

# Tutor Professional Development Handbook: B.Ed. in Initial Teacher Education - Science Year 3 Semester 1

HANDBOOK FOR TUTORS



Wisdom, Knowledge  
and Prudence





The Government of Ghana



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# Foreword

In Ghana we have made great strides in transforming our teacher education system over the past few years. With each passing year the changes brought about through these reforms are maturing, embedding, and sustaining. Once the first B.Ed. graduates from Colleges of Education enter basic school classrooms from 2022 onwards, I am sure that as a nation, we will truly start to see the benefits of these reforms.

The success of national reforms depends on individual tutors and individual teachers working in classrooms across the country every day. The progress that we want to see will only be brought about through the consistent and regular application of the professional knowledge, professional practice and professional values and attitudes set out in the National Teachers' Standards.

This is where the Tutor Professional Development Handbooks have such an important role to play, and it is very pleasing to see the continued development and use of these handbooks as we enter the 3rd Year of the B.Ed. in Initial Teacher Education.

These Handbooks aim to ensure that tutors in Colleges of Education are reflecting critically on their methods of teaching and learning and supporting each other to implement the B.Ed. in line with the National Teacher Education Curriculum Framework and National Teacher Education Assessment Policy. Assessment is one of the areas where we need to pay particular attention as the teacher education reforms matures and is sustained. The National Teacher Education Assessment Policy sets out the range of formative and summative modes and methods of assessment required to ensure that the B.Ed. is both implemented and assessed as planned. Assessment is a key driver of learner behaviour, and we must all ensure that we are familiar with the National Teacher Education Assessment Policy and applying it consistently to ensure that we eliminate the 'chew, pour, pass and forget' syndrome which has infected our education system. These Handbooks pay particular attention to assessment and are an important tool in ensuring that we are all following national policy guidelines correctly and consistently.

This latest set of Professional Development Handbooks, developed by four mentoring universities (University for Development Studies, University of Education, Winneba, University of Ghana and Kwame Nkrumah University of Science and Technology) and tutors from their affiliated Colleges of Education, are the second set of Professional Development Handbooks to be developed since Transforming Teaching, Education & Learning (T-TEL) became a Ghanaian not-for-profit organisation. I would like to take this opportunity to thank both the Ghana Tertiary Education Commission and Mastercard Foundation for making all this possible.

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**Executive Director, T-TEL**  
**September 2021**

**Year Three Semester One  
SCIENCE  
Tutor Version of Weekly PD sessions**

**Age Phase/s:****JHS**

1. Psychology of early adolescent learner towards learning of physics
2. Review of the concept of the nature of chemical substances

**UPPER PRIMARY**

Flowers and fruits

**EARLY GRADE**

Teaching plants and their habitats

**Tutor PD Session for Lesson 1 in the Course Manual**

<b>Focus: the bullet points provide the frame for what is to be done. The guidance notes in italics identify the prompt the SL/HoD needs and each one must be addressed</b>	<b>Guidance Notes on Tutor Activity during the PD Session.</b> What PD Session participants (Tutors) will do during each state of the session)	<b>Time in session</b>
<b>1. Introduction / lesson overview</b> <ul style="list-style-type: none"> <li>• Overview of subject/s age phase/s to be covered in this PD session and how it will be organised. Including guidance on grouping tutors according to the subject/s, age phase/s.</li> <li>• Reflection on previous PD Session (Introduction to the course manual/s)</li> <li>• Introduction and overview of the main purpose of the lesson in the course manual/s</li> <li>• Identification of important or distinctive aspects of the lesson/s</li> <li>• Reading and discussion of the introductory sections up to learning outcomes</li> </ul>	<ol style="list-style-type: none"> <li>1.1. In your respective groups, discuss the overview, CLOs and LIs of the subject or learning area to be covered in this PD session for the semester.</li> <li>1.2. Write one thing you learned in semester 2 year 2 PD sessions and how you applied it in your teaching.               <ol style="list-style-type: none"> <li>1.2.1. Share what you have written with the whole group.</li> </ol> </li> <li>1.3. Read the introduction, lesson description and the purpose of lesson 1 in the course manual and indicate how they are related to student teachers' relevant previous knowledge.</li> <li>1.4. Identify and discuss the distinctive features of lesson 1 for the various level.</li> <li>1.5. Identify and discuss the relationship between <i>CLOs</i> and <i>LIs</i> using the course manual.</li> </ol>	<b>20 mins</b>

<p><b>2. Concept Development (New learning likely to arise in this lesson)</b></p> <ul style="list-style-type: none"> <li>• Identification and discussion of concepts</li> <li>• Identification of possible challenging areas in teaching of the concept.</li> <li>• Identification of needed resources for the teaching and learning of the concept.</li> </ul>	<p>2.1. In pairs, list the major concepts in the lesson and share it with the whole group.</p> <p>2.2. Discuss potential misconceptions and barriers with respect to the concepts listed.</p> <p>2.3. write possible challenging areas in teaching of the new concepts identified in both CoE and basic school classrooms.</p> <p>2.4. Show how these challenges would be overcome.</p> <p>2.5. Identify the needed inclusive resources for teaching and learning of the concepts in both CoE and basic school classrooms.</p>	<p><b>25 mins</b></p>
<p><b>3. Teaching, learning and assessment activities for the lesson</b></p> <ul style="list-style-type: none"> <li>• Reading of teaching and learning activities and identification of areas that require clarification</li> <li>• Reading of assessment opportunities and ensuring they are aligned to the NTEAP and required course assessment: subject project (30%), subject portfolio (30%) and end of semester examination (40%)</li> <li>• Working through one or two activities,</li> </ul>	<p>3.1 Read silently the teaching and learning activities and identify areas that require clarification.</p> <p>3.2. In your various groups/levels discuss how the different activities would be carried out in both CoE and basic school classroom to achieve the LOs and the LIs of the course manual for lesson 1.</p> <p>3.3. Using think pair share, discuss how GESI issues that relate to the teaching and learning activities of the lesson will be addressed.</p> <p>3.4. Identify where, and which, core and transferable skills that can be developed or applied in the lesson and how you can help student teachers to support basic school learners to develop these skills through STS activities.</p> <p>3.5. Read the assessment activities in the manual(s) and identify areas that require clarification especially on NTEAP related activities.</p> <p>3.6. Refer to the NTEAP document and focus on subject portfolio and subject project especially.</p>	<p><b>40 mins</b></p>
<p><b>4. Evaluation and review of session:</b></p> <ul style="list-style-type: none"> <li>• Identification of any outstanding issues relating to this lesson for clarification</li> <li>• Advance preparation</li> <li>• In the case of unresolved issues</li> </ul>	<p>4.1. Individually, identify any outstanding issues relating to Lesson 1 for clarification.</p> <p>4.2. Identify a critical friend who took part in the PD session to sit in your class during the lesson and report on observation during the next PD session.</p> <p>4.3. Read lesson 2 from the PD manual and look for relevant materials for the next session.</p>	<p><b>5 mins</b></p>

	4.3.1. Take note of GESI related issues bothering your minds as well as unanswered questions from your class.	
<p><b>Course assessment in accordance with the NTEAP: SWL need to review assessment in the course manual to ensure it complies with NTEAP implementation and the 60% continuous assessment and 40 % End of semester examination. This means ensuring : subject project, subject portfolio preparation and development are explicitly addressed in the PD sessions.</b></p>		

## The PD session check list: supporting B.Ed. implementation.

*In some cases, to support implementation the PD sessions may need to add more detail to what is in the course manuals*

What to Include in PD sessions: Check list	Checked and In Place.
<p><b>Course introductions and conclusions</b></p> <ul style="list-style-type: none"> <li>The first PD session of each semester introduces the course manual/s and course expectations to student teachers.</li> <li>The final PD session provides the opportunity to review student teachers learning from the course</li> </ul>	
<p><b>Prior knowledge:</b> Points for tutors on assessing or activating student teachers' prior knowledge.</p>	
<p><b>Basic School Curriculum:</b> when topics for student teachers are from the Basic School Curriculum the PD session makes explicit links.</p>	
<p><b>CLO:</b> relevant to the session to be introduced</p>	
<p><b>Lesson Learning outcomes and indicators.</b> PD sessions provide opportunities for tutors to model interactive approaches to teaching and learning they will use to support student teachers</p>	
<p><b>Integration of subject specific content and subject specific pedagogy.</b> This is modelled in PD sessions through activities for tutors. Any potentially new or challenging concepts are explored with tutors</p>	
<p><b>Subject Specific Training.</b> Where subjects have been grouped together for the PD sessions, tutors are guided to activities in the subject course manuals to ensure the PD is not generic. Where appropriate there is direct page or point references to activities in each of the relevant subject course manuals.</p>	
<p><b>Integrating GESI:</b> each PD session explicitly highlights at least two (2) teaching and learning activities from the course manual/s which should be used to promote student teachers' understanding of GESI responsiveness and support the inclusion of all pupils.</p>	
<p><b>Assessment. Integrating and embedding NTEAP practices</b> PD sessions include at least two continuous assessment opportunities which will support tutors in developing student teacher's understanding of and ability to apply assessment for or as learning.</p>	
<p><b>Phase Specific Training.</b> Tutors are guided to specific activities in the relevant phase course manuals for EG, UP and JHS. Tutors are advised to group student teachers according to the phase they are training for specific activities.</p>	
<p><b>Building in STS.</b> STS tasks are integrated into the PD sessions. Preparing for work in school and opportunities for tutors to draw on what student teachers are learning in school by, for example, targeting observations linked directly to the themes in the course manuals.</p>	
<p><b>Building in activities which support the development of 21c skills in particular the use of ICT.</b> The development of these is integrated into the PD sessions including the use of ICT to support learning. Each PD session should include at least two (2) examples of students being required to use ICT to extend their learning.</p>	

<b>Resources /TLM.</b> Where specific resources are required, it is clear where tutors can access them e.g., videos, online resources or readings.	
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**Age Phase/s:**

**JHS:**

Thermal energy

**UPPER PRIMARY:**

Seeds and Dispersal

**EARLY GRADE:**

How to Teach Propagation in Plants

## Tutor PD Session for Lesson 2 in the Course Manual

<b>Focus: the bullet points provide the frame for what is to be done. The guidance notes in italics identify the prompt the SL/HoD needs and each one must be addressed</b>	<b>Guidance Notes on Tutor Activity during the PD Session.</b> What PD Session participants (Tutors) will do during each state of the session)	<b>Time in session</b>
<p><b>1. Introduction / lesson overview</b></p> <ul style="list-style-type: none"><li>• Overview of subject/s age phase/s to be covered in this PD session and how it will be organised. Including guidance on grouping tutors according to the subject/s, age phase/s.</li><li>• Reflection on previous PD Session (Introduction to the course manual/s)</li><li>• Introduction and overview of the main purpose of the lesson in the course manual/s</li><li>• Identification of important or distinctive aspects of the lesson/s</li><li>• Reading and discussion of the introductory sections up to learning outcomes</li></ul>	<p>1.6. In your respective groups, discuss the overview of the subject or learning area to be covered in this PD session for the semester.</p> <p>1.7. Critical friends share their observations with the larger group.</p> <p>1.8. Read the introduction, lesson description and the purpose of lesson 2 in the course manual and indicate how they are related to student teachers' relevant previous knowledge.</p> <p>1.9. Identify and discuss the distinctive features of lesson 2 for the various level.</p> <p>1.10. Identify and discuss the relationship between <i>CLOs</i> and <i>LIs</i> using the course manual.</p>	<b>20 min</b>
<p><b>2. Concept Development (New learning likely to arise in this lesson)</b></p> <ul style="list-style-type: none"><li>• Identification and discussion of concepts</li><li>• Identification of possible</li></ul>	<p>2.1. Using think-pair-share, identify the major concepts in the lesson.</p> <p>2.2. Discuss the potential challenges and barriers with respect to the concepts listed.</p>	<b>25 mins</b>

<p>challenging areas in teaching of the concept.</p> <ul style="list-style-type: none"> <li>• Identification of needed resources for the teaching and learning of the concept.</li> </ul>	<p>2.1.1. Demonstrate how one of these challenges would be overcome.</p> <p>2.3. In pairs, select a concept through balloting and design inclusive resources that can be used in the teaching and learning of the concepts.</p> <p>2.4. Identify the needed inclusive resources for teaching and learning of the concepts in both CoE and basic school classrooms.</p>	
<p><b>3. Teaching, learning and assessment activities for the lesson</b></p> <ul style="list-style-type: none"> <li>• Reading of teaching and learning activities and identification of areas that require clarification</li> <li>• Reading of assessment opportunities and ensuring they are aligned to the NTEAP and required course assessment: subject project (30%), subject portfolio (30%) and end of semester examination (40%)</li> <li>• Working through one or two activities,</li> </ul>	<p>3.2 Read silently the teaching and learning activities and identify areas that require clarification.</p> <p>3.3 In your various groups/levels discuss how the different activities would be carried out in both CoE and basic school classroom to achieve the LOs and the LIs of the course manual for lesson 1.</p> <p>3.4 Using think pair share, discuss how GESI issues that relate to the teaching and learning activities of the lesson will be addressed.</p> <p>3.5 Identify where, and which, core and transferable skills that can be developed or applied in the lesson and how you can help student teachers to support basic school learners to develop these skills through STS activities.</p> <p>3.6 Read the assessment activities in the manual(s) and identify areas that require clarification especially on NTEAP related activities.</p> <p>3.7 Refer to the NTEAP document and focus on subject portfolio and subject project especially.</p>	
<p><b>4. Evaluation and review of session:</b></p> <ul style="list-style-type: none"> <li>• Identification of any outstanding issues relating to this lesson for clarification</li> <li>• Advance preparation</li> <li>• In the case of unresolved issues</li> </ul>	<p>4.1 Individually, identify any outstanding issues relating to Lesson 1 for clarification.</p> <p>4.2 Identify a critical friend who took part in the PD session to sit in your class during the lesson and report on observation during the next PD session.</p> <p>4.3 Read lesson 3 from the PD manual and look for relevant materials for the next session.</p>	<p><b>5 mins</b></p>

	4.4 Take note of GESI related issues bothering your minds as well as unanswered questions from your class.	
<p><b>Course assessment in accordance with the NTEAP: SWL need to review assessment in the course manual to ensure it complies with NTEAP implementation and the 60% continuous assessment and 40 % End of semester examination. This means ensuring : subject project, subject portfolio preparation and development are explicitly addressed in the PD sessions.</b></p>		

**Age Phase/s:****JHS:**

1. Thermal energy
2. Teaching Reproduction in Humans

**UPPER PRIMARY:**

Pollination and Fertilization

**EARLY GRADE:**

Teaching of Germination in Plants

### Tutor PD Session for Lesson 3 in the Course Manual

Focus: the bullet points provide the frame for what is to be done. The guidance notes in italics identify the prompt the SL/HoD needs and each one must be addressed	Guidance Notes on Tutor Activity during the PD Session. What PD Session participants (Tutors) will do during each state of the session)	Time in session
<p><b>1. Introduction / lesson overview</b></p> <ul style="list-style-type: none"> <li>• Overview of subject/s age phase/s to be covered in this PD session and how it will be organised. Including guidance on grouping tutors according to the subject/s, age phase/s.</li> <li>• Reflection on previous PD Session (Introduction to the course manual/s)</li> <li>• Introduction and overview of the main purpose of the lesson in the course manual/s</li> <li>• Identification of important or distinctive aspects of the lesson/s</li> <li>• Reading and discussion of the introductory sections up to learning outcomes</li> </ul>	<p>1.1 In your separate groups, deliberate on the overview of the subject or learning area to be covered in this PD session for the semester.</p> <p>1.1.1 As a Critical friends, share yours observations from lesson 2 with the larger group.</p> <p>1.2 Read the introduction, lesson description and the purpose of lesson 3 in the course manual and indicate how they are related to student teachers' relevant previous knowledge.</p> <p>1.3 Identify and discuss the distinctive features of lesson 3 for the various levels.</p> <p>1.4 Identify and discuss the <i>CLOs and LIs of lesson 3 in the course manuals at different levels.</i></p>	<b>20 mins</b>
<p><b>2. Concept Development (New learning likely to arise in this lesson):</b></p> <ul style="list-style-type: none"> <li>• Identification and discussion of concepts</li> <li>• Identification of possible</li> </ul>	<p>2.1 List and discuss the major concepts in the lesson 3 from the course manual and share it with the whole group.</p> <p>2.1.1. In pairs, discuss the potential misconceptions and barriers with respect to the concepts listed.</p>	<b>25 mins</b>

<p>challenging areas in teaching of the concept.</p> <ul style="list-style-type: none"> <li>• Identification of needed resources for the teaching and learning of the concept.</li> </ul>	<p>2.2. Write possible challenging areas in teaching of the new concepts identified in both CoE and basic school classrooms.</p> <p>2.2.1. In your respective groups, show how these challenges would be overcome.</p> <p>2.3. Identify the needed inclusive resources for teaching and learning of the concepts in both CoE and basic school classrooms.</p>	
<p><b>3. Teaching, learning and assessment activities for the lesson</b></p> <ul style="list-style-type: none"> <li>• Reading of teaching and learning activities and identification of areas that require clarification</li> <li>• Reading of assessment opportunities and ensuring they are aligned to the NTEAP and required course assessment: subject project (30%), subject portfolio (30%) and end of semester examination (40%)</li> <li>• Working through one or two activities,</li> </ul>	<p>3.1. Read silently the teaching and learning activities in lesson 3 and identify areas that require clarification.</p> <p>3.2. In your various groups/levels discuss how the different activities would be carried out in both CoE and basic school classroom to achieve the LOs and the LIs of the course manual for lesson 3.</p> <p>3.3. Using think pair share, show how GESI issues that relate to the teaching and learning activities of the lesson will be addressed.</p> <p>3.4. Identify where, and which, core and transferable skills that can be developed or applied in the lesson and how you can help student teachers to support basic school learners to develop these skills through STS activities.</p> <p>3.5. Read the assessment activities in the manual(s) and identify areas that require clarification especially on NTEAP related activities.</p> <p>3.6. Refer to the NTEAP document and focus on subject portfolio and subject project especially.</p>	<b>40 mins</b>
<p><b>4. Evaluation and review of session:</b></p> <ul style="list-style-type: none"> <li>• Identification of any outstanding issues relating to this lesson for clarification</li> <li>• Advance preparation</li> <li>• In the case of unresolved issues</li> </ul>	<p>4.1. Individually, identify any outstanding issues relating to Lesson 3 for clarification.</p> <p>4.2. Identify a critical friend who took part in the PD session to sit in your class during the lesson and report on observation during the next PD session.</p> <p>4.3. Read lesson 4 from the PD manual and look for relevant materials for the next session.</p>	<b>5 mins</b>

	4.4. Take note of GESI related issues bothering your minds as well as unanswered questions from your class.	
<p><b>Course assessment in accordance with the NTEAP: SWL need to review assessment in the course manual to ensure it complies with NTEAP implementation and the 60% continuous assessment and 40 % End of semester examination. This means ensuring : subject project, subject portfolio preparation and development are explicitly addressed in the PD sessions.</b></p>		

**Age Phase/s:****JHS:**

1. Optics
2. Teaching about food, Nutrition and energy expenditure.

**UPPER PRIMARY:**

Air and Water

**EARLY GRADE:**

Teaching of Classification Of Animals and the Human Body

### Tutor PD Session for Lesson 4 in the Course Manual

Focus: the bullet points provide the frame for what is to be done. The guidance notes in italics identify the prompt the SL/HoD needs and each one must be addressed	Guidance Notes on Tutor Activity during the PD Session. What PD Session participants (Tutors) will do during each state of the session)	Time in session
<b>1. Introduction / lesson overview</b> <ul style="list-style-type: none"> <li>• Overview of subject/s age phase/s to be covered in this PD session and how it will be organised. Including guidance on grouping tutors according to the subject/s, age phase/s.</li> <li>• Reflection on previous PD Session (Introduction to the course manual/s)</li> <li>• Introduction and overview of the main purpose of the lesson in the course manual/s</li> <li>• Identification of important or distinctive aspects of the lesson/s</li> <li>• Reading and discussion of the introductory sections up to learning outcomes</li> </ul>	<ol style="list-style-type: none"> <li>1.1. In your distinct groups, discuss the learning area to be covered in this PD session for the semester.</li> <li>1.2. As a critical friend, share the observations you have made from lesson 3 with the larger group.</li> <li>1.3. Tutors refer to the course manual and read the NTS that supports the course description and each of the CLOs.               <ol style="list-style-type: none"> <li>1.3.1. Tutors share the NTS they have read with the whole group.</li> </ol> </li> <li>1.4. Read the introduction, lesson description and the purpose of lesson 4 in the course manual and indicate how they are related to student teachers' relevant previous knowledge.</li> <li>1.5. Identify and discuss the <i>CLOs</i> and <i>LIs</i> using the course manuals.</li> <li>1.6. Identify and discuss the distinctive features of lesson 4 for the various levels.</li> </ol>	<b>20 mins</b>

<p><b>2. Concept Development (New learning likely to arise in this lesson)</b></p> <ul style="list-style-type: none"> <li>• Identification and discussion of concepts</li> <li>• Identification of possible challenging areas in teaching of the concept.</li> <li>• Identification of needed resources for the teaching and learning of the concept.</li> </ul>	<p>2.1. Using think-pair-share, identify the major concepts in the lesson.</p> <p>2.1.1. Show how they can help student teachers to use different activities and strategies to support learning of these areas in basic schools through STS activities.</p> <p>2.2. Write and discuss the potential challenges and barriers with respect to the concepts listed.</p> <p>2.2.1. Demonstrate how these challenges would be addressed.</p> <p>2.3. In your groups, select a concept through balloting and identify the inclusive resources that can be used in it teaching and learning in both CoE and basic school classrooms.</p>	<p><b>25 mins</b></p>
<p><b>3. Teaching, learning and assessment activities for the lesson</b></p> <ul style="list-style-type: none"> <li>• Reading of teaching and learning activities and identification of areas that require clarification</li> <li>• Reading of assessment opportunities and ensuring they are aligned to the NTEAP and required course assessment: subject project (30%), subject portfolio (30%) and end of semester examination (40%)</li> <li>• Working through one or two activities,</li> </ul>	<p>3.1. In pairs, read the teaching and learning activities for lesson 4 from the course manual and identify areas that require clarification.</p> <p>3.2. In your various groups/levels discuss how the different activities would be carried out in both CoE and basic school classroom to achieve the CLOs and the LIs of the course manual for lesson 4.</p> <p>3.3. Using think pair share, discuss how GESI issues that relate to the teaching and learning activities of the lesson will be addressed.</p> <p>3.4. Identify where, and which, core and transferable skills that can be developed or applied in the lesson and how you can help student teachers to support basic school learners to develop these skills through STS activities.</p> <p>3.5. Read the assessment activities in the manual(s) and identify areas that require clarification especially on NTEAP related activities.</p> <p>3.6. Refer to the NTEAP document and focus on subject portfolio and subject project especially.</p>	

<p><b>4. Evaluation and review of session:</b></p> <ul style="list-style-type: none"> <li>• Identification of any outstanding issues relating to this lesson for clarification</li> <li>• Advance preparation</li> <li>• In the case of unresolved issues</li> </ul>	<p>Individually, identify any outstanding issues relating to Lesson 4 for clarification.</p> <p>4.1. Take note of issues that might come up in your class during the lesson delivery and report to the larger group at the next PD session.</p> <ul style="list-style-type: none"> <li>a. Read lesson 5 from the PD manual and look for relevant materials for the next session.</li> <li>b. Take note of GESI related issues bothering your minds as well as unanswered questions from your class.</li> </ul>	<p><b>5 mins</b></p>
<p><b>Course assessment in accordance with the NTEAP: SWL need to review assessment in the course manual to ensure it complies with NTEAP implementation and the 60% continuous assessment and 40 % End of semester examination. This means ensuring : subject project, subject portfolio preparation and development are explicitly addressed in the PD sessions.</b></p>		

**Age Phase/s:****JHS:**

1. Waves and Vibrations
2. Teaching Digestion

**UPPER PRIMARY:**

Light

**EARLY GRADE:**

Teaching of Parts and Functions of the Human Body

### Tutor PD Session for Lesson 5 in the Course Manual

Focus: the bullet points provide the frame for what is to be done. The guidance notes in italics identify the prompt the SL/HoD needs and each one must be addressed	Guidance Notes on Tutor Activity during the PD Session. What PD Session participants (Tutors) will do during each state of the session)	Time in session
<b>1. Introduction / lesson overview</b> <ul style="list-style-type: none"> <li>• Overview of subject/s age phase/s to be covered in this PD session and how it will be organised. Including guidance on grouping tutors according to the subject/s, age phase/s.</li> <li>• Reflection on previous PD Session (Introduction to the course manual/s)</li> <li>• Introduction and overview of the main purpose of the lesson in the course manual/s</li> <li>• Identification of important or distinctive aspects of the lesson/s</li> <li>• Reading and discussion of the introductory sections up to learning outcomes</li> </ul>	1.1. Review the previews PD session for lesson 4 in your distinct groups.  1.2. Individual tutors share their experiences from lesson 4 with the larger group.  1.3. In groups, read the purpose and the NTS that supports lesson 5 in the course manuals.  1.3.1. Explain how the NTS can support the teaching of concepts in lesson 5 both at CoE and basic schools.  1.4. Read the introduction and the lesson description of lesson 5 in the course manual and indicate how they are related to student teachers' relevant previous knowledge.  1.5. Identify and discuss the <i>LOs</i> and <i>LIs</i> using the course manuals.  1.6. Identify and discuss the distinctive features of lesson 5 for the various levels.	<b>15 mins</b>
<b>2. Concept Development (New learning likely to arise in this lesson):</b> <ul style="list-style-type: none"> <li>• Identification and discussion of concepts</li> </ul>	2.1. Identify and discuss the major concepts in lesson 5 from the manual and share them with your respective group.	<b>25 mins</b>

<ul style="list-style-type: none"> <li>• Identification of possible challenging areas in teaching of the concept.</li> <li>• Identification of needed resources for the teaching and learning of the concept.</li> </ul>	<p>2.2. In your various groups, identify the potential barriers with respect to the new concepts in both CoE and basic school classrooms .</p> <p>2.2.1. Show how the challenges identified will be addressed.</p> <p>2.2. Identify the needed inclusive resources for teaching and learning of the concepts in both CoE and basic school classrooms.</p>	
<p><b>3. Teaching, learning and assessment activities for the lesson</b></p> <ul style="list-style-type: none"> <li>• Reading of teaching and learning activities and identification of areas that require clarification</li> <li>• Reading of assessment opportunities and ensuring they are aligned to the NTEAP and required course assessment: subject project (30%), subject portfolio (30%) and end of semester examination (40%)</li> <li>• Working through one or two activities,</li> </ul>	<p>Read the teaching and learning activities</p> <p>3.1. Discuss the teaching and learning activities of lesson 5 from the course manual and identify areas that require clarification.</p> <p>3.2. Suggest alternative ways by which the concept can be taught.</p> <p>3.3. In your various groups/levels discuss how the different activities would be carried out in both CoE and basic school classroom to achieve the CLOs and the LIs of the course manual for lesson 5.</p> <p>3.4. Using think pair share, discuss how GESI issues that relate to the teaching and learning activities of the lesson will be addressed.</p> <p>3.5. Identify where, and which, core and transferable skills that can be developed or applied in the lesson and how you can help student teachers to support basic school learners to develop these skills through STS activities.</p> <p>3.6. Read the assessment activities in the manual(s) and identify areas that require clarification especially on NTEAP related activities.</p> <p>3.7. Identify and discuss some alternative ways by which they can assess the concept.</p> <p>3.8. Refer to the NTEAP document and focus on subject portfolio and subject project especially.</p>	<p><b>40 mins</b></p>

<p><b>4. Evaluation and review of session:</b></p> <ul style="list-style-type: none"> <li>• Identification of any outstanding issues relating to this lesson for clarification</li> <li>• Advance preparation</li> <li>• In the case of unresolved issues</li> </ul>	<p>4.1. Individually, identify any outstanding issues relating to Lesson 5 for clarification.</p> <p>4.2. Identify a critical friend who took part in the PD session to sit in your class during the lesson and report on observation during the next PD session.</p> <p>4.3. Read lesson 6 from the PD manual and look for relevant materials for the next session.</p> <p>4.4. Take note of GESI related issues bothering your minds as well as unanswered questions from your class.</p>	<p><b>5 mins</b></p>
<p><b>Course assessment in accordance with the NTEAP: SWL need to review assessment in the course manual to ensure it complies with NTEAP implementation and the 60% continuous assessment and 40 % End of semester examination. This means ensuring : subject project, subject portfolio preparation and development are explicitly addressed in the PD sessions.</b></p>		

**Age Phase/s:**  
JHS, Upper Primary and Early Grade

**Name of Subject/s:**  
Revision on Lessons 1-5

### Tutor PD Session for Lesson 6 in the Course Manual

Focus: the bullet points provide the frame for what is to be done. The guidance notes in italics identify the prompt the SL/HoD needs and each one must be addressed	Guidance Notes on Tutor Activity during the PD Session. What PD Session participants (Tutors) will do during each state of the session)	Time in session
<p><b>1. Introduction / lesson overview</b></p> <ul style="list-style-type: none"> <li>• Overview of subject/s age phase/s to be covered in this PD session and how it will be organised. Including guidance on grouping tutors according to the subject/s, age phase/s.</li> <li>• Reflection on previous PD Session (Introduction to the course manual/s)</li> <li>• Introduction and overview of the main purpose of the lesson in the course manual/s</li> <li>• Identification of important or distinctive aspects of the lesson/s</li> <li>• Reading and discussion of the introductory sections up to learning outcomes</li> </ul>	<p>1.1. Write down your reflections on the post-it card given you base on the following: positives, challenges and suggestions to improve on the next PD sessions.</p> <p>1.1.1 Share your reflections with a colleague and then with the larger group.</p> <p>1.2. Brainstorm on how to promote GESI in the CoE and basic classrooms.</p> <p>1.3. Discuss the parts of the NTS that support lessons 1, 2, 3, 4 and 5 and explain how it was implemented in your various lessons.</p> <p>1.3.1. Explain how you supported your student teachers to also implement the NTS during their STS activities.</p> <p>1.4. Discuss whether or not the TLRs used in the delivery of their varied lessons were GESI responsive.</p> <p>1.5. Shared your experiences on the kinds of feedbacks provided as well as assessment mode used to evaluate student teachers during the various teaching and learning processes.</p> <p>1.6. Pick at random, read aloud and tell the meaning of the core and transferable skills written on pieces of paper.</p> <p>1.6.1. Show how you can help student teachers to support basic school learners to develop these skills through STS activities.</p>	<b>20 mins</b>

	<p>1.7. Discuss cross cutting issues, including equity and inclusivity connected to the lessons delivered and how the student teachers would also implement them in the basic school classrooms.</p> <p>1.8. Identify and discuss the various digital tools used to facilitate your lessons and how gender friendly the tools were.</p>	
<p><b>2. Concept Development (New learning likely to arise in this lesson)</b></p> <ul style="list-style-type: none"> <li>• Identification and discussion of concepts</li> <li>• Identification of possible challenging areas in teaching of the concept.</li> <li>• Identification of needed resources for the teaching and learning of the concept.</li> </ul>	<p>2.1. Work in pairs to identify and discuss basic concepts in lesson 1, 2, 3, 4, and 5 that you felt were not well treated with the students and suggest ways to improve upon teaching of those concepts.</p> <p>2.1.1. Explain the concepts above to the larger group with with appropriate exemplars that can enhance understanding.</p> <p>2.2. In pairs, identify challenging areas of teaching the concept in lessons 1, 2, 3, 4 and 5.</p> <p>2.2.1. Present your answers on chats for gallery walk.</p>	<b>25 mins</b>
<p><b>3. Teaching, learning and assessment activities for the lesson</b></p> <ul style="list-style-type: none"> <li>• Reading of teaching and learning activities and identification of areas that require clarification</li> <li>• Reading of assessment opportunities and ensuring they are aligned to the NTEAP and required course assessment: subject project (30%), subject portfolio (30%) and end of semester examination (40%)</li> <li>• Working through one or two activities.</li> </ul>	<p>3.1. Discuss the nature of the various tasks given to student teachers and how the scores were collated.</p> <p>3.1.1. Discuss at your various groups/levels what you have done in lessons 1, 2, 3, 4, and 5 to ensure that student teachers' assessment were in accordance with the NTEAP.</p>	
<p><b>4. Evaluation and review of session:</b></p> <ul style="list-style-type: none"> <li>• Identification of any outstanding issues relating to this lesson for</li> </ul>	<p>4.1. Evaluate the PD sessions indicating what lessons have been learnt and how the lessons learnt impacted teaching and learning of lessons 1, 2, 3, 4 and 5.</p>	<b>5 mins</b>

clarification <ul style="list-style-type: none"> <li>• Advance preparation</li> <li>• In the case of unresolved issues</li> </ul>	4.2. Read through lesson seven (7) before the next PD session.	
<b>Course assessment in accordance with the NTEAP: SWL need to review assessment in the course manual to ensure it complies with NTEAP implementation and the 60% continuous assessment and 40 % End of semester examination. This means ensuring : subject project, subject portfolio preparation and development are explicitly addressed in the PD sessions.</b>		

**Age Phase/s:****JHS:**

1. Atomic and Nuclear Physics
2. Science Pedagogies and Curriculum Studies

**UPPER PRIMARY:**

Changes of States of Matter I.

**EARLY GRADE:**

Teaching Water, Air and Soils.

### Tutor PD Session for Lesson 7 in the Course Manual

Focus: the bullet points provide the frame for what is to be done. The guidance notes in italics identify the prompt the SL/HoD needs and each one must be addressed	Guidance Notes on Tutor Activity during the PD Session. What PD Session participants (Tutors) will do during each state of the session)	Time in session
<p><b>1. Introduction / lesson overview</b></p> <ul style="list-style-type: none"> <li>• Overview of subject/s age phase/s to be covered in this PD session and how it will be organised. Including guidance on grouping tutors according to the subject/s, age phase/s.</li> <li>• Reflection on previous PD Session (Introduction to the course manual/s)</li> <li>• Introduction and overview of the main purpose of the lesson in the course manual/s</li> <li>• Identification of important or distinctive aspects of the lesson/s</li> <li>• Reading and discussion of the introductory sections up to learning outcomes</li> </ul>	<p>1.1. Discuss the various lessons learned from your previous PD session.</p> <p>1.2. Individually, share your experiences on lessons 6 reviewed with the larger group.</p> <p>1.3. Discuss the learning area to be covered in this 7<sup>th</sup> PD session In your distinct groups.</p> <p>1.4. In groups, read the purpose and the NTS that supports lesson 7 in the course manuals.</p> <p>1.4.1. Explain how the NTS supports the teaching of lesson 7 both at CoE and basic school classrooms.</p> <p>1.5. Read the introduction and the lesson description of lesson 7 in the course manual and indicate how they are related to student teachers' relevant previous knowledge.</p> <p>1.6. Identify and discuss the <i>LOs and Lis</i> OF LESSON 7 using the course manuals.</p> <p>1.7. Identify and discuss the distinctive features of lesson 7 for the various levels.</p>	

<p><b>2. Concept Development (New learning likely to arise in this lesson)</b></p> <ul style="list-style-type: none"> <li>• Identification and discussion of concepts</li> <li>• Identification of possible challenging areas in teaching of the concept.</li> <li>• Identification of needed resources for the teaching and learning of the concept</li> </ul>	<p>2.1. In pairs write and share the major concepts of lesson 7 with the whole group.</p> <p>2.2. Demonstrate how you can help student teachers to use different activities and strategies to support learning of these areas in the basic schools through STS activities.</p> <p>2.3 Identify potential challenging areas in teaching the respective concepts.</p> <p>2.3.1. Suggest solutions to the possible challenging areas in teaching of the various concepts identified.</p> <p>2.4. Identify the resource needed for lesson 7 in the course manual and indicate how they will be used in the lesson to promote learning for all learners.</p>	<p><b>20 mins</b></p>
<p><b>3. Teaching, learning and assessment activities for the lesson</b></p> <ul style="list-style-type: none"> <li>• Reading of teaching and learning activities and identification of areas that require clarification</li> <li>• Reading of assessment opportunities and ensuring they are aligned to the NTEAP and required course assessment: subject project (30%), subject portfolio (30%) and end of semester examination (40%)</li> <li>• Working through one or two activities,</li> </ul>	<p>3.1. Read the teaching and learning activities of lesson 7 of the course manual.</p> <p>3.1.1. From the course manual, discuss the teaching and learning activities of lesson 7.</p> <p>3.1.2. Identify areas that require clarification.</p> <p>3.2. In your various groups/levels discuss how the different activities would be carried out in both CoE and basic school classroom to achieve the CLOs and the LIs of the course manual for lesson 7.</p> <p>3.3. Discuss how GESI issues that relate to the teaching and learning activities of the lesson.</p> <p>3.4. Identify where, and which, core and transferable skills that can be developed or applied in the lesson and how you can help student teachers to support basic school learners to develop these skills through STS activities.</p> <p>3.5. Read the assessment activities in the manual(s) and identify areas that require clarification especially on NTEAP related activities.</p> <p>3.5.1. Discuss in your various groups alternative ways by which you can assess the concept.</p>	<p><b>40 mins</b></p>

	3.6. Refer to the NTEAP document and focus on subject portfolio and subject project especially.	
<p><b>4. Evaluation and review of session:</b></p> <ul style="list-style-type: none"> <li>• Identification of any outstanding issues relating to this lesson for clarification</li> <li>• Advance preparation</li> <li>• In the case of unresolved issues</li> </ul>	<p>4.1. Individually, identify any outstanding issues relating to Lesson 7 for clarification.</p> <p>4.2. Take note of issues that might come up in your class during the lesson delivery and report to the larger group at the next PD session.</p> <p>4.3. Read lesson 8 from the PD manual and look for relevant materials for the next session.</p> <p>4.4. Take note of GESI related issues bothering your minds as well as unanswered questions from your class.</p>	<b>5 mins</b>

**Age Phase/s:****JHS:**

1. Force fields
2. Identifying resources and planning lessons for teaching science at the Primary School.

**UPPER PRIMARY:**

Changes of States of Matter II.

**EARLY GRADE:**

Teaching composition of soil and air.

### Tutor PD Session for Lesson 8 in the Course Manual

Focus: the bullet points provide the frame for what is to be done. The guidance notes in italics identify the prompt the SL/HoD needs and each one must be addressed	Guidance Notes on Tutor Activity during the PD Session. What PD Session participants (Tutors) will do during each state of the session)	Time in session
<p><b>1. Introduction / lesson overview</b></p> <ul style="list-style-type: none"> <li>• Overview of subject/s age phase/s to be covered in this PD session and how it will be organised. Including guidance on grouping tutors according to the subject/s, age phase/s.</li> <li>• Reflection on previous PD Session (Introduction to the course manual/s)</li> <li>• Introduction and overview of the main purpose of the lesson in the course manual/s</li> <li>• Identification of important or distinctive aspects of the lesson/s</li> <li>• Reading and discussion of the introductory sections up to learning outcomes</li> </ul>	<p>1.1. Discuss the various lessons learned from previous PD session.</p> <p>1.2. Individually, share your experiences on lesson 7 delivered with the larger group.</p> <p>1.3. Be in your distinct groups and discuss the learning area to be covered in this PD session.</p> <p>1.4. In groups, read the purpose and the NTS that support lesson 8 in the course manuals.</p> <p>1.4.1. Explain how the NTS supports the teaching of lesson 8 both at CoE and basic school classrooms.</p> <p>1.5. Read the introduction and the lesson description of lesson 8 in the course manual and indicate how they are related to student teachers' relevant previous knowledge.</p> <p>1.6. Identify and discuss the <i>LOs</i> and <i>LIs</i> of lesson 8 using the course manuals.</p> <p>1.7. Identify and explain the distinctive features of lesson 8 for the various levels.</p>	<b>30 mins</b>

<p><b>2. Concept Development (New learning likely to arise in this lesson):</b></p> <ul style="list-style-type: none"> <li>• Identification and discussion of concepts</li> <li>• Identification of possible challenging areas in teaching of the concept.</li> <li>• Identification of needed resources for the teaching and learning of the concept.</li> </ul>	<p>2.1. List and discuss the major concepts which are familiar and unfamiliar in lesson 8 from the manual of the respective group.</p> <p>2.2. Write any two (2) potential misconception and barriers with respect to new concepts in both CoE and basic school classrooms .</p> <p>2.3. Identify the needed inclusive resources for teaching and learning of the concepts in both CoE and basic school classrooms.</p>	<p><b>15 mins</b></p>
<p><b>3. Teaching, learning and assessment activities for the lesson</b></p> <ul style="list-style-type: none"> <li>• Reading of teaching and learning activities and identification of areas that require clarification</li> <li>• Reading of assessment opportunities and ensuring they are aligned to the NTEAP and required course assessment: subject project (30%), subject portfolio (30%) and end of semester examination (40%)</li> <li>• Working through one or two activities,</li> </ul>	<p>3.1. In your groups/ level, read and discuss the teaching and learning activities of lesson 8.</p> <p>3.1.1. Identify areas that require clarification.</p> <p>3.1.2. Suggest alternative ways by which the activities could be done.</p> <p>3.2. In your various groups/levels discuss how the different activities would be carried out in both CoE and basic school classroom to achieve the CLOs and the LIs of the course manual for lesson 8.</p> <p>3.3. Discuss how GESI issues that relate to the teaching and learning activities of the lesson.</p> <p>3.4. Identify where, and which, core and transferable skills that can be developed or applied in the lesson and how you can help student teachers to support basic school learners to develop these skills through STS activities.</p> <p>3.5. Read the assessment activities in the manual(s) and identify areas that require clarification especially on NTEAP related activities.</p> <p>3.5.1. Discuss some alternative ways by which the concept can be assessed.</p> <p>3.6. Refer to the NTEAP document and focus on subject portfolio and subject project especially.</p>	<p><b>40 mins</b></p>

<p><b>4. Evaluation and review of session:</b></p> <ul style="list-style-type: none"> <li>• Identification of any outstanding issues relating to this lesson for clarification</li> <li>• Advance preparation</li> <li>• In the case of unresolved issues</li> </ul>	<p>4.1. Individually, identify any outstanding issues relating to Lesson 8 for clarification.</p> <p>4.2. Identify a critical friend who took part in the PD session to sit in your class during the lesson and report on observation during the next PD session.</p> <p>4.3. Read lesson 9 from the PD manual and look for relevant materials for the next session.</p> <p>4.4. Take note of GESI related issues bothering your minds as well as unanswered questions from your class.</p>	<p><b>5 mins</b></p>
<p><b>Course assessment in accordance with the NTEAP: SWL need to review assessment in the course manual to ensure it complies with NTEAP implementation and the 60% continuous assessment and 40 % End of semester examination. This means ensuring : subject project, subject portfolio preparation and development are explicitly addressed in the PD sessions.</b></p>		

**Age Phase/s:****JHS:**

1. *Further studies on Junior High school Science curriculum and pedagogy (Lesson Planning and Microteaching).*
2. *Co-planning and Co-teaching Primary Science*

**UPPER PRIMARY:***Teaching Ventilation II.***EARLY GRADE:***Air***Tutor PD Session for Lesson 9 in the Course Manual**

<b>Focus: the bullet points provide the frame for what is to be done. The guidance notes in italics identify the prompt the SL/HoD needs and each one must be addressed</b>	<b>Guidance Notes on Tutor Activity during the PD Session.</b> What PD Session participants (Tutors) will do during each state of the session)	<b>Time in session</b>
<p><b>1. Introduction / lesson overview</b></p> <ul style="list-style-type: none"> <li>• Overview of subject/s age phase/s to be covered in this PD session and how it will be organised. Including guidance on grouping tutors according to the subject/s, age phase/s.</li> <li>• Reflection on previous PD Session (Introduction to the course manual/s)</li> <li>• Introduction and overview of the main purpose of the lesson in the course manual/s</li> <li>• Identification of important or distinctive aspects of the lesson/s</li> <li>• Reading and discussion of the introductory sections up to learning outcomes</li> </ul>	<p>1.1. Discuss the various lessons learned from previous PD session.</p> <p>1.2. Individual tutors share their own experiences on lesson 8 with the larger group.</p> <p>1.3. Discuss the learning areas to be covered in this 9<sup>th</sup> PD session In your separate groups.</p> <p>1.4. List on post-it card the main modes of lesson delivery chosen to support student teachers in achieving the learning outcomes.</p> <p>1.4.1. Share with the larger group the main lesson delivery mode you have chosen to support student teachers in achieving the learning outcomes, and explain how it would be employed to teach the lesson.</p> <p>1.5. In your course groups, read the NTS that support lesson 9 in the course manuals.</p> <p>1.5.1. Explain how the NTS support the teaching of lesson 9 both at CoE and basic school classrooms.</p> <p>1.6. Read the introduction and the lesson description of lesson 9 in the course manual and indicate how they are related to student teachers' relevant previous knowledge.</p>	<b>20 mins</b>

	<p>1.7. Identify and discuss the <i>LOs</i> and <i>LIs</i> using the course manuals.</p> <p>1.8. Identify and explain the distinctive features of lesson 9 for the various levels.</p>	
<p><b>2. Concept Development (New learning likely to arise in this lesson):</b></p> <ul style="list-style-type: none"> <li>• Identification and discussion of concepts</li> <li>• Identification of possible challenging areas in teaching of the concept.</li> <li>• Identification of needed resources for the teaching and learning of the concept.</li> </ul>	<p>2.1. In pairs, list the major concepts in the lesson and share it with the whole group.</p> <p>2.2. Discuss potential misconceptions and barriers with respect to the concepts listed.</p> <p>2.3. Write possible challenging areas in teaching of the concepts identified.</p> <p>2.3.1. Show how these challenges would be overcome.</p>	<b>25 mins</b>
<p><b>3. Teaching, learning and assessment activities for the lesson</b></p> <ul style="list-style-type: none"> <li>• Reading of teaching and learning activities and identification of areas that require clarification</li> <li>• Reading of assessment opportunities and ensuring they are aligned to the NTEAP and required course assessment: subject project (30%), subject portfolio (30%) and end of semester examination (40%)</li> <li>• Working through one or two activities,</li> </ul>	<p>3.1. Read and discuss the teaching and learning activities of lesson 9 from the course manual.</p> <p>3.1.1. Identify areas that require clarification.</p> <p>3.1.2. Suggest alternative ways by which the concepts can be taught.</p> <p>3.2. In your various groups/levels discuss how the different activities would be carried out in both CoE and basic school classroom to achieve the CLOs and the LIs of the course manual for lesson 9.</p> <p>3.3. Discuss how GESI issues that relate to the teaching and learning activities of the lesson.</p> <p>3.4. Identify where, and which, core and transferable skills that can be developed or applied in the lesson and how you can help student teachers to support basic school learners to develop these skills through STS activities.</p> <p>3.5. Read the assessment activities in the manual(s) and identify areas that require clarification especially on NTEAP related activities.</p> <p>3.5.1. Discuss some alternative ways by which the concept can be assessed.</p>	<b>40 mins</b>

	3.6. Refer to the NTEAP document and focus on subject portfolio and subject project especially.	
<b>4. Evaluation and review of session:</b> <ul style="list-style-type: none"> <li>• Identification of any outstanding issues relating to this lesson for clarification</li> <li>• Advance preparation</li> <li>• In the case of unresolved issues</li> </ul>	4.1. Individually, identify any outstanding issues relating to Lesson 9 for clarification. 4.2. Take note of issues that might come up in your class during the lesson delivery and report to the larger group at the next PD session. 4.3. Read lesson 10 from the PD manual and look for relevant materials for the next session. 4.3.1. Take note of GESI related issues bothering your minds as well as unanswered questions from your class.	<b>5 mins</b>
<b>Course assessment in accordance with the NTEAP: SWL need to review assessment in the course manual to ensure it complies with NTEAP implementation and the 60% continuous assessment and 40 % End of semester examination. This means ensuring : subject project, subject portfolio preparation and development are explicitly addressed in the PD sessions.</b>		

**Age Phase/s:****JHS:**

1. Further studies on Junior High school Science curriculum and pedagogy (Building an e-portfolio).
2. Co-planing and Co-teaching JHS science

**UPPER PRIMARY:**

Science Curriculum Studies- Pedagogies

**EARLY GRADE:**

Measurement of time, mass, temperature and volume

### Tutor PD Session for Lesson 10 in the Course Manual

Focus: the bullet points provide the frame for what is to be done. The guidance notes in italics identify the prompt the SL/HoD needs and each one must be addressed	Guidance Notes on Tutor Activity during the PD Session. What PD Session participants (Tutors) will do during each state of the session)	Time in session
<p><b>1. Introduction / lesson overview</b></p> <ul style="list-style-type: none"> <li>• Overview of subject/s age phase/s to be covered in this PD session and how it will be organised. Including guidance on grouping tutors according to the subject/s, age phase/s.</li> <li>• Reflection on previous PD Session (Introduction to the course manual/s)</li> <li>• Introduction and overview of the main purpose of the lesson in the course manual/s</li> <li>• Identification of important or distinctive aspects of the lesson/s</li> <li>• Reading and discussion of the introductory sections up to learning outcomes</li> </ul>	<p>1.1. Discuss the various lessons learned from previous PD session.</p> <p>1.2. Individual tutors share their experiences on lessons taught with the larger group.</p> <p>1.3. Discuss the learning area to be covered in this 10<sup>th</sup> PD session in your distinct groups.</p> <p>1.4. In their respective levels/phases, ask tutors to read the purpose and the NTS that supports lesson 10 in the course manuals.</p> <p>1.4.1. Explain how the NTS supports the teaching of lesson 10 both at CoE and basic school classrooms.</p> <p>1.5. Read the introduction and the lesson description of lesson 10 in the course manual and indicate how they are related to student teachers' relevant previous knowledge.</p> <p>1.6. Identify and discuss <i>LOs and LIs</i> of lesson 11 at different levels in the course manuals.</p> <p>1.7. Identify and discuss the distinctive features of lesson 10 for the various levels.</p>	<b>20 mins</b>

<p><b>2. Concept Development (New learning likely to arise in this lesson)</b></p> <ul style="list-style-type: none"> <li>• Identification and discussion of concepts</li> <li>• Identification of possible challenging areas in teaching of the concept.</li> <li>• Identification of needed resources for the teaching and learning of the concept.</li> </ul>	<p>2.1. Be in pairs, write and Cross-share your views on how the major concepts of lesson 10 will be delivered.</p> <p>2.2. Show how you can help student teachers to use different activities and strategies to support learning of these areas in basic schools through STS activities.</p> <p>2.3. Write and discuss the potential challenges and barriers with respect to the concepts to be thought.</p> <p>2.3.1. Demonstrate how these challenges would be addressed.</p> <p>2.4. In pairs, identify the needed inclusive resources for teaching and learning of the concepts in both CoE and basic school classrooms..</p>	<p><b>25 mins</b></p>
<p><b>3. Teaching, learning and assessment activities for the lesson</b></p> <ul style="list-style-type: none"> <li>• Reading of teaching and learning activities and identification of areas that require clarification</li> <li>• Reading of assessment opportunities and ensuring they are aligned to the NTEAP and required course assessment: subject project (30%), subject portfolio (30%) and end of semester examination (40%)</li> <li>• Working through one or two activities,</li> </ul>	<p>3.1. In your groups/ level read and discuss the teaching and learning activities of lesson 10 from the course manual.</p> <p>3.1.1. Identify areas that require clarification.</p> <p>3.1.2. Suggest alternative ways by which the concepts can be taught.</p> <p>3.2. In your various groups/levels discuss how the different activities would be carried out in both CoE and basic school classroom to achieve the CLOs and the LIs of the course manual for lesson 10.</p> <p>3.3. Discuss how GESI issues that relate to the teaching and learning activities of the lesson.</p> <p>3.4. Identify where, and which, core and transferable skills that can be developed or applied in the lesson 10 and how you can help student teachers to support basic school learners to develop these skills through STS activities.</p> <p>3.5. Read the assessment activities in the manual(s) and identify areas that require clarification especially on NTEAP related activities.</p>	<p><b>40 mins</b></p>

	<p>3.5.1. Discuss some alternative ways by which the concept can be assessed.</p> <p>3.6. Refer to the NTEAP document and focus on subject portfolio and subject project especially.</p>	
<p><b>4. Evaluation and review of session:</b></p> <ul style="list-style-type: none"> <li>• Identification of any outstanding issues relating to this lesson for clarification</li> <li>• Advance preparation</li> <li>• In the case of unresolved issues</li> </ul>	<p>4.1. Individually, identify any outstanding issues relating to Lesson <b>10</b> for clarification.</p> <p>4.2. Take note of issues that might come up in your class during the lesson delivery and report to the larger group at the next PD session.</p> <p>4.3. Read lesson 11 from the PD manual and look for relevant materials for the next session.</p> <p>4.4. Take note of GESI related issues bothering your minds as well as unanswered questions from your class.</p>	<b>5 mins</b>
<p><b>Course assessment in accordance with the NTEAP: SWL need to review assessment in the course manual to ensure it complies with NTEAP implementation and the 60% continuous assessment and 40 % End of semester examination. This means ensuring : subject project, subject portfolio preparation and development are explicitly addressed in the PD sessions.</b></p>		

**Age Phase/s:****JHS:**

1. Further studies on Junior High school Science curriculum and pedagogy
2. Co-planning with Individualized teaching

**UPPER PRIMARY:**

Science Curriculum Studies- Co- planning and Co – Teaching

**EARLY GRADE:**

The student teacher as a resource in diversity

### Tutor PD Session for Lesson 11 in the Course Manual

Focus: the bullet points provide the frame for what is to be done. The guidance notes in italics identify the prompt the SL/HoD needs and each one must be addressed	Guidance Notes on Tutor Activity during the PD Session. What PD Session participants (Tutors) will do during each state of the session)	Time in session
<p><b>1. Introduction / lesson overview</b></p> <ul style="list-style-type: none"> <li>• Overview of subject/s age phase/s to be covered in this PD session and how it will be organised. Including guidance on grouping tutors according to the subject/s, age phase/s.</li> <li>• Reflection on previous PD Session (Introduction to the course manual/s)</li> <li>• Introduction and overview of the main purpose of the lesson in the course manual/s</li> <li>• Identification of important or distinctive aspects of the lesson/s</li> <li>• Reading and discussion of the introductory sections up to learning outcomes</li> </ul>	<p>1.1. Discuss the various lessons learned from the previous PD session.</p> <p>1.2. Individual tutors share their experiences on lessons taught with the larger group.</p> <p>1.3. Sit according to your group levels and discuss the learning area to be covered in this 11<sup>th</sup> PD session from your course manual.</p> <p>1.4. Read from the course manuals the purpose and the NTS that supports lesson 11.</p> <p>1.4.1. Explain how the NTS supports the teaching of lesson 11 both at CoE and basic school classrooms.</p> <p>1.5. Read the introduction and the lesson description of lesson 11 in the course manual and indicate how they are related to student teachers' relevant previous knowledge.</p> <p>1.6. Identify and discuss the <i>LOs</i> and <i>LIs</i> using the course manuals.</p> <p>1.7. Identify and discuss the distinctive features of lesson 11 for the various levels from the course manual.</p>	

<p><b>2. Concept Development (New learning likely to arise in this lesson)</b></p> <ul style="list-style-type: none"> <li>• Identification and discussion of concepts</li> <li>• Identification of possible challenging areas in teaching of the concept.</li> <li>• Identification of needed resources for the teaching and learning of the concept.</li> </ul>	<p>2.1. Using think-pair-share, identify the major concepts in the lesson.</p> <p>2.2. Discuss the potential challenges and barriers with respect to the concepts listed.</p> <p>2.2.1. Demonstrate how one of these challenges would be overcome.</p> <p>2.3. Show how you can help student teachers to use different activities and strategies to support learning of the concepts in basic schools through STS activities.</p> <p>2.4. In pairs, select a concept through balloting and design inclusive resources that can be used in the teaching and learning of the concepts in both CoE and basic school classrooms.</p>	<p><b>20 mins</b></p>
<p><b>3. Teaching, learning and assessment activities for the lesson</b></p> <ul style="list-style-type: none"> <li>• Reading of teaching and learning activities and identification of areas that require clarification</li> <li>• Reading of assessment opportunities and ensuring they are aligned to the NTEAP and required course assessment: subject project (30%), subject portfolio (30%) and end of semester examination (40%)</li> <li>• Working through one or two activities,</li> </ul>	<p>3.1. Read and discuss the teaching and learning activities of lesson 11 from the course manual.</p> <p>Suggest alternative ways by which the concept can be taught.</p> <p>3.2. In your various groups/levels discuss how the different activities would be carried out in both CoE and basic school classroom to achieve the CLOs and the LIs of the course manual for lesson 11.</p> <p>3.3. Discuss how GESI issues that relate to the teaching and learning activities of the lesson.</p> <p>3.4. Identify where, and which, core and transferable skills that can be developed or applied in the lesson 11 and how you can help student teachers to support basic school learners to develop these skills through STS activities.</p> <p>3.5. Read the assessment activities in the manual(s) and identify areas that require clarification especially on NTEAP related activities.</p> <p>3.5.1. Discuss some alternative ways by which the concept can be assessed.</p>	<p><b>40 mins</b></p>

	3.6. Refer to the NTEAP document and focus on subject portfolio and subject project especially.	
<p><b>4. Evaluation and review of session:</b></p> <ul style="list-style-type: none"> <li>• Identification of any outstanding issues relating to this lesson for clarification</li> <li>• Advance preparation</li> <li>• In the case of unresolved issues</li> </ul>	<p>4.1. Individually, identify any outstanding issues relating to Lesson 11 for clarification.</p> <p>4.2. Identify a critical friend who took part in the PD session to sit in your class during the lesson and report on observation during the next PD session.</p> <p>4.3. Read lesson 12 from the PD manual and look for relevant materials for the next session.</p> <p>4.4. Take note of GESI related issues bothering your minds as well as unanswered questions from your class.</p>	<b>5 mins</b>
<p><b>Course assessment in accordance with the NTEAP: SWL need to review assessment in the course manual to ensure it complies with NTEAP implementation and the 60% continuous assessment and 40 % End of semester examination. This means ensuring : subject project, subject portfolio preparation and development are explicitly addressed in the PD sessions.</b></p>		

**Age Phase/s:**  
JHS, Upper Primary and Early Grade

**Name of Subject/s:**  
Revision on Lessons 1-5

### Tutor PD Session for Lesson 12 in the Course Manual

Focus: the bullet points provide the frame for what is to be done. The guidance notes in italics identify the prompt the SL/HoD needs and each one must be addressed	Guidance Notes on Tutor Activity during the PD Session. What PD Session participants (Tutors) will do during each state of the session)	Time in session
<p><b>1. Introduction / lesson overview</b></p> <ul style="list-style-type: none"> <li>• Overview of subject/s age phase/s to be covered in this PD session and how it will be organised. Including guidance on grouping tutors according to the subject/s, age phase/s.</li> <li>• Reflection on previous PD Session (Introduction to the course manual/s)</li> <li>• Introduction and overview of the main purpose of the lesson in the course manual/s</li> <li>• Identification of important or distinctive aspects of the lesson/s</li> <li>• Reading and discussion of the introductory sections up to learning outcomes</li> </ul>	<p>1.1. Write down your reflections of PD session 7-11 on the post-it card given you base on the following: positives, challenges and suggestions to improve on the next PD sessions.</p> <p>1.1.1. Share your reflections with a colleague and then with the larger group.</p> <p>1.2. Brainstorm on how to promote GESI in the CoE and basic classrooms.</p> <p>1.3. Discuss the parts of the NTS that support lessons 7-11 and explain how it was implemented in your various lessons.</p> <p>1.3.1. Explain how you supported your student teachers to also implement the NTS during their STS activities.</p> <p>1.4. Discuss whether or not the TLRs used in the delivery of their varied lessons were GESI responsive.</p> <p>1.5. Shared your experiences on the kinds of feedbacks provided as well as assessment mode used to evaluate student teachers during the various teaching and learning processes.</p> <p>1.6. Pick at random, read aloud and tell the meaning of the core and transferable skills written on pieces of paper.</p> <p>1.6.1. Show how you can help student teachers to support basic school learners to develop these skills through STS activities.</p>	<b>20 mins</b>

	<p>1.7. Discuss cross cutting issues, including equity and inclusivity connected to the lessons delivered and how the student teachers would also implement them in the basic school classrooms.</p> <p>1.8. Identify and discuss the various digital tools used to facilitate your lessons and how gender friendly the tools were.</p>	
<p><b>2. Concept Development (New learning likely to arise in this lesson)</b></p> <ul style="list-style-type: none"> <li>• Identification and discussion of concepts</li> <li>• Identification of possible challenging areas in teaching of the concept.</li> <li>• Identification of needed resources for the teaching and learning of the concept.</li> </ul>	<p>2.1. Work in pairs to identify and discuss basic concepts in lesson 7-11 that you felt were not well treated with the students and suggest ways to improve upon teaching of those concepts.</p> <p>2.1.1. Explain the concepts above to the larger group with with appropriate exemplars that can enhance understanding.</p> <p>2.2. In pairs, identify challenging areas of teaching the concept in lessons 7-11.</p> <p>2.2.1. Present your answers on chats for gallery walk.</p>	<b>25 mins</b>
<p><b>3. Teaching, learning and assessment activities for the lesson</b></p> <ul style="list-style-type: none"> <li>• Reading of teaching and learning activities and identification of areas that require clarification</li> <li>• Reading of assessment opportunities and ensuring they are aligned to the NTEAP and required course assessment: subject project (30%), subject portfolio (30%) and end of semester examination (40%)</li> <li>• Working through one or two activities,</li> </ul>	<p>3.1. Discuss the nature of the various tasks given to student teachers and how the scores were collated.</p> <p>3.1.1 Discuss at your various groups/levels what you have done in lessons 7-11 to ensure that student teachers' assessment were in accordance with the NTEAP.</p>	<b>40 mins</b>
<p><b>4. Evaluation and review of session:</b></p> <ul style="list-style-type: none"> <li>• Identification of any outstanding issues relating to this lesson for clarification</li> </ul>	<p>4.1. Evaluate the PD sessions indicating what lessons have been learnt and how the lessons learnt impacted teaching and learning of lessons 7-11.</p>	<b>5 mins</b>

<ul style="list-style-type: none"> <li>• Advance preparation</li> <li>• In the case of unresolved issues</li> </ul>		
<p><b>Course assessment in accordance with the NTEAP: SWL need to review assessment in the course manual to ensure it complies with NTEAP implementation and the 60% continuous assessment and 40 % End of semester examination. This means ensuring : subject project, subject portfolio preparation and development are explicitly addressed in the PD sessions.</b></p>		

## The PD session check list: supporting B.Ed. implementation.

*In some cases, to support implementation the PD sessions may need to add more detail to what is in the course manuals*

What to Include in PD sessions: Check list	Checked and In Place.
<p><b>Course introductions and conclusions</b></p> <ul style="list-style-type: none"> <li>• The first PD session of each semester introduces the course manual/s and course expectations to student teachers.</li> <li>• The final PD session provides the opportunity to review student teachers learning from the course</li> </ul>	
<p><b>Prior knowledge:</b> Points for tutors on assessing or activating student teachers' prior knowledge.</p>	
<p><b>Basic School Curriculum:</b> when topics for student teachers are from the Basic School Curriculum the PD session makes explicit links.</p>	
<p><b>CLO:</b> relevant to the session to be introduced</p>	
<p><b>Lesson Learning outcomes and indicators.</b> PD sessions provide opportunities for tutors to model interactive approaches to teaching and learning they will use to support student teachers</p>	
<p><b>Integration of subject specific content and subject specific pedagogy.</b> This is modelled in PD sessions through activities for tutors. Any potentially new or challenging concepts are explored with tutors</p>	
<p><b>Subject Specific Training.</b> Where subjects have been grouped together for the PD sessions, tutors are guided to activities in the subject course manuals to ensure the PD is not generic. Where appropriate there is direct page or point references to activities in each of the relevant subject course manuals.</p>	
<p><b>Integrating GESI:</b> each PD session explicitly highlights at least two (2) teaching and learning activities from the course manual/s which should be used to promote student teachers' understanding of GESI responsiveness and support the inclusion of all pupils.</p>	
<p><b>Assessment. Integrating and embedding NTEAP practices</b> PD sessions include at least two continuous assessment opportunities which will support tutors in developing student teacher's understanding of and ability to apply assessment for or as learning.</p>	
<p><b>Phase Specific Training.</b> Tutors are guided to specific activities in the relevant phase course manuals for EG, UP and JHS. Tutors are advised to group student teachers according to the phase they are training for specific activities.</p>	
<p><b>Building in STS.</b> STS tasks are integrated into the PD sessions. Preparing for work in school and opportunities for tutors to draw on what student teachers are learning in school by, for example, targeting observations linked directly to the themes in the course manuals.</p>	
<p><b>Building in activities which support the development of 21c skills in particular the use of ICT.</b> The development of these is integrated into the PD sessions including the use of ICT to support learning. Each PD session should include at least two (2) examples of students being required to use ICT to extend their learning.</p>	

<b>Resources /TLM.</b> Where specific resources are required, it is clear where tutors can access them e.g., videos, online resources or readings.	
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