourism and Leisure (Social Studies - FDC 218)

While planning a lesson on the topic 'Health, Tourism and Leisure' in Social Studies consider the advantages and disadvantages of the types of classroom arrangement and pick the most appropriate one to manage Talk for Learning in your class.

Figure 20. Organising furniture for group work

Plan Your Own Talk for Learning Activity

Can you use any of the above ideas? Hopefully the above topics give you an idea of how you can design an activity for use in your classroom. But, as usual, it is possible that those ideas do not fit, and you will need to identify a topic that fits into your weekly lesson forecast.

At the end of the planning activity you should have developed an activity plan that you can use in your teaching 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.

PDC Notes

As a simple observation tool to use during and after the 'Teach', ask tutors to draw the seating arrangements of the class they observed and answer the following questions:
What type of seating arrangement did the tutor use?
Why did they use it? (for what purpose/activity)?
In your opinion, was this a suitable work arrangement for the activity? Why/why not?
Did the arrangement allow for females and males to participate equally?
How did the tutor manage the Talk for Learning in this seating arrangement?
What was the impact of the seating arrangement on learning?

T3-3 A 3 Teach and Observe

It is important for your professional learning that you actually teach the activity that you have planned. Please make sure that you have your activity plan available when you teach. Any issues that arose during the lesson should be written down immediately after you have taught, and remember to fill in your observations section of the activity plan immediately after you have taught. If possible arrange with a colleague to observe each other when you each do the activity with your student teachers during the week.

T3-3 A 4 Reflect Together

Managing Talk for Learning

Use the seating arrangements above as part of the reflective practice on 'Managing Group Work.' Some of the questions you might ask are:

- Are you familiar with these work arrangements to help you manage your class? If so what do you call them? Have you used them? When and how?

- What type of activities might suit each? Can you come up with a teaching and learning scenario (that focuses on Talk for Learning) for each of the seating arrangements?

Do a quick 'Matching' activity as a review to the session. Here is a list of names to match to the seating arrangements:

- Onion

- Horseshoe with tutor as participant

- Public Meeting

- Panel

- Pairs (face-to-face or back-to-back)

- Horseshoe with tutor as leader

- 'Buzz' groups

- 'Corners'

- 'Team Competitions'

- Pairs

PDC Notes

Other names that might come up: 'Mingling'; 'Wheel'; 'Pyramid'; 'Circles'; 'Islands'.

Teaching Strategy 3 - Strand B
Managing Talk for Learning with Think-Pair-Share

T3-3 B 1   Example

📖 Ms Gertrude Tackles Gender Issues in Maths

This is Ms Gertude's story about how she managed Talk for Learning in her maths classroom and addressed some gender issues at the same time.

This was the second semester I was teaching this class in which about three quarters of the class is male, and a quarter is female. I became disconcerted about some gender issues that were occurring. For example, I had noticed that the female student teachers will talk, but only when asked. At the same time the student teachers volunteering to answer and raising their hands tend to be male, and most male student teachers will also cut in with their ideas when others, male or female, are talking.

The desks in the classroom are arranged in rows, rearranging this to make it more suitable for group work is not easy and time consuming. Also, other subject tutors teach in this room so I can not move the furniture and then leave it as I would like it to be.

To make the female student teachers more confident to share their ideas and give them more practice in talking mathematically before discussing their ideas with their male peers, I decided to use the approach of 'Think-Pair-Share', where the 'Pair' section is done in same gender pairs. I then asked them to address the same questions in groups of four. To make discussion physically possible, I asked the student teachers sitting on every other row to turn around to work with those behind them (see figure) and moved some student teachers so that none of the groups would be all female.

Before letting them start the group discussions, we looked at the list we had devised together some months back on ways of working together that they had all copied in their notebook. The maths activity was about 'Proportion - Inverse and Direct' (FDC 112, unit 2). In this lesson I wanted them to see how proportional properties are applied (or not) in maths and in real life. Before the start of the lesson I had written the statements (see further down) they had to consider on the board, ready for the lesson.

I told the student teachers: *The statements written on the board describe some real life and maths situations. Read these and decide whether these would be proportional or not, and under what conditions. Provide your reasons. First think about these yourself, then discuss these with your neighbour. I will ask you later to then talk to another pair to see whether you have the same opinions. Be critical!*

I noticed that all student teachers talked happily to their neighbour in the 'Think-Pair-Share' activity and once working in groups of four, the female student teachers seemed to keep that confidence. Managing the Talk for Learning group work seemed to work like this. Next time I will try the same approach, but with mixed gender 'Think-Pair-Share' (at least for as much as possible). I am curious to see whether it is the working in same gender pairs that gives the confidence, or whether it is just the 'Think-Pair-Share' activity.
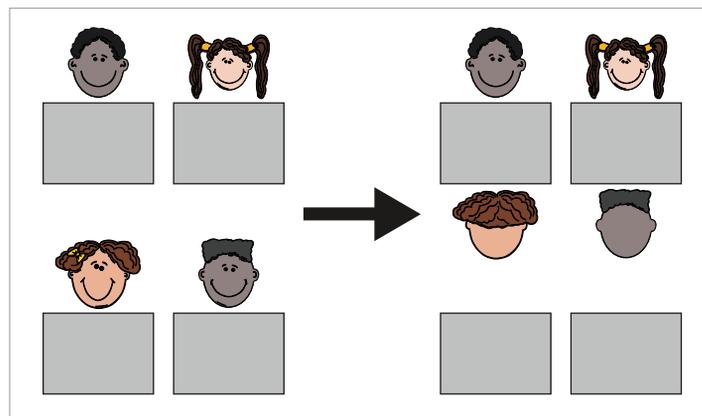
Figure 21. Changing desks arrangements for group work

Do the following have any proportional properties?

a. Enlarging a photograph.

b. Cutting slices of bread to make a sandwich.

c. The equation of a linear equation in one variable (ax + b = 0).

d. The work done by some number of people in a given time frame.

e. The amount of money spent by a number of people to watch a particular movie at a particular cinema.

f. Dividing a line segment into a number of equal parts.

g. The height of The Flagstaff House (see Figure).

h. The circumference of a circle.

i. The volume of a cone.

j. A tro-tro fare.

The list written by Ms Gertrude on the whiteboard.

Figure 22. The Flagstaff house, Accra

Tutor Discussion

Do the same 'Think-Pair-Share' activity for any three statement of the maths activity above. Then share your ideas with another pair. Limit your time to five minutes in total, just so you have some idea of what ideas your student teachers could come up with.

Discuss afterwards:

- Did this approach make you Talk for Learning about proportion?
- How did doing the 'Think-Pair-Share' before talking in a group of four support you in your learning?
- Would you change anything if you were doing this in your classroom?

PDC Notes

Commentary

The activity asks the student teachers to explore whether and when the examples are proportional (direct or indirect proportionality). Proportional reasoning involves multiplication or division (not addition or subtraction). For example, enlarging a photograph involves multiplying the existing size by a scale factor; the circumference of circle is proportional to its diameter because of its formula; you would expect a tro-tro fare to be proportional to distance traveled but that is not always the case!

T3-3 B 2 Plan and Practise Together

Think-Pair-Share

'Think-Pair-Share' can be used for almost anything. It works particularly well for topics that benefit from student teachers coming up with their individual ideas before sharing, refining those and getting more ideas from talking to others. Given the topics that you are teaching this week, the topic in the above example is not likely to work for you. Here are three more ideas that lend themselves to using this Think-Pair-Share strategy:

Relations and Functions (Maths - FDC 112)

Find examples of real life situations that can be expressed as linear equations. For example length of calls on mobile phone bills, subscription to pay TV, yearly health insurance payment, rent per semester.

Reference: 2014 DBE Mathematics (Number and Basic Algebra), FDC 112, Unit 1, p. 206.

Trigonometric Ratios (Maths - FDC 122T)

Look at pictures of buildings and identify where principles of trigonometry play a role. For example the slopes of roofs, number and steepness of stairs, working out the quantity of materials to be used on a roof.

Reference: 2014 DBE Trigonometry, FDC 122T, Unit 1, p. 220.

Stigma and Discrimination (HIV/AIDS Education - GNS 121)

Investigate the statement: *"How Can Stigma and Discrimination Affect People Living with HIV/Aids?"*

Reference: 2014 DBE HIV and AIDS education, GNS 121, Unit 10, p. 317.

You can find more ideas about discussing sexual health at http://oer.educ. cam.ac.uk/wiki/ASKAIDS

Plan Your Own Think-Pair-Share Activity

Here are your planning tasks:

1. In groups think of a lesson and a topic that you will teach in the coming week.

2. Come up with activities suitable for 'Think-Pair-Share'. Remember the aim is to stimulate talk for learning with all your student teachers.

3. Do you feel that 'Think-Pair-Share' will ensure that all students, especially females, will participate? Is there anything else you can do to ensure the equal and full participation of your students?

You can use the activity plan template found in the appendix. Plan the activities in detail. Please make sure that you have noted down everything you need to remember for your lesson in your activity plan.

At the end of the planning activity you should have developed an activity plan that you can teach in the coming week, as well as 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.

PDC Notes

The importance of managing Talk for Learning is to use different approaches, depending on the learning the student teachers are supposed to do, and the context of the tutors' classrooms.

T3-3 B 3 Teach and Observe

It is important for your professional learning that you actually teach the activity that you have planned. Please make sure that you have your activity plan available when you teach. Any issues that arose during the lesson should be written down immediately after you have taught, and remember to fill in your observations section of the activity plan immediately after you have taught. If possible arrange with a colleague to observe each other when you each do the activity with your student teachers during the week.

T3-3 B 4 Reflect Together

Think-Pair-Share

Thinking of the different strategies for managing Talk for Learning that you have used so far, have you noticed a difference in:

- the participation in the activities of all student teachers, for example male, female, less confident, boisterous student teachers?

- the quality of the talk and technical language used on the topic you were teaching?

- the learning of the student teachers?

PDC Notes

T3-3 B 5 Further Resources

Sexual Health

You can find more ideas on discussing sexual health at http://oer.educ.cam.ac.uk/wiki/ASKAIDS

T3-3 B 6 Sources

Image of The Flagstaff house, Accra; https://commons.wikimedia.org/wiki/File:The_Flagstaff_House.jpg, http://flickr.com/photos/27998473@N02/9762167496. By jbdodane [CC BY 2.0, http://creativecommons.org/licenses/by/2.0], via Wikimedia Commons.

TESS-India, *Developing mathematical reasoning: mathematical proof*, http://www.open.edu/openlearnworks/pluginfile.php/134971/mod_resource/content/3/SM02_V2_PDF.pdf, available under Creative Commons Attribution-ShareAlike (http://creativecommons.org/licenses/by-sa/3.0/; unless identified otherwise).

Teaching Strategy 3 - Strand C
Managing Talk for Learning with Talking Tokens

T3-3 C 1 Example

Tutor Opoku's Talking Tokens Activity With Student Teachers

Opoku is working as a science tutor in a College of Education and he is having problems with managing some of his student teachers who like to dominate group discussions in his classroom. A colleague (that he is complaining to) tells him about a classroom management technique called 'Talking Tokens'. 'Talking Tokens' can be small bits of paper (or other small objects) that are given to each student teacher in a group so that they can monitor their contribution to the group discussion.

Next week, Opoku will teach his ecosystem topic and he wants the class to work in groups and discuss different threats to the environment. He decides to try out the 'Talking Tokens' strategy and see if he can get everybody in his class to equally contribute to the discussions. He will also use the 'Talking Tokens' strategy in an attempt to improve the quality of his student teachers' talk. He hopes that by asking the student teachers to make only a few comments and to think about what they are going to say before they speak, they will make more of an effort to make comments that are worthwhile to the group discussion.

Before the Activity

Opoku makes these notes in his activity plan about how the technique works:

- Each person in the group receives the same number of tokens (usually 3 or 4).

- One token is placed in the middle of the table by the speaker each time they make a contribution to the discussion.

- Student teachers take it in turn to speak until they have exhausted their supply of tokens.

He will give some groups the task of talking about earthquakes, a few more the task of talking about flooding and the rest the task of discussing waste disposal.

DBE syllabus reference: "Ecosystem" (FDC114, *Integrated Science 1*, Biology, Unit 4).

During the Activity

Tutor Opoku describes how he does the activity as follows:

> I talk to the student teachers briefly about what I have planned for the lesson and then I write the following on the board:
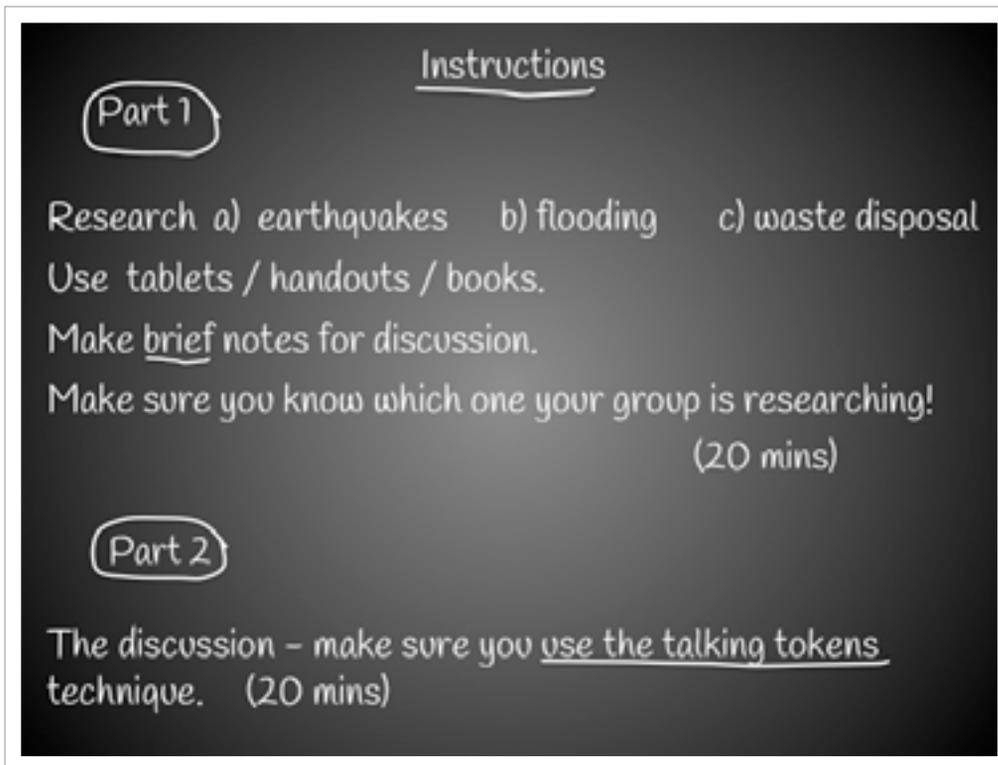
Figure 23. Instructions for the task

> The groups work industriously on their research, gathering the information that they will use during their discussion. After 20 minutes researching I draw the class together for Part 2 of the lesson.
>
> I explain the 'Talking Tokens' technique and ask them to make the tokens by folding a piece of A4 paper and tearing it, to give 4 tokens for each group member. I remind the class of their talk rules before leaving them to it.
>
> During this part of the activity I walk around the classroom and listen to the discussions and whilst I do not get to hear all of the points made I am happy that there is an acceptable level of 'good' noise (the sound of on-task discussion) as I walk from group to group. I am pleased to hear many salient points being made and I can hear local language being used on the odd occasion to clarify some points - that's OK too.

After the Activity

Opoku can see that this technique will be very useful to get his student teachers to make meaningful contributions on many other topics as it really does make them think about what they are saying before they speak. The quality of the discussion was definitely higher than on previous occasions. When the student teachers have become very familiar with the technique he will think about ways in which groups will feedback from their group discussions and what they might write during their discussion (e.g. some notes that they can put on the wall for other groups to read).

Tutor Discussion

Here are some questions to discuss in your groups after you have read through the 'Talking Tokens' example:

- What do you think of Opoku's rationale for choosing this technique for this topic?

- What resources does he need to bring along to the lesson?

- What resources will you need do a similar activity with your student teachers?

- At what stages in the student teachers' learning do you think 'Talking Tokens' would work best?

- Before you start a topic to find out what student teachers know?

- At the end of a topic to find out what they have learned?

Here are some potential problems with the 'Talking Tokens' technique:

- Someone may chose not to talk even though they have tokens.

- Someone may talk for too long when using their token.

- Student teachers may not engage with the technique (i.e. not use the tokens but just talk how they want to).

How would you solve these problems? What will your role be during the 'Talking Tokens' activity?

Figure 24. Student teachers making notes for a group discussion

---

PDC Notes

Here are some potential problems and solutions:

- Someone may chose not to talk even though they have tokens: in this case you can provide some small reward for using the token.
- Someone may talk for too long when using their token alternatively some else may be too brief: you can introduce the idea of timed tokens.
- To encourage engagement with the technique you can also make it competitive: groups that use more tokens get more points (the quality of the discussion must remain high though).

T3-3 C 2 Plan and Practise Together

Talking Tokens

You are now going to plan your own 'Talking Tokens' activity. The previous example will only work for you if you happen to be teaching the ecosystem topic, so here are some other topics for group work that you can use the 'Talking Tokens' technique with in a similar way to the example:

The Benefits of Vegetables and Vegetable Production to Humans (Integrated Science - FDC 114)

DBE syllabus reference: "Vegetable crop production" (FDC114, *Integrated Science 1*, Agriculture, Unit 3).

Factors That Make Females More Vulnerable Than Males to HIV/AIDs Prevention Programmes (HIV/AIDS Education - GNS 121)

For example:

- socio-cultural

- biological

- economic

- behavioural

Each group works on one of the factors.

Reference: 2014 DBE syllabus, GNS 121, Unit 7 , p.316

Factors Affecting the Individual's Moral Development in the Home (Religious and Moral Education - FDC 119)

Reference: 2014 DBE syllabus, FDC 119, Unit 5 , p.128

Planning Your Own Talking Tokens Activity

Choose a topic from a lesson you will teach next week that you can use 'Talking Tokens' with. It can be something that student teachers have to research and then talk about in their groups (like the example) but it does not have to be. 'Talking Tokens' can be used to manage any group discussion. Plan to use the activity in a way that works well with what you will be teaching next week.

If the student teachers are familiar with group work practices you can use some of the following ideas to extend the activity:

- One person will make sure everyone speaks only when they use the token.

- One person will be a scribe and write down a brief bullet point of what is said.

- One person will report back to the rest of the class.

- Make sure that these leadership roles are assigned equally to females and males.

Write the group work instructions in an activity plan; you can find the activity plan template in the appendix. Also write in your plan other planning details (resources needed etc.) that will help you to do the activity successfully with your student teachers.

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.

PDC Notes

Resources needed: A4 paper for tokens (one sheet per student), handouts, tablets, textbooks etc. if needed for research.

Student teachers may feel that they have talked about everything during the research part of the activity. Remind tutors that the 'Talking Tokens' technique is to help student teachers make *meaningful* contributions to the discussion. Rather than just saying what they know, student teachers should aim to be selective in what they say, picking out pertinent bits of information.

T3-3 C 3 Teach and Observe

It is important for your professional learning that you actually teach the activity that you have planned. Please make sure that you have your activity plan available when you teach. Any issues that arose during the lesson should be written down immediately after you have taught, and remember to fill in your observations section of the activity plan immediately after you have taught. If possible arrange with a colleague to observe each other when you each do the activity with your student teachers during the week.

T3-3 C 4 Reflect Together

Talking Tokens

Now that you have used 'Talking Tokens' with your student teachers, reflect on how it went. Do the reflection together with colleagues who also tried the activity.

In your reflection, consider the following questions:

- How did group members prepare for the discussion?
- Did student teachers use the 'Talking Tokens' well during the discussion? How do you know?
- How successful was the technique at managing students teachers' contributions to the group discussion?
- Did using the technique bring students learning on? How do you know?
- Did the technique ensure that all students (especially females) participate equally? Did males still talk first and for longer?
- What will you do differently next time you use the technique? Why?

- How could you adapt the 'Talking Tokens' technique to make it suitable for a whole class dialogue activity?

Remember to write down your thoughts in your learning journal. Also note down what you learned from this session that was most effective in improving your teaching.

PDC Notes

The technique is very simple but requires co-operation by student teachers to be successful. They will need practice before they are able to get the most from the activity. Any feedback that tutors can give the class about discussions that went well (perhaps by getting groups whose discussions went well to model part of them for the class) will be useful.

3

Introduction to Teaching Strategy 4
Structuring Talk for Learning

PDC Notes
To start this session:
• Please briefly read out the Learning Objectives.
• Check that everybody has read the overall introduction and ask whether there are any questions.
The activity
• Now skip the Introduction, going straight to the activity below.
Suggested time: 5 minutes

T3-4 i 1 Learning Objectives

By the end of the session tutors will be able to:

• Use teaching strategies to structure Talk for Learning;

• Recognise how these teaching approaches can help your student teachers to learn effectively.

T3-4 i 2 Introduction

When using Talk for Learning you want your student teachers to be actively engaged, to participate and to feel free to offer their ideas and thoughts, for example through brainstorming. One of the challenges as a tutor is how to capture these many ideas in such a way that everyone in your classroom can progress their own learning from them. It requires structuring what is being shared, without making it prescriptive.

For example, to get your student teachers engaged and involved you might have done a brainstorm on the issue of gender imbalance in different professions in Ghana, jotting down all their ideas on the board. How do you move on from there in a way that will increase your student teachers' understanding of the topic of gender equality?

This strategy explores some teaching activities that can help you in structuring those many ideas. They tend to fall into two categories:

• Activities that ask your student teachers for their ideas within a certain framework so it is easier to compare and contrast the different elements of that framework, for example using a writing framework.

• Activities that allow your student teachers to categorise the ideas that are offered, by using (for example) a concept map, diamond nine, etc.

Here are some ideas for such strategies. They can be used and adapted for many topics, and all subjects. More details are given after the table.

Theme 3: Talk for Learning Teaching Strategy 4: Structuring Talk for Learning		
Aspect	**How it works**	**Strand**
Concept Maps and Mind Maps	A 'Concept Map' uses lines and arrows to make connections between keywords and concepts whereas a 'Mind Map' has themes, and sub themes radiating from a central idea through 'branches' and later on 'twigs'.	T3-4i
Diamond Nine	This helps to categorise and prioritise key factors of what student teachers have to learn. Student teachers are asked to order key factors in terms of importance in the shape of a diamond made of 9 elements.	T3-4i
Know, Want to Know, Learnt (KWL)	KWL asks the student teachers to identify what they know already about a topic and what they want to know. It also asks them to evaluate what they learned after a lesson.	T3-4A
Plus, Minus, Interesting (PMI)	PMI stands for '**P**lus **Mi**nus and **I**nteresting'. This strategy for discussion requires student teachers to consider pros, cons or interesting aspects of a given scenario.	T3-4C
Structured Posters	Student teachers are asked to record their ideas on posters but with a given 'writing frame', headings or a table that they have to use. This will make it easier to compare and contrast the ideas given on the posters.	T3-4i
Three Things We Know, Three Things We Do not Know	This strategy involves student teachers identifying and discussing what they know and do not know about a topic. The discussion can lead to student teachers developing their understanding.	T3-4B
Writing Frames	In 'Writing Frames' the text type is visually laid out and the connectives you want student teachers to use to link paragraphs together appear as prompts on the left. The students arrange their ideas around these prompts.	T3-4i

Structured Posters

Ask your student teachers to record their ideas on posters and put these on the walls. This will help to keep the thinking process and ideas 'live'. They can also take pictures of the posters to capture what has been shared. To get similar structures in the posters that will make it easier to compare and contrast you can give them a 'Writing Frame', headings or a table that they have to use.

Concept Maps and Mind Maps

'Concept and Mind Maps' can help to structure the topic or concept in your student teachers' minds by providing them with an overview of the topic. It is very useful for categorising ideas from brainstorming. A 'Mind Map' has the main idea or focus in a central node, and the themes and sub themes radiate from this central node through 'branches' and later on 'twigs'. Here are two examples: a 'Mind Map' about equations in mathematics, and a 'Mind Map' about acids and bases in science.
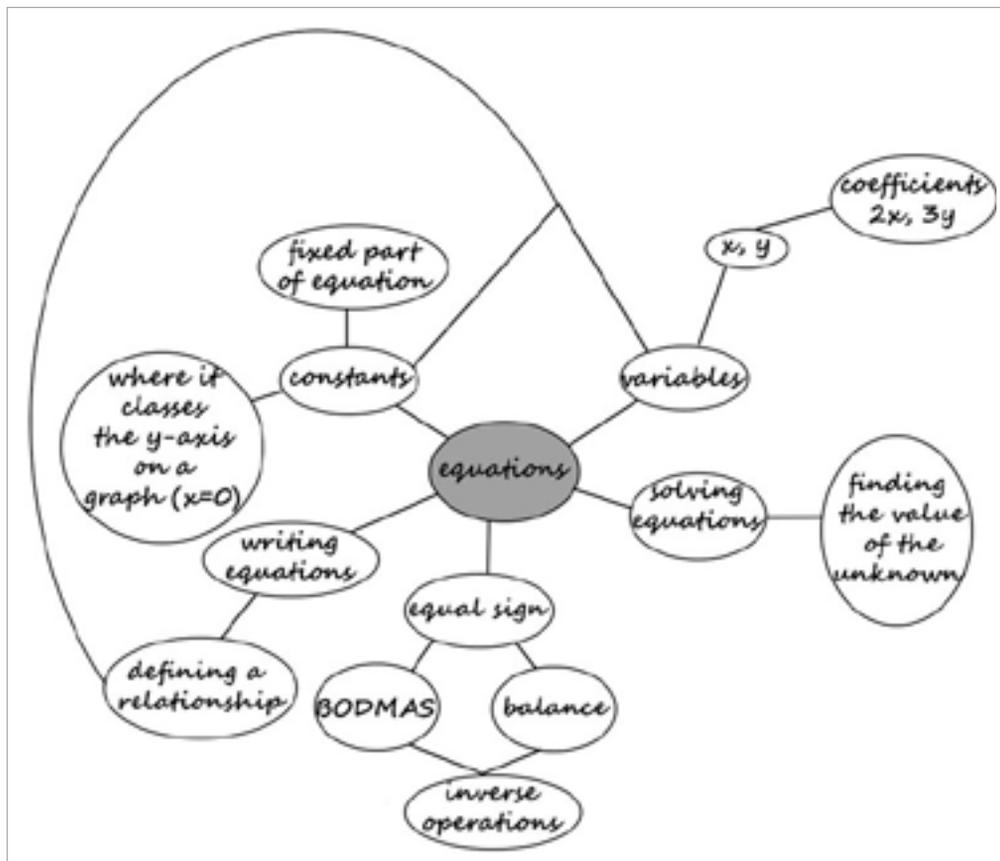
Figure 25. A 'Mind Map' on 'equations' in mathematics
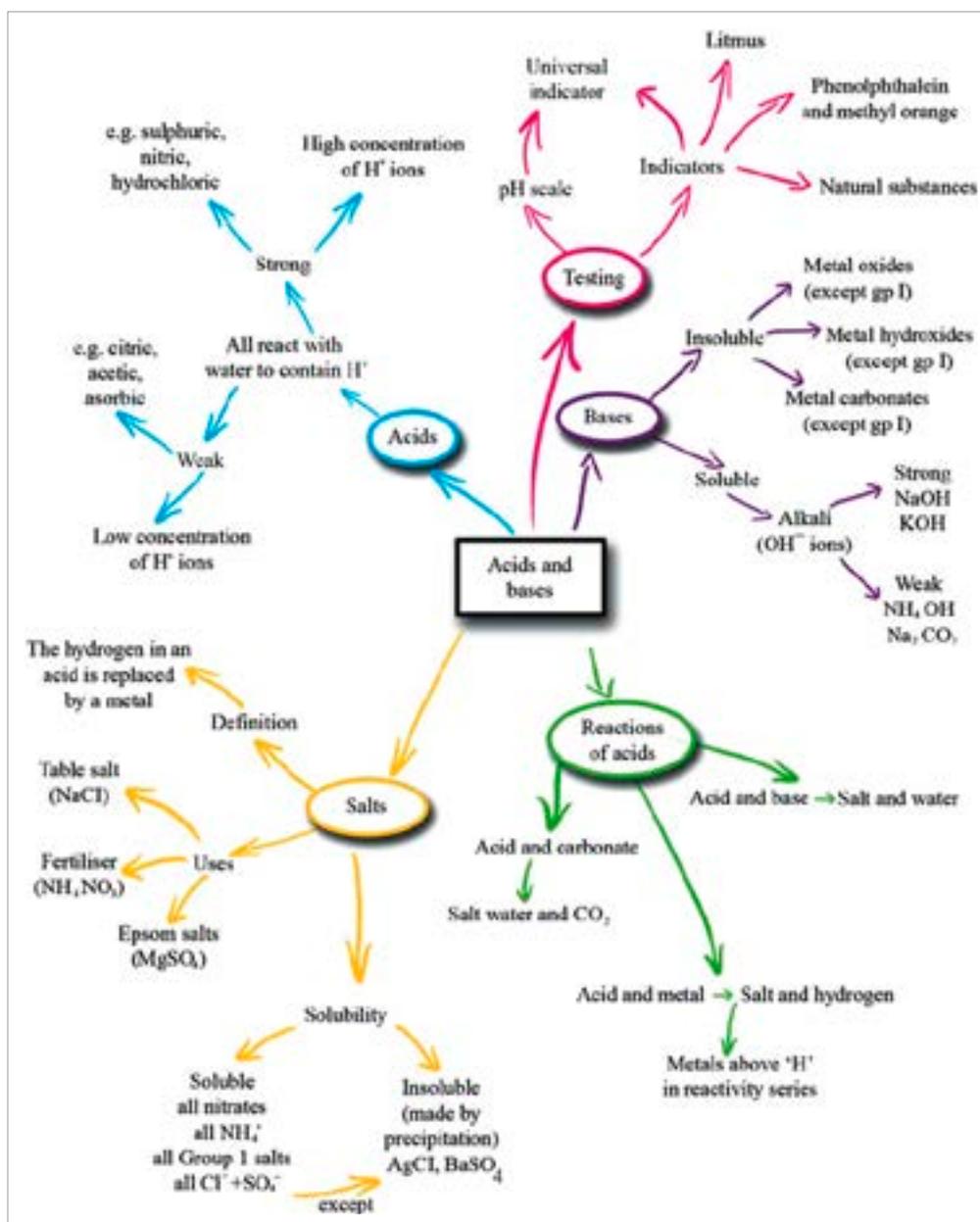
Figure 26. A 'Mind Map' on 'acids and bases' in science

A 'Concept Map' places more emphasis on making connections between keywords and concepts than a 'Mind Map' and uses lines and arrows to make connections between key words. The idea is that the key words and the linking words make a meaningful sentence. A 'Concept Map' is often more linear than a mind map. Here is an example of a 'Concept Map' about acids, salts and bases in science.

Figure 27. A 'Concept Map' on 'acids, salts and bases'

Writing Frames

'Writing Frames' are used for getting student teachers to produce a particular text type, such as a report, a discussion, a persuasive letter. They follow on very well from a brainstorming session because the frame makes student teachers organise their ideas into a specified text type.

For example, after a brainstorming activity, give the student teachers a 'Writing Frame' with the text type visually laid out and the connectives that they should use to link paragraphs together appearing as prompts on the left. Ask the student teachers to arrange their ideas around these prompts. Here is an example:

[my address]	
Urban Development Council [their address]	
[date]	
Dear Sir/Madam	
Garbage collection proposal	
I am writing in support of building a new garbage collection site next outside the town because …	Opening; state purpose
The main point is that …	State main position or argument
In addition …	Supporting argument 1
Moreover …	Supporting argument 2
Some people think that …	Counter argument expressed weakly
However, if … In short, we should … because it is my firm belief that the whole community would …	Counter argument deflated Summary or reiteration of original position]
Thank you for your kind consideration of this matter. Yours faithfully	Closing
[signature, name, title]	

Figure 28. ' Writing Frame' for a persuasive letter

Diamond Nine

This helps to categorise and prioritise key factors of what student teachers have to learn. Give the student teachers key factors, or ask them to come up with these and write them on cards, post-its or pieces of paper. The student teachers then have to order them in terms of importance, in the shape of a diamond made of nine elements. The most important factors are placed towards the top of the "Diamond Nine". The least important factors are placed towards the bottom. Equally important factors are placed on the same row. Here is an example of a "Diamond Nine" about the topic 'alcohol

and its effects' which examines why student teachers might want to drink alcohol. This can then be used to address the issues one-by-one to tackle alcohol consumption and abuse.
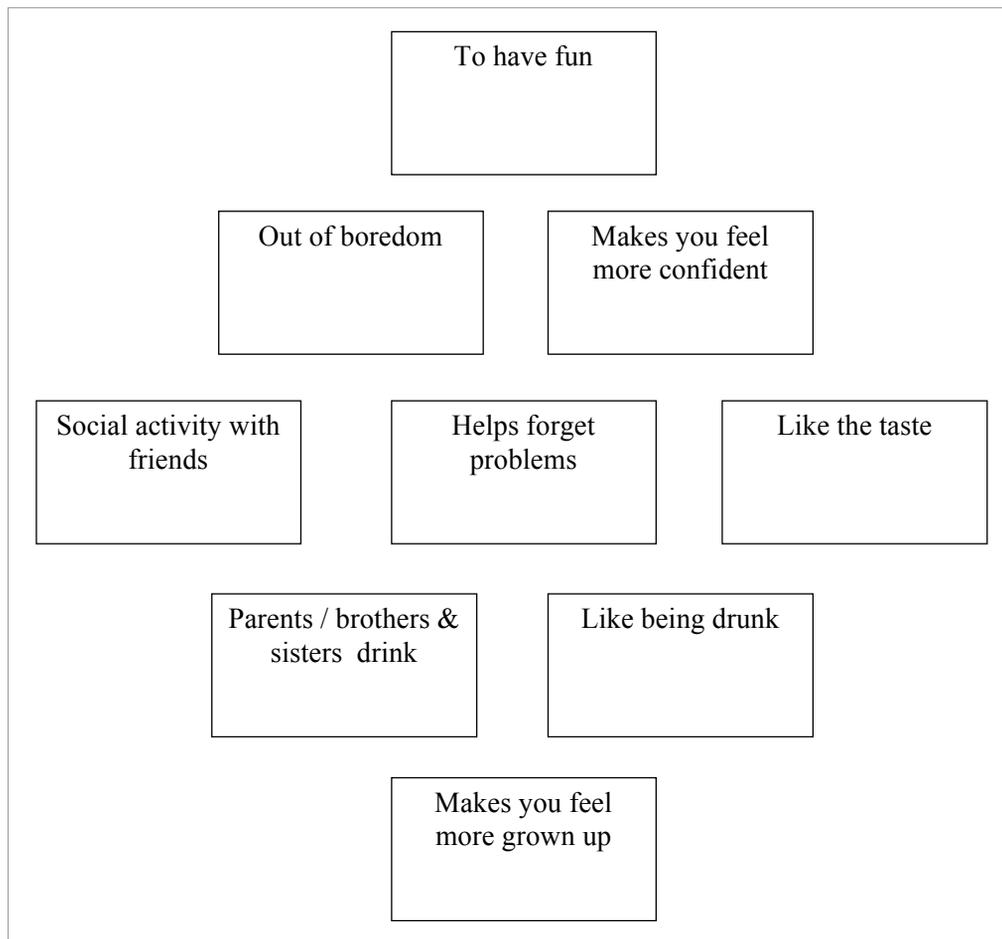
Figure 29. 'Diamond Nine' about alcohol and its effects to tackle alcohol consumption and abuse

KWL: Know, Want to know, Learnt from the lesson

KWL stands for K = Know; W = Want to know; L = Learnt from the lesson. This activity initially draws on what student teachers already know about the topic being taught. The tutor then elicits what the student teachers want to learn more about, specific to the topic. Finally after the lesson, the tutor goes back to the KWL and elicits what the student teachers learnt that was new for them from the lesson.

Three Things We Know, Three Things We Do Not Know

Ask the student teachers to decide in their groups or pairs on three things they know and three things they do not know about a topic. It works well if you ask them to do that on cards or post-its so they can move it around from the 'know this' pile to the 'do not know this' pile. They will learn from hearing what other groups will share with them in a clearly structured format.

Plus, Minus, Interesting (PMI)

PMI stands for 'Plus, Minus and Interesting'. It is a strategy for discussion that encourages participants to think about things from other viewpoints and to structure their ideas by considering the pros and cons (P and M) for a given scenario. During discussions some points may be raised which may not be technically a pro or a con but can be considered creative/worth mentioning. These will make up the 'interesting' category. For example: Ask you student teachers at the start of a talk activity to come up with three PMIs for the subject they are discussing. Tell them to structure their talk in such a way that they will end up with three positive, three negative and three interesting comments about the subject.

Please refer back to the gender section in the introduction to T3-1, and bear in mind the number of questions asked/answered by males and females, the amount of attention you give, being patient with students who may be shy or afraid to talk, and, when doing group work, experiment with different student groupings.

T3-4 i 3 Activity: Mindmaps and Diamond Nine

PDC Notes

Outcome. At the end of this activity, tutors should have

- had a go at trying out and experiencing the strategies 'Making a Mind Map' followed by 'Diamond Nine' about 'The Importance of Religious Tolerance in Ghana';
- got more ideas on the variety in outcomes of these strategies by comparing and contrasting their work with the work of other groups
- discussed how these strategies can help in structuring thinking and ideas;
- discussed and thought about how seeing more examples by looking at each other's work helps learning.

In this activity you will first of all make a 'Mind Map' which you will then use the 'Diamond Nine' approach with. After the 'Diamond Nine' part of the activity you will compare your results with those from other groups. Here are the steps for the activity:

Step 1: 'Make a Mind Map'. In groups, design with your colleagues a 'Mind Map' about 'The Importance of Religious Tolerance in Ghana' (DBE FDC 219B).

Step 2: 'Diamond Nine'. Pick the nine most important factors of the 'Mind Map'. Use the 'Diamond Nine' approach to categorise and prioritise these factors.

Step 3: 'Compare Your Results'. Go and compare (what is the same) and contrast (what is different) what you produced in your group with other groups.

Tutor Discussion

As a whole group, discuss:

- Did these activities help you in structuring your thinking? What effect did that have on your learning/thinking?

- Were you able to compare and contrast with other groups? What effect did that have on your learning/thinking?

- Is there anything that did not work so well or could be improved? What would you change to make it better?

Make notes of your ideas in your learning journal.

T3-4 i 5 Plan and Practise Together

PDC Notes

It is now time for group work, to Plan and Practise Together.

Suggested time: 45 minutes

The next three sections have examples of different activities for structuring talk for learning that can be used in all subjects. In your own planning, please use the introduction above if you need further information on the various aspects. Also note that the example provided in each section is just for guidance. Do not spend too long on it, but move straight on to your planning activity.

PDC Notes

There are three different sections that follow, each focusing on different aspects of Structuring Talk for Learning.

If you want to keep the planning simpler, you could keep the group of tutors together, and select one of the sections that all tutors can do.

However, if you would like to challenge your tutors a bit more, refer them to the above table, and let them choose which aspect to cover. Note that this will also make the reflection (at the start of the next session) more complicated.

As tutors start with the following sections, do remind them to not spend too much time on the Example, but to really focus on planning their own activities.

During the different task group work, you should circulate, and support the groups where needed.

T3-4 i 6 **Prepare for Teach and Reflect**

> **PDC Notes**
>
> After about 45 minutes (with about 10 minutes left in the session), bring the tutors back together, and see whether anything needs to be discussed. Make sure that everybody has a concrete plan for teaching, and has recorded this in their activity plan.
>
> Then close the session.
>
> Suggested time: 10 minutes

Once you have planned your activity, come back together as a whole group, to see what issues arose. Make a note in your learning journal. After you have taught, write down your own observations and reflections on your activity plan and in your learning journal, and be prepared to share these with others at the start of the next session.

T3-4 i 7 Sources

TESS-India, *Creating contexts for abstract mathematics: equations.* http://www.open.edu/openlearnworks/mod/oucontent/view.php?id=57353&section=8.3, Resource 3: An example of a mind map, http://www.open.edu/openlearnworks/mod/oucontent/view.php?id=57353&extra=thumbnail_idm35045248. Available under Creative Commons Attribution-ShareAlike (http://creativecommons.org/licenses/by-sa/3.0/; unless identified otherwise).

TESS-India, *Mind mapping and concept mapping: acids, bases and salts.* http://www.open.edu/openlearnworks/mod/oucontent/view.php?id=64819

- Resource 5: Example of a concept map, http://www.open.edu/openlearnworks/mod/oucontent/view.php?id=64819&extra=thumbnail_idp27083728;

- Resource 2: An acids, bases and salts mind map, http://www.open.edu/openlearnworks/mod/oucontent/view.php?id=64819&extra=thumbnail_idp27021712.

- Available under Creative Commons Attribution-ShareAlike (http://creativecommons.org/licenses/by-sa/3.0/; unless identified otherwise).

Alcohol education trust - http://www.alcoholeducationtrust.org/teacher-area/effects-physical-and-social/effects-physical-social-lesson-planning/, http://www.alcoholeducationtrust.org/wp-content/uploads/2014/11/Diamond-Completed.doc © Alcohol Education Trust 2015. This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

Teaching Strategy 4 - Strand A
Structuring Talk for Learning with Know, Want to Know and Learnt (KWL)

T3-4 A 1 Example

How Mr. Zadiq Structured Talk for Learning in His English Class

Mr. Zadiq is planning for his class tomorrow. He is introducing 'Methods of Teaching English in Basic Schools' (FDC 211). He wants his student teachers to really engage with the topic so he decides to structure his lesson using KWL (Know; Want to know; Learnt from the Lesson).

Before the start of the lesson he first arranges the furniture so that student teachers work in groups. Then he draws three columns on the board like this:

KNOW (already)	WANT (to know more about)	LEARNT (from the lesson)

He introduces the lesson and asks his student teachers to discuss what they already know about the topic in their groups. After five minutes he asks for their ideas, taking two or three ideas from each group and putting them on the board under the column 'KNOW'. Then he gives them another five minutes to discuss what they want to know more about the topic. He follows the same steps and writes some of the student teachers' ideas under the second column 'WANT'.

Mr. Zadiq then gives his student teachers some input using a variety of activities. He monitors them as they complete the different tasks. Finally, he asks his student teachers to discuss in their groups what they have learnt from the lesson. He elicits some ideas and adds them to the column 'LEARNT' on the board.

Tutor Discussion

At present:

1. How do you find out what your student teachers already know of a topic (their prior learning)?

2. How do you meet the needs of what your student teachers need to know ?

3. How do you elicit from your student teachers on the new things they have learnt?

4. Do you think you could use KWL to structure your Talk for Learning in your own subject area?

Look at the next section and try it out!

PDC Notes

The notes under Further Resources (T3-4 E5) will help you facilitate the Tutor Discussion and get your tutors to think more about the links between prior knowledge and experience and learning something new.

T3-4 A 2 Plan and Practise Together

KWL

You are now going to plan your own KWL activity. If the above examples fit what you are teaching, you can use them. However, you may well be teaching something else, so here are some more ideas from various subjects that lend themselves to Talk for Learning, using KWL.

Food Poisoning (Catering FVH - 122)

Now plan a lesson on the topic 'Food Poisoning' in Catering and how to structure the lesson to involve student teachers to tell you what they know, what they want to know and what they have learnt within the lesson to encourage Talk for Learning.

Modern Approaches to the Teaching of Religious and Moral Education (Religious and Moral Education - FDC 219B)

Now plan an activity on the topic 'Modern Approaches to the teaching of Religious and Moral Education' in Religious and Moral Education. Think about how to structure your lesson to engage student teachers to talk about what they know, what they want to know and what they have learnt about the topic.

Types of Oral Literature (Ghanaian Language and Culture - FDC 123)

Now plan a lesson on the subject Ghanaian Language and Culture (FDC 123) with the topic 'Types of Oral Literature' and consider how you would structure your lesson to get student teachers talking about what they know, what they want to know, and what they would have learnt at the end of the lesson.

Plan Your Own KWL Activity

Can you use any of the above ideas? Hopefully the above topics give you an idea of how you can design an activity for use in your classroom. But, as usual, it is possible that those ideas do not fit, and you will need to identify a topic that fits into your weekly lesson forecast.

At the end of the planning activity you should have developed an activity plan that you can use in your teaching 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.

PDC Notes

Figure 30. Whole class dialogue using KWL

T3-4 A 3 Teach and Observe

It is important for your professional learning that you actually teach the activity that you have planned. Please make sure that you have your activity plan available when you teach. Any issues that arose during the lesson should be written down immediately after you have taught, and remember to fill in your observations section of the activity plan immediately after you have taught. If possible arrange with a colleague to observe each other when you each do the activity with your student teachers during the week.

T3-4 A 4 Reflect Together

KWL

After you have taught a class using KWL, first reflect on your own and answer these questions/statements:

- Note down all the things you felt went very well because of using KWL in your lesson and share it with your peers.

- What was the 'high point' of the lesson for you? Why was this?

- Can you answer the same question from your student teachers' point of view?

- Note down the specific points in the lesson where you felt the student teachers were learning something due to using KWL.

- Which part of the lesson involved your students most completely? Were females and males involved equally?

> **PDC Notes**

T3-4 A 5 Further Resources

Planning Your KWL Activity

Why Building on Previous Experience and Knowledge Helps Support Learning

Try to build in opportunities for students to activate prior knowledge as it is an important way of making learning contexts more supportive for all and particularly for those learning through a language other than their own.

As learning occurs mainly through 'linking' new ideas to what we already know, it is usually only when students have the opportunity to relate new ideas to previous knowledge and experience that real learning takes place.

Activating prior knowledge allows students to connect with prior learning, either to build on what has been learned in previous lessons or to assimilate a new idea or topic. It enables teachers to find out what they already know and understand, can do, believe or are aware of. It also sends explicit messages to students that their ideas are of value and that they have an active role to play in the learning.

Strategies for activating prior knowledge include:

- giving a summary of the last related lesson's outcome or focus;

- sharing quick ideas at the beginning of a new topic;

- concept maps;

- bilingual strategies;

- KWL grids;

- using artefacts, realia (replicas of real objects eg a toy or a model) and pictures; and

- note the strategies used in teaching vocabulary/terminologies apply in all subject areas.

More Strategies to Build on Previous Experience and Knowledge in Bilingual and Multilingual Contexts

Here are some more tips on both 'building and structuring Talk for Learning' in the classroom. In particular, you will find these useful for activating previous knowledge. Building on previous experience should be used in any classroom and is particularly useful in bilingual and multilingual contexts. Strategies can include:

- using prior knowledge by sharing initial thoughts, ideas, understandings and experiences;

- using culturally familiar starting points, examples and analogies;

- starting with the language the child knows best, i.e. using bilingual strategies

- creating shared experiences through practical activities, speakers and stories; and

- using a wide range of assessments for learning e.g. when giving feedback to children you can praise in more than one language – try to learn some of the basic communication skills in the language of your pupils so you can say, 'well done, that is very good.' etc.

3

Teaching Strategy 4 - Strand B
Structuring Talk for Learning with Three Things We Know, Three Things We Do Not Know

T3-4 B 1 Example

Mr Owusu Manages the Many Ideas His Student Teachers Shared in Mathematics

Mr Osei Owusu teaches mathematics in a College of Education in the Eastern Region. He has been trying out some of the teaching strategies that he learned from the T-TEL materials and it is going well: his student teachers are enjoying the interactive teaching and learning a lot from having the opportunity to talk to each other.

He would like to try out a teaching strategy now that would address some particular issues that happen when he is in the middle of teaching a topic: at that moment he wants to consolidate the learning of the topic so far and evaluate the progress of the student teachers to inform his planning for the next lessons.

This is Mr Osei Owusu's story of how he went about achieving this:

> Evaluating my student teachers halfway through a topic to inform my planning for the next few lessons is something I really think is good to do, but up to now, I have not found it a pleasant experience. I just get disheartened by the gaps in knowledge that the student teachers seem to have, and the wide variety in those gaps. I can find it really hard to know what to do next: how to structure those different gaps in knowledge into chunks that I can teach quickly. Do I repeat what I have already taught? Do I ignore the gaps, move on and hope for the best? Do I waste time on teaching some things that some students already know?
>
> I have experienced that my student teachers learn well through Talk for Learning activities. They seem to develop a deeper understanding and I also found these strategies time effective because the student teachers seem to learn much more quickly by learning from their peers. Reading about the strategy 'Three things we know, three things we do not know' I thought this might address my particular issues.

I was in the midst of teaching 'Central Tendency in Statistics' (FDC 312, unit 2). I asked the student teachers to work in groups of four or five and do the activity written on the board:

I told them it was up to them to decide how to go about it, for example they could decide to first individually write down 5 things they knew, and five things they did not know, and then discuss with each other. I walked around the classroom, observing what they were doing and noticed that many of the 'things I do not know' moved to the 'I know' pile after they taught each other quickly this 'thing I do not know'. I was really happy about that because it would save whole class teaching time. These are some of the things they knew:

To get all groups to share with the class without taking too much time, I asked each group to first share one example of what 'we know' and wrote these on the board. Then I asked for one example of 'what we do not know' from only three groups and asked whether anyone 'knew' this and could explain. Then we kept adding and discussing.

On separate pieces of paper, write

Three things you **do** know about central tendency
Three things you **do not** know about central tendency

I told them it was up to them to decide how to go about it, for example they could decide to first individually write down 5 things they knew, and 5five things they did not know, and then discuss with each other. I walked around the classroom, observing what they were doing and noticed that many of the 'things I do not know' moved to the 'I know' pile after they taught each other quickly this 'thing I do not know'. I was really happy about that because it would save whole class teaching time. These are some of the things they knew:

- there are several averages: mean, mode, median;
- the range shows how the data is spread.

Some of the things they do not know were:

- why it is called this way (central tendency - so complicated!);
- how to work out the mean of grouped data;
- how to work out the possible data (numbers) when you are given a mean.

To get all groups to share with the class without taking too much time, I asked each group to first share one example of what 'we know' and wrote these on the board. Then I asked for one example of 'what we do not know' from only 3three groups and asked whether anyone 'knew' this and could explain. Then we kept adding and discussing.

Figure 31. Student teachers engaging in group work

Tutor Discussion

Discuss with your colleagues:

- Why do you think Mr Owusu structured the group work in this way?

- Do you think the activity allowed for the student teachers to consolidate their learning? How?

- How do you think this activity might help Mr Owusu in his planning of the next lessons on this topic?

- It is important to have a sense of what student teachers know and do not know. Can you think of any other 'things I do not know' your student teachers could have about this topic?

- Do you have any more ideas for sharing the group ideas with the whole class that would be effective?

PDC Notes

T3-4 B 2 Plan and Practise Together

Three Things We Know, Three Things We Do not Know

Given the topics that you are teaching this week, the topic in the above example is not likely to work for you. Here are five more ideas that lend

themselves for using 'Three Things We Know, Three Things We Do not Know' to structure the many ideas student teachers might have.

Linear Equations (Maths - FDC 112)

Write down 'Three Things We Know, Three Things We Do not Know' about linear graphs.

Reference: 2014 DBE Mathematics (Number and Basic Algebra), FDC 112, Unit 6, p. 207.

Rational Numbers (Maths - FDC 112)

Write down 'Three Things We Know, Three Things We Do not Know' about operations on fractions.

Reference: 2014 DBE Mathematics (Number and Basic Algebra), FDC 112, Unit 3, p. 207.

Vectors (Maths - FDC 122)

Write down 'Three Things We Know, Three Things We Do not Know' about addition, subtraction and multiplication of vectors.

Reference: 2014 DBE Mathematics (Geometry and Trigonometry), FDC 122, Unit 7, p. 209.
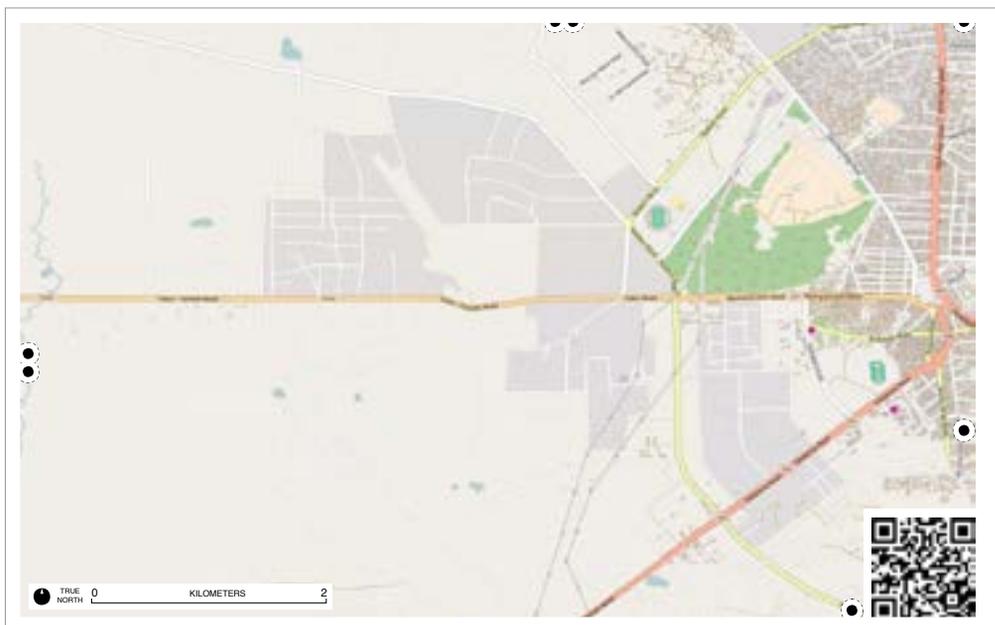
Figure 32. A map produced with www.openstreetmap.org and www.fieldpapers.org

Maps and Scales (Social Sciences - FDC 118)

Write down 'Three Things We Know, Three Things We Do not Know' about map reading.

Reference: 2014 DBE Introduction to Foundations of Social Studies, FDC 118, Unit 5, p. 289.

Data Representation (ICT - GNS 211)

Write down 'Three Things We Know, Three Things We Do not Know' about representing data on the computer.

Reference: 2014 DBE Introduction to Information Technology 1 (ICT 1), GNS 211, Week 11 & 12, p. 302.

Plan Your Classroom Activity

Can you use any of the above ideas? If not, consult your syllabus and choose a topic from a lesson you will teach next week where you can use 'Three Things We Know, Three Things We Do not Know'. Plan in detail, you can use the activity plan in the appendix. Take care with selecting the topics as the activity works well for focused topics but not for big general topics. For example, do not ask the student teachers what they know or do not know about 'graphs' but about 'linear graphs'.

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.

Please make sure that you have noted down everything you need to remember for your lesson in your activity plan.

> **PDC Notes**
>
> The topic chosen for this activity benefits from being focused and not too wide, for example, not asking the student teachers what they know or do not know about 'graphs' but about 'linear graphs'.

T3-4 B 3 Teach and Observe

It is important for your professional learning that you actually teach the activity that you have planned. Please make sure that you have your activity plan available when you teach. Any issues that arose during the lesson should be written down immediately after you have taught, and remember to fill in your observations section of the activity plan immediately after you have taught. If possible arrange with a colleague to observe each other when you each do the activity with your student teachers during the week.

T3-4 B 4 Reflect Together

Three Things We Know, Three Things We Do not Know

Here are some prompts for reflection:

- Did the activity 'Three Things We Know, Three Things We Do not Know' help you to manage the many ideas your student teachers shared? How did it support your teaching?

- Did the activity help or hinder your student teachers to learn from talking? Please explain how you think this happened.

- Is there anything you could do further to improve this?

- Did female and male students participate equally? If not, what can you do next time to improve this?

PDC Notes

T3-4 B 5 Sources

The map image was produced using OpenStreetMap: OpenStreetMap is open data, licensed under the Open Data Commons Open Database License (ODbL) by the OpenStreetMap Foundation (OSMF). The cartography in the map tiles is licensed under the Creative Commons Attribution-ShareAlike 2.0 license (CC BY-SA). The PDF image was produced with Field Papers (http://www.fieldpapers.org/).

Teaching Strategy 4 - Strand C
Structuring Talk for Learning with Plus, Minus and Interesting (PMI)

T3-4 C 1 Example

Using PMI to Structure Talk for Learning in Science

Edward DeBono is known as the father of lateral thinking and he devised many thinking tools including the "six thinking hats" used for critical thinking. Another one of his tools to help organise thinking is 'Plus, Minus, Interesting', also known as PMI. This one is useful in collaborative environments for structuring group thinking. We are using it here to structure talk during group work.

Tutor Mohammed is giving a lesson on fertilizers next week. He wants to make the lesson interactive so he refers to his professional development teaching strategies booklets. On this occasion he will ask his student teachers to make a PMI table as an output of their group discussion as it is useful for them to be able to summarise their thoughts in this way.

Tutor Mohammed's PMI Activity With Student Teachers

Tutor Mohammad tells his student teachers briefly about Edward DeBono and his interesting techniques for developing thinking skills.

> Instead of standing here and lecturing you today on everything you need to know about fertilizers I have prepared some information for you to read and I want you to process the information in groups. By talking and thinking together you are more likely to make better sense of the material than if I just tell you about it and you will find it easier to remember the information by puzzling through it yourselves too.

He goes on to explain that to help groups structure their talk they will use a PMI table and he draws an empty table on the board and writes an outline of the PMI technique also on the board. He also writes this prompt:

Think about the advantages and disadvantages of using fertilizers to grow crops.

He asks the following questions to make sure that everyone has understood the instructions and he records a bullet point for each column in the table so that they know how to complete it.

Mohammad: Can someone tell me something positive about using fertilizers?

Student teacher: They improve crop yield.

He writes it in the table like this:

Positives (P)	Minuses (M)	Interesting points (I)
• improve crop yield		

Mohammad: What about something bad about them? Can anyone think of a reason not to use fertilizers?

Student teacher: They can leach away if it rains and so you need to fertilise your crops all over again.

He writes it in the table like so:

Positives (P)	Minuses (M)	Interesting points (I)
• improve crop yield	• leach away so need to be replenished	

Mohammad: Now here's where we get creative. That's another one of DeBono's things. Creative thinking is a very useful skill for problem solving amongst other things. So, can anyone tell me something interesting about fertilizers? Something you've heard on the news perhaps?

Student teacher: I've heard that they can cause cancer.

He finishes off like so:

Positives (P)	Minuses (M)	Interesting points (I)
• improve crop yield	• leach away so need to be replenished	• some people think fertilizers can cause cancer

Mohammad leaves his unfinished table on the board as he will add to it later (or maybe he will get some student teachers to complete it) during the lesson plenary.

He reminds the student teachers to make sure that there are at least five points in each column and to complete one column before moving on to the next one. They should aim to spend the same amount of time on each column (about five minutes) working from P to M to I.

After handing out the reading material to the groups they get under way with their PMI task and he walks around the room offering guidance when needed.

DBE syllabus reference: "Types of fertilizer" (FDC124, *Integrated Science 2*, Agriculture, Unit 1).

Figure 33. Pineapples growing in fertilized sandy soil

Tutor Discussion

Tutor Mohammad wrote an outline of the PMI technique on the board. What do you think he wrote? Fill in the table with your ideas. The first point has been completed for you.

Outline of the PMI technique
• P = plus points about something (advantages), M = minus points about something (disadvantages) and I = interesting points about something
•
•
•

Here are some further points for discussion:

- How would you adapt the example (and your instructions) so that the student teachers can include information on organic and inorganic fertilizers in their PMI chart?

- Discuss the different ways of taking feedback from the groups when they have completed the activity.

- How could you ensure that females and males are participating fully and equally during discussion and feedback?

- What are the advantages and disadvantages of doing the PMI activity in groups rather than a whole class dialogue activity?

- Can you anticipate any difficulties when using this technique? How would you cope with these?

- What types of groups can you see this activity working with?

- What should student teachers write in their books after doing the activity?

PDC Notes

See completed PMI table in Further Resources.

Different ways of taking feedback from the groups when they have completed the activity:

- They could do it on a poster and these could be displayed - others could then walk around the room and look at them.
- They could use the pyramid group formation adding any new ideas from the different group members to give one comprehensive chart.

A whole class PMI table can be constructed when groups have finished by asking an individual from each group to come up to the board (or flipchart) and add their group's points. They should make sure not to repeat any points that have been mentioned already.

T3-4 C 2 Plan and Practise Together

PMI

You are now going to plan your own PMI activity. The previous example will only work for you if you happen to be teaching about types of fertilizer, so here are some other ideas that you can use the PMI technique with:

PMI on Different Types of Energy (Integrated Science - FDC 114)

Different types of energy sources include solar/wind/nuclear/wave, and others. You could do same task group work, or different task group work. For the PMI activity, think about renewable vs. non-renewable, cost, reliability, etc.

DBE syllabus reference: "Energy, Work and Power" (FDC114, *Integrated Science 1*, Physics, Unit 2).

A useful way of illustrating the PMI technique without the student teachers having the cognitive load of having to think about new material might be to do a quick PMI on the advantages and disadvantages (pros and cons) of studying science.

PMI on Having the Test for HIV (HIV/AIDS Education)

Come up with as many PMIs as you can around the idea of having an HIV test. What are the good reasons for having the test (the positives)? What are the reasons why you might not have the test (the negatives)?

PMI on the Role of Computers in Education (ICT - GNS 211)

What are the advantage and disadvantages of using computers in education?

Reference: 2014 DBE syllabus GNS 211, unit 1, p. 300

PMI on Democracy as a System of Government (Social Studies - FDC 128)

What are the advantage and disadvantages of democracy as a system of government?

Reference: 2014 DBE syllabus, FDC 128, unit 8, p. 291

Planning Your Own PMI Activity

Choose a topic from a lesson you will teach next week that you can use the PMI technique with. It should be something that student teachers have to organise their thinking about. Think about where student teachers will get the information from to construct their PMI chart (internet/textbook/notebook/handouts?). Decide if you will use whole-class dialogue or group work to do the activity. If you decide to use whole-class dialogue remember to let the student teachers (females and males equally) guide the talk and take on the responsibility of making sure that they all contribute to the activity.

Write the PMI instructions in an activity plan; you can find the activity plan template in the appendix. Also write in your plan other planning details (resources needed etc.) that will help you to do the activity successfully with your student teachers. Complete the PMI chart yourself as part of your planning. This will help you to guide the student teachers as they do the activity.

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.

> PDC Notes
>
> The topic should be something that has enough information to give at least 3 points in each column. Student teachers should also be prepared to talk about their reasons for adding something to a particular column. The interesting column may present some problems as some creative thinking is required and the 'answer' is unlikely to be found in the lesson material.
>
> If tutors are using laptops/computers, a quick search for the word "advantages" in the syllabus will direct them towards a suitable topic. "P" can also stand for "things you know" i.e. a positive situation, "M" can stand for "things you don't know" i.e. a minus situation and "I" can stand for "things you would like to know" i.e. things you are interested in. In that way the table can be used for almost any topic.
>
> Some tutors may benefit from looking through the completed tables in "Further Resources".

T3-4 C 3 Teach and Observe

It is important for your professional learning that you actually teach the activity that you have planned. Please make sure that you have your activity plan available when you teach. Any issues that arose during the lesson should be written down immediately after you have taught, and remember to fill in your observations section of the activity plan immediately after you have taught. If possible arrange with a colleague to observe each other when you each do the activity with your student teachers during the week.

T3-4 C 4 Reflect Together

PMI

Now that you have taught the lesson activity, reflect on how it went. If at all possible, do the reflection together with a colleague who has also tried the activity.

As part of your reflection, complete the following PMI chart with other members of the group on how the PMI activity with your student teachers went for you (remember to talk about and record the Ps first before moving on to the Ms and then the Is):

P (what went well)	M (what was not so good)	I (what interesting things did you notice)

Make a note of any hints that you would give to someone trying the PMI activity for the first time. Use the information in the chart to help you.

Remember to write down your thoughts in your learning journal. Also note down what you learned from this session that was most effective in improving your teaching.

> **PDC Notes**
>
> Make sure tutors do not duplicate any information added to the table and that they talk about their experience of doing the activity as they fill it in. Keep a note of/copy of what tutors add to this table and use it to inform your planning the next time you do this activity.

T3-4 C 5 Further Resources

PMI Tables

To provide a few more examples, here are the filled in PMI tables from the suggested activities above.

PMI on Organic and Inorganic Fertilizers

Positives (P)	Minuses (M)	Interesting points (I)
Inorganic fertilizers: • they improve crop yield • nutrients are ready made for plants • affordable and accessible • exact ratio of nutrients being used is known	Inorganic fertilizers: • leach away so need to be replenished • chemicals in the fertilizer can damage plant roots • can deplete natural soil nutrients and minerals • frequent use can lead to chemical build up which can leak into fruits • fertilizers decrease the shelf life of vegetables and fruits	Inorganic fertilizers: • some people think fertilizers can cause cancer • genetically modified organisms (GMO) • drought resistant seeds • supermarkets sell only good quality crops • some fertilizers also contain weedicide to kill weeds • cocoa farmers are being given free fertilizers
Organic fertilizers: • improves soil structure • no toxic build-up of chemicals in plants (poison free) • you are less likely to harm plants since it is slow in working • made from plant or animal waste so sustainable	Organic fertilizers: • can be very expensive • amount of nutrients going into plants is usually guessed • nutrients are not ready-made for plants since it takes time to breakdown • can be smelly in the environment	Organic fertilizers: • poultry droppings are very good for plant growth • crops can vary in quality (crooked carrots/straight carrots)

PMI for Having the HIV Test

P	M	I
• pre- and post-test counselling available • early referrals for opportunistic infections • helps with prevention • helps with mother to child transmission • you can be happy if the test is negative	• psychological trauma of a negative result • other people will get to know so you will be stigmatised / discriminated against • you may get an incorrect result • could lose your spouse if they have a different result to you (discordant results)	• there are networks of support available for those who test positive • people who have counselling are better able to cope with the infection and/or the disease • pre-test counselling addresses the worries that some people might have about the risk of becoming infected during the test (very sterile environment/new syringe for each person

PMI for Role of Computers in Education

P	M	I
• As teaching and learning materials • It's versatile • It stores volumes and volumes of data and information • It speeds up communication • It processes millions and millions of data in few seconds	• Lack of privacy • Dislocation of employees • Initial cost • Cannot be used without electricity • Requires technical know-how • Health hazards	• Network of friends and family • Amazing speed with which the computer processes data into information • Its ability to keep volumes and volumes of data , instructions, and information for future use • Its ability to represent all characters in all languages in the world eg. Unicode (coding scheme)

PMI for Democracy and Governance

P	M	I
• constitution and rule of law • freedom of speech • protection of human rights • freedom to access the courts • media freedom • multi-party participation in elections • people's representation • the courts • electoral commission • good governance • peace • tolerance	• disagreement/war • tribal sentiments • abuse of freedom of speech • inter-intra party fighting and killings • insults and use of abusive words • intolerance • burning of state property • refusal to vote • corruption	• giving of lanterns/ key soaps before going to vote • snatching of ballot boxes • macho men at polling stations • election projects by governments • name not found in voters register • dumsor • non winning parties

T3-4 C 6 Sources

Image: "Pineapples growing in fertilized sandy soil" - by Hiroo Yamagata, Flickr. CC BY-SA 2.0. https://www.flickr.com/photos/hiyori13/31685467/in/set-706066

Introduction to Teaching Strategy 5
Expressing Yourself with New Words

> **PDC Note**
>
> This is the last session in this Theme, and possibly the last session in the semester. It is your choice how you finish the Theme. You can do one of two things depending on the time you have available:
>
> If you have time, do an extra session, dedicated to reviewing Theme 3. Options for this will be discussed at the induction workshops.
>
> However, if you are running short of time, and you do not have a clear week for adding a session, then skip the activity in this introduction, going straight to planning. This will then give you time at the end of the session to conduct a short reflection activity covering the whole semester.

T3-5 i 1 Learning Objectives

By the end of the session tutors will be able to:

- Use teaching strategies to help student teachers improve their learning of language whether this is their mother tongue, additional, scientific, technical or mathematical language;

- Show how these teaching approaches help student teachers to learn more effectively.

T3-5 i 2 Introduction

One of the reasons Talk for Learning activities are such effective learning tools is that they give your student teachers opportunities to rehearse and practise expressing themselves about their thinking. This is important for all students, but arguably becomes even more important for student teachers who are also English Language Learners (ELL), and those with culturally diverse backgrounds. Learning a language – which includes studying or improving your mother tongue, an additional language, or subject specific languages – involves identifying words and expressions, using them in different contexts and phrases, and giving them meaning. To learn a language effectively you need to regularly hear it, see it, read it, write it, and practise speaking it. Murray (2004) argues that one needs to use a word at least 30 times in order to own it! That requires a lot of opportunities to practise vocabulary.

Some maths experts who have looked into language learning (Kersaint and colleagues) suggest five principles for supporting this:

1. provide many opportunities to read, write, listen, and discuss in a variety of ways;

2. draw attention to patterns of language structure, e.g. English, scientific and mathematical language;

3. allow plenty of time to use and develop the language;

4. allow learners opportunities to notice their errors and to correct what they are saying (e.g. through having another go at what they were saying, requesting clarification, elicitation by pausing, repetition of what student teacher says by the tutor); and

5. construct activities that allow learners to have the maximum time to interact with others.

In the table below are ideas that provide opportunities to use some of the above principles in your daily teaching. These ideas can be used and adapted for many topics and all subjects.

Theme 3: Talk for Learning Teaching Strategy 5: Expressing yourself with New Words		
Aspect	**How it works**	**Strand**
Dealing with New Words	The first step in choosing a strategy to help you deal with new words involves determining how essential the new word is for understanding the text (is it a key word?) and how difficult the new word is. Thereafter context clues and decoding strategies can be used.	T3-5A
Personal Dictionaries	Student teachers make their own dictionaries of mathematical words and add to these over time.	T3-5B
Talk Like An Expert	This strategy gives student teachers the opportunity to read, write and listen to new words as well as speak using them.	T3-5C

Dealing With New Words in Texts Using Context Clues

Student teachers can work out the meaning of essential new words in context in the following ways:

- **Keep Reading:** Students can continue reading after the new word. Most readers just stop when they reach a word they don't know. In fact, students can keep reading right to the end of the text in order to prioritise key unknown words.

- **Compare Repetitions:** Students can look to see if the word is repeated later. If it is, students can compare the usage in two contexts.

- **Examine Surrounding Words:** Most of the context clues that help students work out meanings occur within 5 to 10 words before and after the unknown word, so students can be trained to read those surrounding words carefully.

- **Check by Substituting Synonyms:** Students can also learn to check their guesses. They can check the part of speech by using a synonym of their guess, putting the synonym in the passage instead of the unknown word and seeing if the passage then makes sense. Most wrong guesses come from guessing the wrong part of speech. Students can also check that any affixes in the unknown word agree with the guess.

Dealing With New Words in Texts Using Patterns of Language Structure

Finding patterns in words and identifying root words can help student teachers understand the meaning of new words that they encounter.

- **Decode From Inflections, Grammar:** Students can find the part of speech of the unknown word from endings and grammar patterns: *-ed* , *-ing* or *-s* and preceding auxiliaries like *is*, *can* or *have/has* will denote a verb; *-ly* an adverb, and articles or quantifiers will precede a noun. Proper nouns – particularly people's names – confuse students but can be identified by capital letters. Adverbs and adjectives can generally be identified by their sentence position, and usually can be ignored because the passage will make sense without them.

- **Decode From Roots and Affixes:** Students can learn word derivatives, for example prefixes of negation and opposites (un-, dis-, in-, non-), suffixes that transform words to other parts of speech (-ify, -able, -ful), and roots (sign-, -phone, -scope) to deconstruct words and increase the accuracy of their guess.

Personal Dictionaries and Word Walls

These provide student teachers with the opportunity to write new words and can help with remembering them. A word wall can be build up as a topic is taught with new words being added to it as they are encountered. Student teachers can also add the words from the word wall to their own personal subject specific dictionaries.

Talk Like an Expert

The activity 'Talk like an Expert' gives student teachers the opportunity to read, write and listen to new words as well as speak using them. The tutor writes a paragraph on a relevant topic that uses interesting vocabulary (expert words) and gives the student teachers a list of the expert words that are in the paragraph. They tick off the words as the tutor models talking like an expert by reading out the paragraph. They then use the same words to write their own paragraph and read them out to the class. Others tick off the words as they listen.
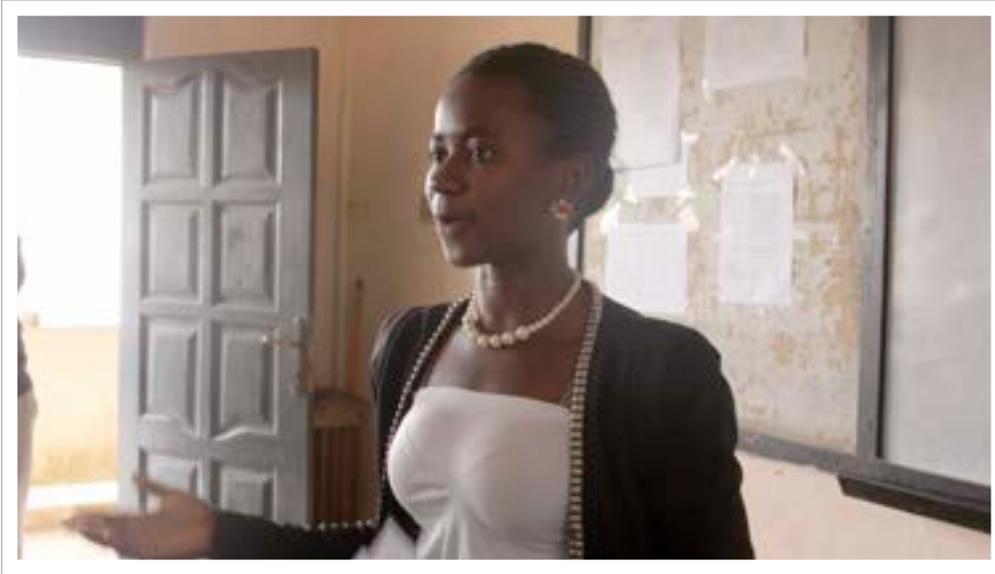
Figure 34. Student teacher 'Talking Like an Expert'

Please refer back to the gender section in the introduction to T3-1, and bear in mind the number of questions asked/answered by males and females, the amount of attention you give, being patient with students who may be shy or afraid to talk, and, when doing group work, experiment with different student groupings.

T3-5 i 3 Activity: Talk Like an Expert

> **PDC Notes**
>
> **Outcome.** At the end of this activity, tutors should have
>
> • had a go at trying out and experiencing the strategy 'Talk Like an Expert' about 'Interventions and Treatment of HIV/AIDS'
>
> • discussed the effects of the strategy of 'Talk Like an Expert' on developing technical vocabulary and understanding of the topic.

Try out the 'Talk Like an Expert' strategy with your colleagues as follows:

• One member of the group reads out the paragraph about interventions and treatment of HIV/AIDS to the other group members.

• Other group members tick off the expert words from the list.

• Group members then work in pairs to write their own version of the paragraph using the same words.

• Each member of the pair practises what they will say when they 'Talk Like an Expert'.

• Pairs take it in turns to 'Talk Like an Expert' (by reading their new paragraph out or speaking from memory using the list of expert words as a prompt) to the whole class who tick off the words.

Here is a paragraph about interventions and treatment of HIV/AIDS that has some interesting vocabulary:

> When the human **immunodeficiency** virus (HIV) enters a person's system it causes what is known as HIV infection. Without any **intervention** this **progresses** to the acquired immune deficiency syndrome (AIDS) stage. However the good news is that when one finds out through Voluntary Counselling and Testing (VCT) during the **asymptomatic** stage, treatment in the form of antiretroviral **therapy** can be **administered**. Depending on the type of **antiretroviral** drug, this can either prevent the virus from entering the white blood cells or, where it has already entered, from **replicating** itself and destroying the cells.

Here is a list of expert words in the paragraph:

- immunodeficiency
- intervention
- progresses
- asymptomatic
- therapy
- administered
- antiretroviral
- replicating

Tutor Discussion

Afterwards discuss with your colleagues:

- What was the effect of the activity 'Talk Like an Expert' on your use of language?
- What was the effect of the activity 'Talk Like an Expert' on your understanding of the key words?
- What did you find hardest to do? Discuss with your colleagues some ideas to overcome this.

Make notes of your ideas in your learning journal.

T3-5 i 4 Plan and Practise Together

PDC Notes

It is now time for group work, to Plan and Practise Together.

Suggested time: 45 minutes

The next three sections have examples of different activities for expressing yourself with new words that can be used in all subjects. In your own planning, please use the introduction above if you need further information on the various aspects. Also note that the example provided in each section is just for guidance. Do not spend too long on it, but move straight on to your planning activity.

PDC Notes

There are three different sections that follow, each focusing on different aspects of Expressing Yourself with New Words.

If you want to keep the planning simpler, you could keep the group of tutors together, and select one of the sections that all tutors can do.

However, if you would like to challenge your tutors a bit more, then refer them to the above table, and let them choose which aspect to cover.

As tutors start with the following sections, do remind them to not spend too much time on the Example, but to really focus on planning their own activities.

During the different task group work, you should circulate, and support the groups where needed.

T3-5 i 5 Prepare for Teach and Reflect

PDC Notes

After about 45 minutes (with about ten minutes left in the session), bring the tutors back together, and see whether anything needs to be discussed. Make sure that everybody has a concrete plan for teaching, and has recorded this in their activity plan.

Then close the session.

Suggested time: 10 minutes

Once you have planned your activity, come back together as a whole group, to see what issues arose. Make a note in your learning journal. After you have taught, write down your own observations and reflections on your activity plan and in your learning journal, and be prepared to share these with others at the start of the next session.

T3-5 i 6 Further Resources

Review Teaching Strategies and the Five Principles for Supporting Language Learning

Think of the teaching activities you have tried out in the last few months and look at the notes you made about this in your learning journal. Discuss in groups with your colleagues whether and how you used any of the following five principles for supporting language learning (Kersaint et al, 2013):

1. allow many opportunities to read, write, listen, discuss in a variety of ways;

2. draw attention to patterns of language structure, eg English, scientific and mathematical language;

3. allow plenty of time to use and develop the language;

4. allow learners opportunities to notice their errors and to correct what they are saying (eg through having another go at what they were saying, requesting clarification, elicitation by pausing, repetition of what student teacher says by the tutor); and

5. construct activities that allow learners to have the maximum time to interact with others.

Make notes of your ideas in your learning journal.

T3-5 i 7 References

Kersaint, G., Thompson, D. R., & Petkova, M. (2013). *Teaching mathematics to English language learners* (2nd Edition). New York: Routledge.

Murray, M. (2004). *Teaching Mathematics Vocabulary in Context*. Portsmouth, NH: Heinemann.

T3-5 i 8 Sources

Teaching Strategy 5 - Strand A
Expressing Yourself With New Words: Dealing With New Words in Texts

T3-5 A 1 Example

How Mr. Anyanful Helped his Student Teachers Deal With New Words and Expressions in English

Mr. Anyanful wants to help his student teachers use different strategies for dealing with new words so that they can help their own students in their language learning. Mr. Anyanful tells his student teachers how he deals with new words when he is teaching reading comprehension.

When I am preparing a reading text for a class, the first thing I do is underline all the 'new' words. Then I need to make some decisions about how to deal with these words. This depends on two things: how essential the new word is for understanding the text (is it a key word?) and how difficult the new word is. Here are the decisions I can make taking these two things into account:

- If the new word/expression is essential for understanding the passage and at the students' level, it can be taught actively: listen or read, repeat, spell, record.

- If the word/expression is essential but above the students' level, it can be taught passively: I can explain it briefly, give a quick translation or get students to look it up in a dictionary.

- If the word/expression is not essential for understanding the passage, and is somehow self-defined in the text, students can work out the meaning from the context for themselves.

- If the word is low frequency, above the students' level, and the passage can be understood without it, students can ignore it.

Reference: 'Teaching Reading Comprehension' (*Methods of Teaching English in Basic Schools* FDC 211).
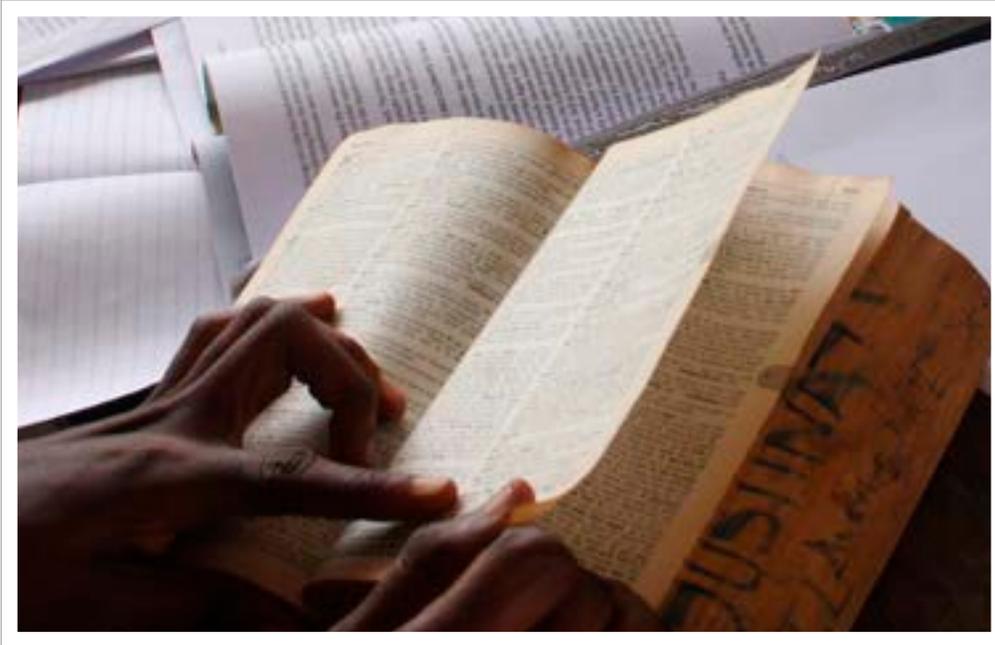
Figure 35. Using a dictionary to look up new words

Tutor Discussion

1. List the problems your student teachers might face when dealing with new words or expressions in a reading passage.

2. How would you teach new words or terminologies that are essential for understanding your lesson? Think of strategies your student teachers could use.

3. How would you handle a new word or terminology that is essential to understanding but above the understanding of your student teachers?

4. Would you have to explain self-defining words or terminologies to student teachers in your lessons? Why/why not?

5. How can the above strategies in the example be used to develop language skills other than reading?

6. How does learning new words/expressions or terminology help student teachers express themselves?

Complete the table to show how Mr Ayanful deals with new words.

If the word/ expression is ...	... at the students' level	... above the students' level
... essential for understanding the passage and ...	*pre-teach carefully*	
... not essential for understanding the passage and ...		

PDC Notes

If the word is ...	... at the students' level	... above the students' level
... essential for understanding the passage and ...	*pre-teach carefully*	*explain it briefly, give a quick translation or get students to look it up in a dictionary*
... not essential for understanding the passage and ...	*let them guess from context*	*ignore it*

T3-5 A 2 Plan and Practise Together

Dealing With New Words in Texts

You are now going to plan your own 'dealing with new words/expressions' activity. If the above examples fit what you are teaching, you can use them. However, you may well be teaching something else, so here are some more ideas from various subjects that lend themselves to 'dealing with new words'-type activities.

Circulatory System in Humans (Integrated Science - FDC 124)

Now plan and practise a lesson in biology on the topic 'Circulatory System in Human Beings' and how you would deal with the new words/terminologies to your student teachers. Example: 'atherosclerosis' and 'varicose'.

Manufacturing Processes (Technology - TEC 121)

Now plan and practise a lesson on the topic 'Technology'. How would you introduce your student teachers to new words/terminologies?

Classification of Computers (ICT - GNS 211)

Now plan and practise your lesson n Information and Communications Technology on the topic 'Classification of Computers'. Ensure your plan indicates how you would enable your student teachers to understand the new words and terminologies in the lesson.

Remember all your plans should take into account the strategy 'expressing yourself with new words.'

Plan Your Own New Words Activity

Can you use any of the above ideas? Hopefully the above topics give you an idea of how you can design an activity for use in your classroom. If those ideas do not fit, you will need to identify a topic that fits into your weekly lesson forecast and use it.

Have a look under section T3-5A5 Further Resources below and use the information there to help with your planning as follows:

- The checklist will help you think about your context, your student teachers, and how you can support all your student teachers deal with new language.

- The handout will give you some more strategies for helping students to work out the meaning of words from context clues.

At the end of the planning activity, you should have developed an activity plan that you can use in your teaching 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.

> **PDC Notes**
>
> Encourage tutors to come up with concrete examples of how they will deal with new words e.g. for Circulatory System in Humans: Using root words (see handout, point 5) and prior knowledge would be beneficial to understanding the meaning of biology terms. With the word 'atherosclerosis', we can guess that 'athero' refers to the arteries.

T3-5 A 3 Teach and Observe

It is important for your professional learning that you actually teach the activity that you have planned. Please make sure that you have your activity plan available when you teach. Any issues that arose during the lesson should be written down immediately after you have taught, and remember to fill in your observations section of the activity plan immediately after you

have taught. If possible arrange with a colleague to observe each other when you each do the activity with your student teachers during the week.

T3-5 A 4 Reflect Together

Dealing With New Words in Texts

Now that you have tried some of these teaching strategies in your class, reflect on the following questions:

- What have you learned about your student teachers' ability to discover and use new words/expressions? Did they use any of the above strategies? Which ones and how?

- Did females and males participate and benefit equally from this activity? If not, how could you give more support to ensure equal learning outcomes?

- What have you learned about yourself in your planning and teaching by using these 'new word strategies' yourself?

- Have these strategies given you any new insights about the learning process? If so, explain.

PDC Notes

T3-5 A 5 Further Resources

A Checklist for Planning in Bilingual and Multilingual Contexts

Have you...	Yes	No
clearly identified the language demands of the activities e.g. vocabulary, structures?		
included content that is meaningful, relevant and of interest to your student teachers?		
made links with student teachers' prior knowledge both in terms of language and content?		
made sure the sequence of activities supports your student teachers' level of progress?		
provided plenty of opportunities for listening and speaking through a variety of work arrangements/seating?		
provided opportunity for second language learners to use their first language for their learning?		

A Handout on How to Deal With New Words and Expressions in Texts

How to Deal with New Words and Expressions

You can help your students deal with new words by using the following strategies for working out themeaning of words from context clues.

1. Keep Reading

Students can continue reading after the new word. Most readers just stop when they reach a word they don't know. In fact, students can keep reading right to the end of the text in order to prioritise key unknown words.

2. Compare Repetitions

Students can look to see if the word is repeated later. If it is, students can compare the usage in two contexts.

3. Examine Surrounding Words

Most of the context clues that help students work out meanings occur within 5 to 10 words before and after the unknown word, so students can be trained to read those surrounding words carefully.

4. Decode From Inflections, Grammar

Students can find the part of speech of the unknown word from endings and grammar patterns: *-ed* , *-ing* or *-s* and preceding auxiliaries like *is*, *can* or *have/has* will denote a verb; *-ly* an adverb, and articles or quantifiers will precede a noun. Proper nouns – particularly people's names – confuse students but can be identified by capital letters. Adverbs and adjectives can generally be identified by their sentence position, and usually can be ignored because the passage will make sense without them.

5. Decode From Roots and Affixes

Students can learn word derivatives, for example prefixes of negation and opposites (un-, dis-, in-, non-), suffixes that transform words to other parts of speech (-ify, -able, -ful), and roots (sign-, -phone, -scope) to deconstruct words and increase the accuracy of their guess.

6. Check by Substituting Synonyms

Students can also learn to check their guesses. They can check the part of speech by using a synonym of their guess, putting the synonym in the passage instead of the unknown word and seeing if the passage then makes sense. Most wrong guesses come from guessing the wrong part of speech. Students can also check that any affixes in the unknown word agree with the guess.

Teaching Strategy 5 - Strand B
Expressing Yourself With New Words: Making Your own Dictionary

T3-5 B 1 Example

How Mrs Anyanful Helped Her Student Teachers Develop Fluency in Talking Mathematically

Mrs Anyanful teaches mathematics in a College of Education in the Eastern Region. She has been trying out some of the teaching strategies that she learned from the T-TEL materials. She is pleased with the change in the learning, enjoyment and motivation that has happened. She herself is also feeling more professional pride and has become more confident in trying out different teaching strategies and changing and tweaking her 'normal' teaching practice.

The student teachers who attend her College of Education come from diverse educational and language backgrounds. Mrs Anyanful had noticed that there were some language issue that hindered their learning of mathematics.

This is Mrs Anyanful's story of how she went about addressing this:

> My classes are truly multilingual with many different languages as mother tongues such as Akan, Ewe, Dangme, Dagbani, Hausa, Moshe and Fante. I have noticed that all student teachers can express themselves well in English in social situations; however, in the classroom, especially when talking mathematically and using mathematical expressions, student teachers who do not have English as mother tongue struggle. I think this is hindering their learning and progression. I remember a comment in the introduction section to this teaching strategy that you need to use a word at least 30 times in order to own it, and that made me think. I do a lot of Talk for Learning activities already but I actually do not give a lot of opportunities for the student teachers to write or define the mathematical terminology. I think some of the confusion arises because some mathematical words are also used in everyday language, but have a totally different meaning. For example 'plane' as in 'airplane' and as 'a flat two-dimensional space' in mathematics. I decided to try out the teaching strategy of asking the student teachers to 'make their own dictionaries' to see whether this would help.

I told my student teachers in advance that we would be working on developing a personal dictionary for maths, and this would be ongoing. Bringing a separate notebook to make that their 'dictionary' could be helpful. Of course they could also use their existing notebook or write on loose sheets.

We had been working on geometry so I decided to focus on geometrical vocabulary (FDC 122, unit 7 & FDC 112M, unit 6) and terminology from congruence and similarity (FDC 122, unit 7 & PFC 222 unit 8). In the lesson, I asked the student teachers to work in pairs of groups of three and gave them the 'Making Your Own Mathematical Dictionary' activity (see box).

Making Your Own Mathematical Dictionary

Part 1: Making the Dictionary
Look at your notes on geometry in your notebook, and at the course outline for this course.

1. Write down a list of geometric words that are being used.

2. Look at those words – are there any words that are also used in everyday life? Do they have the same meaning in everyday life or is the meaning different? What about the meaning of that word in other subjects? What is the same and what is different between the geometric meaning and the other meanings?

3. Write down your own explanation of the geometric words. It might help to add a sketch or drawing as well.

4. Check with your neighbour whether your explanation makes sense by talking it through. Make amendments and refinements if needed.

Part 2: Giving Meaning to Mathematical Statements
Again, look at your notes on geometry in your note book, and at the course outline for this course.

1. Write down any mathematical statements you come across that are not straightforward to understand, for example: *"Two triangles are congruent if two sides and the included angle of one triangle are equal to the two sides and the included angle of the other triangle (SAS congruence rule)."*

2. Identify the words that do not make sense for you in the context of the statement. From the example above, this could be the word 'included' which you might understand in everyday language but might find hard to give meaning to in the mathematical statement.

3. Now, discuss and write down what the meaning could be of these words. Try and be as precise as you can.

I was actually a bit surprised by how extremely productive this activity was for both student teachers and me: the student teachers had an opportunity to really work on the language aspect of mathematics, in writing, reading and verbalising it. For me, it made me realise to what extent the language used in mathematics is alien to the students and a barrier to their learning of mathematical ideas. I really want to spend more time on and pay more attention to the language learning of mathematics in the future – if the words have no meaning for them, then how can they learn about them?

Since this lesson, I have been doing this activity in all topics – often I set it as work to be completed at home. I have noticed an improvement in the student teachers fluency in talking mathematically and also in their confidence to do this. I think it also gave them some skills and experience in working on their own to make sense of mathematical language which can help them get unstuck when learning mathematics.

Figure 36. Student teachers discussing terminology in different languages

Tutor Discussion

Have a look at *Section 5: Examples of entries of a student teacher's personal mathematical dictionary*. Discuss with your colleagues:

- If you wrote an entry in your own dictionary about similar triangles, would you find the format given suitable or would you like to make some changes to it?

- How do you think making personal dictionaries would help your learning? How would it help your student teachers?

PDC Notes

T3-5 B 2 Plan and Practise Together

Making Your Own Dictionary

Given the topics that you are teaching this week, the topic in the above example is not likely to work for you. Here are four more examples that lend themselves to using the same strategy of 'Making Your Own Dictionary' to support your student teachers to improve their learning:

Algebraic Expressions and Equations (Maths - FDC 112)

Ask the student teachers to make entries in their own mathematical dictionary for the algebraic terminology that is not clear to them.

Reference: 2014 DBE Mathematics (Number and Basic Algebra), FDC 112, Unit 6, p. 207.

Word Problems (Maths - FDC 112)

Ask the student teachers to make entries in their own mathematical dictionary for the terminology and phrasing used in word problems that is not clear to them.

Reference: 2014 DBE Mathematics (Number and Basic Algebra), FDC 112, Unit 6, p. 207.

Constitution (Social Studies - FDC 128)

Ask the student teachers to make entries in their own social studies dictionary for the terminology and phrasing used in constitutionalism and human rights.

Reference: 2014 DBE Governance, Politics and Stability in Ghana, FDC 128, Unit 5, p. 291.

Classifications of Computers (ICT - GNS 211)

Ask the student teachers to make entries in their own ICT dictionary for the terminology used in the classification of computers.

Reference: 2014 DBE Introduction to Information Technology 1 (ICT 1), GNS 211, Week 1 & 2, p. 300.

Plan Your Classroom Activity

Can you use any of the above ideas? If not, consult your syllabus and choose a topic from a lesson you will teach next week where you can use making personal dictionaries. 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 and support all of your student teachers, especially females. 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. Here are your planning tasks. You can use the activity plan template found in the appendix.

1. In groups think of a lesson and a topic that you will teach in the coming week.

2. Identify in these topics where you can ask your student teachers to develop their personal dictionaries. Remember the aim is to support them in improving their learning through stimulating Talk for Learning.

3. Plan the activity in detail.

Please make sure that you have noted down everything you need to remember for your lesson in your activity plan.

PDC Notes

T3-5 B 3 Teach and Observe

It is important for your professional learning that you actually teach the activity that you have planned. Please make sure that you have your activity plan available when you teach. Any issues that arose during the lesson should be written down immediately after you have taught, and remember to fill in your observations section of the activity plan immediately after you have taught. If possible arrange with a colleague to observe each other when you each do the activity with your student teachers during the week.

T3-5 B 4 Reflect Together

Making Your Own Dictionary

Here are some prompts for reflection:

• How did using the strategy of 'Making Your Own Dictionary' help the learning of your student teachers?

• Have you noticed any difference in the participation in the activities of all student teachers, for example, female student teachers or those

who are less confident in their English? If yes, what are the differences? If no, what extra support can you give?

> PDC Notes

T3-5 B 5 Further Resources

Examples of Entries in a Student Teacher's Personal Mathematical Dictionary

Entry 1: Congruence in Triangles

Word/concept	Congruence in Triangles
Where?	FDC 122, unit 7 & PFC 222 unit 8
Any meaning in everyday language?	According to the dictionary, 'congruent with' means 'suitable, agreeing', but I have never used that or heard that (The Oxford Dictionary, 1997).
Mathematical explanation from textbook/ teacher	Two triangles are congruent if they are 'equal in all respects' that is their shapes and sizes are both the same.
My explanation	Congruent triangles are triangles that are identical in shape and size. Sometimes I have to turn them around or flip them over to actually see this. So the lengths of their sides and the angles will be the same for the congruent triangles. But not only that! Those same length sides and angles have to be in the same place in the triangle – that is what they call 'corresponding'. When you cut out the triangles, you can place them on top of each other and they will be perfect copies. Congruent triangles are at the same time similar triangles, but similar triangles are not always congruent! Also, have a look at my entry for 'similar triangles' to see how these concepts are connected.

| Illustration | These triangles are congruent:
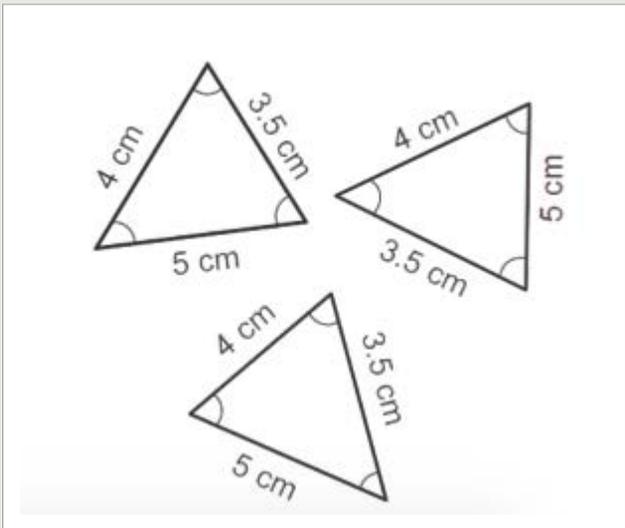
 Figure 37. Triangle Figure 1: congruent triangles |

Entry 2: Similarity of Triangles

Word/concept	Similarity of Triangles
Where?	FDC 122, unit 7 & PFC 222 unit 8
Any meaning in everyday language?	Something that is like something else. What makes something like something else is often not made clear.
Mathematical explanation from textbook/ teacher	Two triangles are similar, they have to fulfill two conditions: (i) their corresponding angles are equal (ii) their corresponding sides or in the same ratio.
My explanation	Note to myself: do not mix up with congruent! Similar triangles have the same shape but not *necessarily* the same size. If they do have the same shape and the same size they are similar as well as congruent. So they have to be similar in shape, but not necessarily identical in size. What makes them similar is that the shapes are a proportional enlargement or reduction of each other. If they are the same size then it means the scale factor is 1! That means that the proportion or ratio of all the corresponding sides will be the same (for example, the big triangle has sides twice the size of the first). And that is why these criteria about similarity of triangles make sense.

Illustration	These triangles are similar: Figure 38. Triangle Figure 2: similar triangles
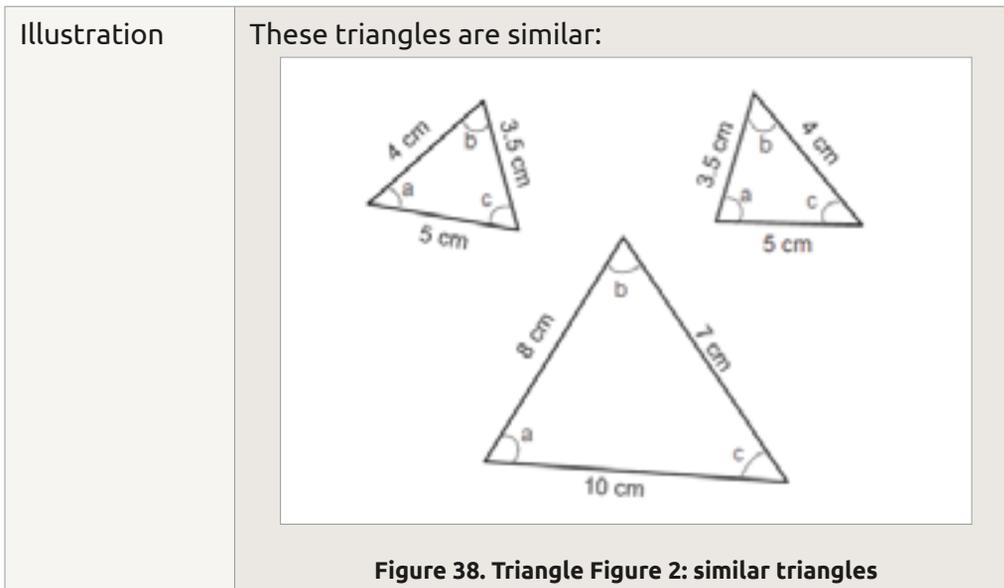
T3-5 B 6 Sources

Sources for Entry 1 and 2:

TESS-India, *Building mathematical resilience: similarity and congruency in triangles*, http://www.open.edu/openlearnworks/pluginfile.php/134980/mod_resource/content/3/SM05_AIE_Final.pdf, available under Creative Commons Attribution-ShareAlike (http://creativecommons.org/licenses/by-sa/3.0/; unless identified otherwise).

TESS-India, *Building mathematical resilience: similarity and congruency in triangles*, http://www.open.edu/openlearnworks/pluginfile.php/134980/mod_resource/content/2/SM05_V2_PDF.pdf, available under Creative Commons Attribution-ShareAlike (http://creativecommons.org/licenses/by-sa/3.0/; unless identified otherwise).

Teaching Strategy 5 - Strand C
Expressing Yourself With New Words: Talk Like an Expert

T3-5 C 1 Example

Talk Like an Expert in Science

Tutor Georgina thinks that her student teachers will benefit from more practice using correct scientific vocabulary. Now that they are talking more during lessons, they sometimes fail to put their point across accurately at times because of a lack of attention to the details of the words and meanings. Sometimes they say molecule when they mean atom, and at other times they mix up the names of processes such as dissolving and melting. She sets them a task that will help with their scientific language development in the area of elements, mixtures and compounds. The time has come for her student teachers to 'Talk Like Experts' in chemistry.

Tutor Georgina's Talk Like an Expert Activity With Student Teachers

Georgina makes these notes in her activity plan:

- Give out a list of expert words that student teachers need to use to describe the separation experiment.

- Model how it is done while the student teachers listen and tick off words as they are mentioned.

- Student teachers work in pairs to write their own speeches and rehearse how they will 'Talk Like an Expert'.

- Student teachers are invited to present to the class with everyone ticking off the words as they use them correctly.

She writes a short paragraph around an experiment to separate iron filings, salt and sand that her student teachers did in their previous lesson. Here it is:

> In order to separate out the element iron from the mixture of iron filings, salt and sand Professor Georgina used a magnet. The iron filings, because they are magnetic, are attracted to the magnet but the salt and sand are not. The next step is to separate these two compounds from each other. Professor Georgina knows that salt dissolves in water but sand does not so she adds water to the mixture of salt and sand and heats the mixture until all of the ionic compound, salt, dissolves. She now has a mixture of sand and salty water - it is easy to remove the sand now by filtration. But how can she get the salt back? When the salt dissolved in the water the sodium cations and the chloride anions became surrounded by water molecules. Now she must evaporate the water to get the salt back again. All done!

She reads through the paragraph and highlights the words that she wants her student teachers to focus on. Here is the list of words she comes up with:

- element
- mixture
- compounds
- dissolves
- ionic
- filtration
- cations
- anions
- molecules
- evaporate

DBE syllabus reference: "Elements, compounds and mixtures" (FDC124, *Integrated Science 2*, Chemistry, Unit 1).

Tutor Georgina describes how she does the activity as follows:

> I tell the student teachers about the 'Talk Like an Expert' technique and I write the list of expert words on the board. As they are copying the list of words into their books I write the rest of the instructions for the activity where they can all see them. I make sure everyone understands what they have to do and then I begin to read the separation experiment paragraph from my notes. I speak quite slowly and the student teachers get to work ticking the words off on their list.
>
> I give them ten minutes to work in pairs and write their own speech using the same words. One group appears to be struggling as they have not written much so I allow them to read through my paragraph for a few minutes and to make some notes. I draw the writing part of the activity to a close and tell the pairs to start rehearsing their speeches.

The volume of noise in the classroom goes up and I remind the student teachers to keep the noise down. After a few minutes I ask for volunteers to read out their speeches while the rest of the class tick of the words again. The speeches are all quite different and there appears to be a little confusion over the words *anions* and *cations* (I must address this in a homework) but the exercise is a success and I look forward to better quality discussions from this group in the future.

Figure 39. Filtering a mixture of salty water and sand

Tutor Discussion

Here are some questions to discuss in your groups after you have read through the 'Talk Like an Expert' example:

- Do you think the 'Talk Like an Expert' activity can improve the quality of student teachers' scientific language? Does it address the five principles for supporting language learning (see introduction)? How?

- Should student teachers look up definitions of the words before the task? Why?

- How can you adapt the task for hearing-impaired students?

- Is it important for all the groups to feedback (by reading their speech) to the whole class? Why?

- What other ways can groups feed back at the end of the activity?

- How can you ensure that females and males participate equally in the feedback process?

PDC Notes

Here are the five principles for supporting language learning from the introduction:

1. Allow many opportunities to read, write, listen, discuss in a variety of ways.

2. Draw attention to patterns of language structure, eg English, scientific and mathematical language.

3. Allow plenty of time to use and develop the language.

4. Allow student teachers opportunities to notice their errors and to correct what they are saying (eg through having another go at what they were saying, requesting clarification, elicitation by pausing, repetition of what student teacher says by the tutor).

5. Construct activities that allow pupils to have the maximum time to interact with others.

'Talk Like an Expert' supports one, three and five. It could be adapted to support two and in some ways it supports four as student teachers get another go at the activity after it has been modelled by the tutor.

Figure 40. Preparing to Talk Like an Expert

T3-5 C 2 Plan and Practise Together

Talk Like an Expert

We are now going to plan our own 'Talk Like an Expert' activity. The previous example will only work for you if you happen to be teaching about separating mixtures, so here are some other ideas that you can use the 'Talk Like an Expert' technique with:

Talk Like an Expert in Biology and Physics (Integrated Science - FDC 114 & 224)

Consider these three topics:

- Cell organisation (cells/tissues/organs etc.). DBE syllabus reference: "The cell" (FDC114, *Integrated Science 1*, Biology, Unit 1).

- Light (reflection/refraction/angle of incidence etc.). DBE syllabus reference: "Light energy" (FDC114, *Integrated Science 1*, Physics, Unit 3).

- The life cycle of the mosquito (larvae/pupa/metamorphosis etc.). DBE syllabus reference: "The life cycle of mosquito" (FDC224, *Integrated Science 3*, Biology, Unit 1).

Talk Like an Expert about Advances in Technology (ICT - FDC 218)

Here is an example of an extract from which to create a list of words for the 'Talk Like an Expert' technique.

> The world today is moving very fast with constant advancement in technology. Technology has taken the place of crude means and methods of doing things and has brought about a refined knowledge devoted to the creation of tools, processing and actions and has minimized human mistakes during production. We all use technology in different ways, from the kitchen to our classrooms, in accomplishing various tasks in the process of improving our lives. Many companies and industries today look for people who have skills in the use of technology to process and organize events. Let us all make a conscious effort to develop some skills in the use of technology.

Reference; 2014 DBE syllabus , FDC 218, unit 2, p. 293

Talk Like an Expert on Basic Skills in Soccer (PE - PRA 216)

What basic skills do you need for soccer?

Reference: 2014 DBE syllabus, PRA 216, unit 2, p. 62

Planning Your Own Talk Like an Expert Activity

Choose a topic from a lesson you will teach next week that you can use the 'Talk Like an Expert' technique with. It should be something that student teachers find challenging at times due to the specific subject language used/needed. Write a short paragraph on the topic and highlight the key vocabulary. Add this to your activity plan along with brief 'Talk Like an Expert' instructions; you can find the activity plan template in the appendix.

Also write in your plan other planning details (resources needed etc.) that will help you to do the activity successfully with your student teachers.

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.

> **PDC Notes**
>
> Make sure that the words chosen for this activity are challenging/ technical rather than everyday words that the student teachers will already be familiar with. At the same time the finished paragraph needs to be easy enough to understand.
>
> Tutors should consider how they might adapt the activity for hearing impaired student teachers.

T3-5 C 3 Teach and Observe

It is important for your professional learning that you actually teach the activity that you have planned. Please make sure that you have your activity plan available when you teach. Any issues that arose during the lesson should be written down immediately after you have taught, and remember to fill in your observations section of the activity plan immediately after you have taught. If possible arrange with a colleague to observe each other when you each do the activity with your student teachers during the week.

T3-5 C 4 Reflect Together

Talk Like an Expert

Now that you have taught the lesson activity, reflect on how it went. If at all possible, do the reflection together with a colleague who has also tried the activity.

As part of your reflection, consider the following questions:

1. Did you make sure student teachers understood the expert words? How?

2. What will you do differently the next time you do the 'Talk Like an Expert' activity?

3. Did females and males participate equally? If not, what can you do to ensure better participation next time?

4. How would you adapt the activity to be suitable for hearing impaired student teachers?

Remember to write down your thoughts in your learning journal. Also note down what you learned from this session that was most effective in improving your teaching.

PDC Notes

Did you make sure student teachers understood the expert words? How? - they can allow/encourage the student teachers to use codeswitching if necessary here.

Codeswitching is the technique of using two different languages in one interaction. You can read more about it in a later session on group work in the multilingual classroom (T4-5C).

T3-5 C 5 Sources

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Activity Plan

Aspect	Details
Theme	
Teaching strategy	
Student level (year and/or course)	
Syllabus reference	
Specific Objective(s) of the activity	
Activity focus	
Activity description	
Textbook title and pages (if available)	
Materials / resources	
Observations (after lesson)	

Date (written):   Date (taught):

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Observations (after lesson)	
Date (written):	Date (taught):

Activity Plan

Aspect	Details
Theme	
Teaching strategy	
Student level (year and/or course)	
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Creative Approaches
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Transforming Teacher Education and Learning

PROFESSIONAL DEVELOPMENT PROGRAMME — THEME 2

Questioning
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STUDENT TEACHER HANDBOOK

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