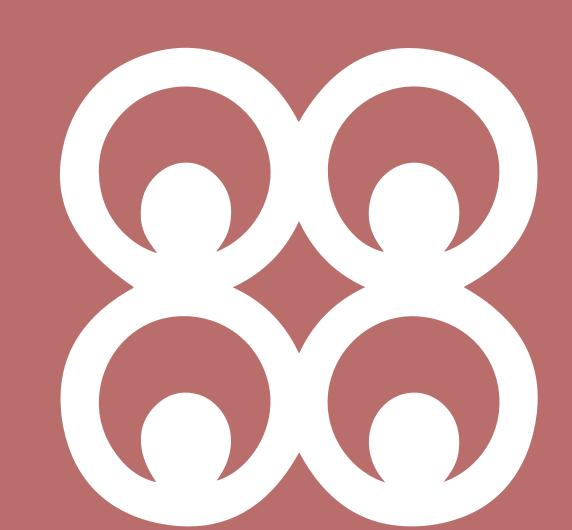
# TUTOR PROFESSIONAL DEVELOPMENT HANDBOOK: B.Ed in Initial Teacher Education Science Year 4

# HANDBOOK FOR COORDINATORS







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# TUTOR PROFESSIONAL DEVELOPMENT HANDBOOK: B.Ed in Initial Teacher Education Science Year 4

**Coordinator Version** 

# Foreword to the Year 4 Tutor Professional Development Handbook

The development of this set of Tutor Professional Development Handbooks, for Year 4 Bachelor of Education (B.Ed.) courses in Initial Teacher Education marks both an end and a beginning.

It marks an end in that this is the final set of Tutor Professional Development Handbooks to be written, bringing an end to three years of writing by teams from across the four mentoring Universities (Kwame Nkrumah University of Science and Technology, University for Development Studies, University of Ghana and University of Education, Winneba) and Colleges of Education.

It marks a beginning because the significant reforms in teacher education which these Handbooks are helping to bring about has only just begun. The first student teachers who have directly benefitted from these Handbooks entered Colleges of Education in 2019 and won't graduate until 2023. Once these B.Ed. graduates enter Ghana's basic school classrooms, I am confident that we will see a year-on-year increase in the number of teachers meeting the quality benchmarks set out in the National Teachers' Standards (NTS).

It is our intention and belief that these Handbooks will be used in Universities and Colleges of Education for many years to come and that they will play a central role in helping us to bring about a sustained transformation in our basic education system so that we achieve the goal of the Education Strategic Plan (2018-2030) that "all pupils are equipped with appropriate literacy, numeracy and social development skills to effectively transition to second cycle education."

I would like to take this opportunity to thank the Ghana Tertiary Education Commission, the UK's Foreign, Commonwealth and Development Office (FCDO) and Mastercard Foundation for their support over the past three years in making all this possible.

Robin Todd Executive Director, T-TEL June 2022

### Year Four

Writing the weekly PD sessions: Guidance for the Subject Writing Leads (SWL).

- It is critical that what SWL write provides direct subject and B.Ed. specific guidance, so SL/HoD can support and scaffold tutors learning and professional development. This requires direct reference to each course manual and explanations of any areas which may be challenging.
- The sessions need to provide the main PD opportunity for tutors to ensure they fully understand what they need to teach and have the opportunity to plan together to make sure the new B.Ed. courses are taught well.
- Developments since the manuals were written require SWL to add additional detail to PD sessions. Specifically, this means a focus on:
  - Integrating GESI to ensure the needs of females, males and students with special education needs are well catered for
  - $\circ~$  Integrating ICT and 21c skills to ensure students learn to use technology effectively to support their own and pupils' learning
  - National Teacher Education Assessment Policy (NTEAP)
    - the three assessment components *for the semester* for *each* course: subject project (30%), subject portfolio (30%) and end of semester examination (40%). These need to be introduced in session 1. PD writers will need to provide an example subject portfolio and project assessment components. if these are not written into the course manuals, see Appendix 1: Course Assessment Components.
    - integrating the use of continuous assessment designed to support student teacher learning in each PD session
    - In year four there are two assessment components associated with the STS Portfolio course: the Professional Portfolio, this is presented with evidence of the Student Teacher meeting the NTS and assessed at a post internship seminar (viva), and the Action Research Project. Tutors need to be prepared for assessing these components.
- The PD session template provides the frame for SWL to write the guidance for the Subject Leads (SL)/HoDs on how to lead and support the professional development of tutors in the weekly sessions
- Age level specialisms. To ensure appropriate subject and age level focus for the PD sessions:
  - $\circ$   $\;$  there will be a subject specialist writing for each subject  $\;$
  - where subjects are grouped direct reference needs to be made to examples of activities in the course manuals for each subject with explanations and guidance as required
  - where there are different age levels direct reference needs to be made to the course manuals for activities for each age level
- This is the student teachers' final year and involves planning for and teaching sequences of lessons next academic year across all required subjects with regard for: the basic school curriculum GESI responsiveness, cross-cutting and transferable skills, including ICT.
- PD sessions in all subjects will need to include preparation for this final push to beginning teaching
- SL/HoD need to have details of the resources needed for the activities

- Appendix 1: The PD writing checklist, for checking that the PD sessions address all required issues.
- Appendix 2: Course Assessment Components overview and example portfolio and projects

#### **Tutor PD Session**

## Age Level/s: JHS

**Course Title:** Physics - Properties of Matter and Electromagnetism. Chemistry - *Chemistry Around Us* **Lesson Title:** Measurement Errors and Dimensional Analysis Name of Subject/s: Physics and Chemistry

Tutor PD Session for Lesson 1 in the Course M	anual
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Focus: the bullet	Guidance notes on Leading	Guidance Notes on	Time in
points provide the	the session. What the	Tutor Activity during the	session
frame for what is to	SL/HoDs will have to say	PD Session. What PD	
be done in the	during each stage of the	Session participants	
session. The SWL	session	(Tutors) will do during	
should use the		each stage of the	
bullets to guide		session.	
what they write for			
the SL/HoD and			
tutors to do and say			
during each session.			
Each bullet needs			
to be addressed			
and specific			
reference should be			
made to the course			
manual/s.			
1a Introduction to	INTRODUCTION 1 (a)		20 mins
the semester – in	1.1. Discuss with tutors	1.1. Discuss the	
session one	the overview related to	overview related to	
Overview of	the JHS specialism from	the JHS specialism	
subject/s age	the course manual.	from the course	
level/s to be		manual.	
covered in the	E.g., The science		
PD sessions and	programme is designed to		
guidance on	transform the JHS teachers		
grouping tutors	into one imbued with the		
according to the	right knowledge,		
subject/s, age	technology, pedagogy,		
level/s.	innovation, content and the		
Introduction to	core values and attitudes to		
the course	promote inclusivity and		
manual/s	inspire active learning at		
Overview of	the JHS levels.		
course learning			
outcomes	Note: Inform tutors that this		
Introduction to	semesters' PD session would		
the two	cover two courses of the JHS		

		an a sialiana (Chanaistan R		
	continuous	specialism (Chemistry &		
	assessment	Physics) hence, grouping for		
	components to	the semester's PD sessions		
	be undertaken	will be done according to		
	in each subject	these two subject		
	during the	specialisms.		
	semester (See			
	Course	1.2. Ask tutors to sit	1.2. Sit according to	
	Assessment	according to their	your subject	
	Components	subject specialisms	specialisms.	
	Appendix NB in	NOTE:	NOTE:	
	subjects where	Courses to be covered	Courses to be covered	
	there are no		with their	
		with their corresponding		
	assessment	course titles during this	corresponding course	
	components in	semester's PD sessions	titles during this	
	the course	are:	semester's PD	
	manuals	> JHS (Physics):	sessions are:	
	examples will	Properties of Matter	JHS (Physics):	
	need to be	and Electromagnetism.	Properties of Matter	
	provided by the	JHS (Chemistry):	and	
	SWL for the	Chemistry Around Us	Electromagnetism.	
	SL/HoD.		JHS (Chemistry):	
1b			Chemistry Around Us	
Int	roduction to the			
ses	ssion	1.3. Ask tutors to read	1.3. Read the course	
$\triangleright$	Review prior	course descriptions,	descriptions, course	
	learning	course learning	learning outcomes	
$\triangleright$	Reading and	outcomes and their	and their	
	discussion of the	corresponding learning	corresponding	
	introductory	indicators from their	learning indicators	
	sections of the	respective course	from your respective	
	lesson up to and	manuals.	course manuals.	
	including			
	learning	NOTE: This would enable	NOTE: This would enable	
	outcomes and	tutors to familiarise	you to familiarise	
		themselves with the course		
~	indicators		yourselves with the	
	Overview of	learning outcomes and their	course learning	
	content and	corresponding learning	outcomes and their	
	identification of	indicators for the semester.	corresponding learning	
	any distinctive		indicators for the	
	aspects of the		semester.	
	lesson/s,			
NB	The guidance for	1.4. Discuss with tutors	1.4. Discuss the two	
SL/	HoD should	the two assessment	assessment	
ide	entify, address	components (Subject	components (Subject	
an	d provide	project and subject	project and subject	
	olanations for any	portfolio) for the	portfolio) for the	
~~r	stand to not any			

areas where tutors	semester.	semester.
might require		
clarification on an	NOTE:	NOTE:
aspect of the lesson.	(Subject Portfolio: Overall	(Subject Portfolio:
NB SL/HoD should	weighting of project = 30%	Overall weighting of
ask tutors to plan	Weighting of individual	project = 30%
for their teaching as	parts of portfolio out of 100.	Weighting of individual
they go through the PD session	Three (3) items of work	parts of portfolio out of
PD Session	produced during the semester selected by	100. <b>Three (3) items of work</b>
	student teachers with tutor	produced during the
	support during the semester	semester selected by
	as best examples of their	student teachers with
	progress and 200-word	tutor support during the
	reflection on the items i.e.	semester as best
	i. (a) Each of the three (3)	examples of their
	items selected by the	progress and 200-word
	student teacher is 30 %	reflection on the items
	(90%).	i.e.
	i. (b) Presentation and	i. (a) Each of the three (3)
	organization of portfolio	items selected by the
	10%.	student teacher is 30 %
		(90%).
		i. (b) Presentation and
		organization of portfolio
		10%.
	OR	OR
	ii. (a). Each of the two (2)	ii. (a). Each of the two (2)
	items selected by the	items selected by the
	student teacher is 30 %	student teacher is 30 %
	(60%).	(60%).
	ii(b)Mid semester	ii(b)Mid semester
	assessment 30%	assessment 30%
	ii. (c) Presentation and	ii. (c) Presentation and
	organization of portfolio	organization of portfolio
	10%.	10%.
	Subject Project: <b>Overall</b>	Subject Project: <b>Overall</b>
	weighting of project = 30%	weighting of project =
	Weighting of individual	30%
	parts of project out of	Weighting of individual
	100%	parts of project out of
	$\rightarrow$ Introduction – 10%	100%
	<ul> <li>Methodology – 20%</li> </ul>	> Introduction –
	<ul> <li>Substantive section</li> </ul>	10%
	- 40%	Methodology –
	Conclusion – 30%)	20%

	Substantive section – 40% Conslusion – 20%)
Suggested examples for subject <u>Project</u> <ul> <li>Lab reports</li> <li>Integrating indigenous knowledge into science teaching.</li> <li>Charts, graphs created</li> <li>Designs, TLMs, posters, worksheets</li> </ul>	Conclusion – 30%) Suggested examples for subject <u>Project</u> > Lab reports > Integrating indigenous knowledge into science teaching. > Charts, graphs created > Designs, TLMs, posters, worksheets
<u>Subject Portfolio</u> → STS Portfolio → Action Research reports	<u>Subject Portfolio</u> → STS Portfolio → Action Research reports.
Let tutors sing the song below as an ice breaker. (E.g., Paracetamol, aracetamol, racetamol, acetamol, cetamol).	
INTRODUCTION 1 (b) 1.5. Ask tutors in their subject groups to write two things they learnt in Year 3 semester 2 PD sessions.	<ul> <li>1.5. Write two things</li> <li>you learnt during</li> <li>Year 3 semester 2 PD</li> <li>sessions.</li> </ul>
1.5.1. Ask tutors to explain how they applied what they have written in their varied lessons.	1.5.1. Explain how you applied what you have written in your varied lessons.
<ol> <li>Guide tutors to discuss lessons on Basic Chemistry II and come out with challenges they faced and how they</li> </ol>	<ul> <li>1.6. Discuss lessons on Basic Chemistry II and come out with challenges you faced and how you</li> </ul>

1	
overcame them from	overcame them
the previous semester	from the previous
lessons.	semester lessons.
1.7. Ask tutors to read	1.7. Read and discuss the
and discuss the	introduction sections of
introduction sections of	the lesson up to learning
the lesson up to	indicators from your
learning indicators from	course manuals.
their course manuals.	
Note: Some of the learning	Note: Some of the
outcomes with their	learning outcomes and
corresponding indicators,	their corresponding
topics and course	indicators for Physics and
descriptions for Physics and	Chemistry are:
Chemistry are:	
Chemistry:	<u>Chemistry:</u>
L.O Demonstrate the ability	<u>L.O</u>
Demonstrate the ability	Demonstrate the ability
to transfer knowledge	to transfer knowledge
and skills from one	and skills from one lesson
lesson onto developing	onto developing new
new concepts (NTS 2e &	concepts (NTS 2e & 2f,
2f, p.13.	p.13.
<u>LI</u>	
Present a checklist on	Present a checklist on
new expectations based	new expectations based
on the links between	on the links between
Basic chemistry II and	Basic chemistry II and
chemistry around us.	chemistry around us.
Dhusian	0/
Physics:	Physics:
<u>LO</u>	<u>LO</u>
Demonstrate knowledge	Demonstrate knowledge
and understanding in	and understanding in the
the various errors	various errors involved in
involved in scientific	scientific measurement
measurement and apply	and apply dimensional
dimensional analysis in	analysis in determining
determining relations	relations among physical
among physical	quantities. (NTS 1a, 2a,
quantities. (NTS 1a, 2a,	Pg. 18 &20)
Pg. 18 &20)	

Show exercises in student	Show exercises in student
teachers' workbook on	teachers' workbook on
errors and limitations of	errors and limitations of
scientific measurement, and	scientific measurement,
the relation of derived	and the relation of
quantity to its basic	derived quantity to its
quantity.	basic quantity.
1.8. Guide tutors to	1.8. Explain how the
explain how the course	course learning
learning outcomes and	outcomes and their
their corresponding	corresponding
indicators are related to	indicators are related
student teachers'	to student teachers'
relevant previous	relevant previous
knowledge.	knowledge.
Kitowicuge.	kilowicuge.
The topics and lesson	
descriptions for lesson 1 at	
the various course levels	
JHS (Physics) Topic:	
Measurement Errors and	
Dimensional Analysis.	
Lesson Description - The	
lesson will get student	
teachers to define and	
calculate absolute and	
relative errors of measured	
value, also help student	
teachers to appreciate	
dimensional analysis by	
determining relations	
among physical quantities	
and how they are used in	
our daily lives.	
JHS (Chemistry) Topic:	
Recap of the course	
Introduction to Basic	
Chemistry II and	
Introduction to Chemistry	
Around Us Manual	
Lesson Description - The	
lesson is designed to embed	
concepts in chemistry that	
are often used on a daily	

	basis in the environment.	
	1.9. Ask tutors to identify and discuss the distinctive features of lesson 1 for the two courses from the course manuals.	<ul> <li>1.9. Identify and discuss the distinctive features of lesson 1 for the two courses from the course manuals.</li> </ul>
	<ul> <li>JHS (Physics):</li> <li>Measurement, errors, accuracy and precision</li> <li>Limitations, significant figures, prefixes, rules of using the metric system and Scientific notations</li> <li>Dimensional analysis</li> </ul>	
As this course is	1.10. Discuss with tutors	1.10. Discuss the need
dealing with	the need to develop	to develop
supporting and/or	professional teaching	professional teaching
assessing the	portfolio.	portfolio in your
Professional	Some Examples are:	respective groups.
Teaching Portfolio	For promotion	
Development	It is a characteristic	
and/or Classroom	of professional	
Enquiry and Action	teacher	
Research Project,	It serves as records	
Report writing,	and a reference	
Tutors should be	material of one's	
provided with	professional work	
guidance on what	over time.	
to do including		
organisation of Post	1.10.1. Ask tutors to list the	1.10.1. List the artefacts
Internship Seminar.	artefacts of a professional teaching portfolio and show	of a professional
	how they will help student	teaching portfolio and show how
	teachers to develop their	you will help
	own professional teaching	student teachers
	portfolio in their respective	to develop their
	basic schools when posted.	own professional
	(Refer to Y3S2 STS	teaching portfolio
	Handbook Pg. 114-118).	in their respective
		basic schools
	Some artefacts found in a	when posted.

	and for the state of the state		]
	professional teaching	(Refer to Y3S2 STS	
	portfolio are;	Handbook Pg.	
	Curriculum Vitae (CV)	114-118).	
	Teaching philosophy		
	Sample lesson plans		
	Sample scheme of		
	learning		
	Teaching and learning		
	resources with		
	annotated descriptions.		
	> Reflections on lessons.		
	1.11. Ask tutors to	1.11. Explain how they	
	explain how they will	will assist the initial	
	assist the initial teachers	teachers to complete	
	to complete their	their classroom	
	classroom enquiry	enquiry report. Refer	
	report. Refer to Y3 STS	to Y3 STS Pg. 91-100.	
	Pg. 91-100.		
	1.12. Ask tutors to explain	1.12. Explain how you	
	how they would assist	would assist initial	
	initial teachers to	teachers to discuss	
	discuss some	some professional	
	professional practices of	practices of their	
	their mentors and co-	mentors and co-	
	mentees. (Refer to NTS	mentees. (Refer to	
	3a-3p. Pg.14).	NTS 3a-3p, pg. 14).	
For each session	1.13. Ask tutors to	1.13. Identify the cross-	
remember this is	identify the cross-	cutting issues in the	
the final semester		course manual and	
•	cutting issues in the course manuals and		
before Students		explain how you can help the initial teachers to	
start teaching	explain how they can		
provide prompts to	help the initial teachers	implement them in the	
help support this	to implement them in	basic school classroom	
transition for	the basic school	after posting.	
planning and give	classroom after posting.		
regard for GESI, CCI,	Examples of erece within a		
ICT etc	Examples of cross-cutting		
	issues are;		
	The use of ICT		
	Equity		
	Inclusivity		
	Gender issues		

2 Concept	2.1. Ask tutors to list	2.1. List and discuss the	15 mins
-			12 111112
Development (New	and discuss the major	major concepts in lesson	
learning likely to	concepts in lesson 1.	1.	
arise in lesson/s):	E.g.		
Identification	JHS: (PHYSICS)		
and discussion	The concept of		
of new learning,	measurement		
potential	Concept the degree of		
barriers to	errors		
learning for	Define the accepted		
student teachers	value of a		
or students, new	measurement		
concepts or	Define relative		
pedagogy being	measurement error		
introduced in	Calculate relative		
the lesson,	measurement error		
which need to	values		
be explored with			
the SL/HoD	2.2 Ask tutors to discuss the	2.2. Discuss the potential	
NB The guidance for	potential	misconceptions and	
SL/HoD should set	misconceptions and	barriers with respect to	
out what they need	barriers with respect to	the concepts listed.	
to do to introduce	the concepts listed.		
and explain the	NB: Misconceptions related		
issues/s with tutors	to the concepts are:		
	JHS (Physics)		
	(i). Students believing that all rulers are 30 cm long.		
	Solution:		
	A standard ruler is 1meter		
	long. There are other meter		
	rules that are more than		
	30cm.		
	Sociii.		
	(ii). Confusing the formula		
	for calculating "area" with		
	the formula for calculating		
	the perimeter of		
	objects/plane figures.		
	Solution:		
	Area is the measurement of		
	the surface of an object,		
	whereas, perimeter is the		
	close path that		
	encompasses/surround the		
	object/plane figure.		
	E.g., The formula		
L			

	<ul> <li>calculating the area of a rectangle is L * B. However, the formula for calculating a perimeter is adding all the sides.</li> <li>2.3. Ask tutors to identify the most appropriate teaching strategies that can be employed to best deliver the new concepts in both CoE and basic school classroom to achieve the LOs and the LIs of the lesson.</li> <li>E.g. (i) Demonstration / practical on how meter rule is used to take accurate measurement. (ii) Video/ multimedia simulation on a typical measurement skill that is GESI responsive.</li> </ul>	2.3. Identify the most appropriate teaching strategies that can be employed to best deliver the new concepts in both CoE and basic school classroom to achieve the LOs and the LIs of the lesson.	
3.Planning for	( <i>iii</i> ). Group presentation 3.1. Guide tutors to read	3.1. Read and discuss the	1.13.1.1.
teaching, learning	and discuss the teaching	teaching and learning	n 1.13.1.1
and assessment	and learning activities in	activities in the course	S
activities for the lesson/s	the course manuals for the two course levels.	manuals for the two course levels.	
<ul> <li>Reading and</li> </ul>	Note: Tutors should go	Note: Tutors should go	
discussion of the teaching and learning activities	through the activities one after the other taking into consideration the time available,	through the activities one after the other taking into consideration the	
<ul> <li>Noting, addressing, and explaining areas where tutors may</li> </ul>	resources and nature of learners, coherency and methodology.	time available, resources and nature of learners, coherency and methodology.	
require clarification Noting opportunities for making	3.1.1. Assist tutors to identify and discuss areas that need clarification.	3.1.1. Identify and discuss areas that need clarification.	

	explicit links to	3.2. Lead tutors to discuss	3.2. Discuss how the	
	the Basic School	how the different activities	different activities would	
	Curriculum	would be carried out in	be carried out in both	
$\triangleright$	Noting	both CoE and basic school	CoE and basic school	
-	opportunities	classroom to achieve the	classroom to achieve the	
	for integrating:	LOs and the LIs of lesson	LOs and the LIs of lesson	
	GESI	1 from their course manuals.		
			1from your course	
	responsiveness		manuals.	
	and ICT and 21 <sup>st</sup>			
~	C skills	<i>Note:</i> Ensure that the	<i>Note:</i> Ensure that the	
	Reading,	language used in instructing	language used in	
	discussion, and	learners to carry out the	instructing learners to	
	identification of	varied activities is gender	carry out the varied	
	continuous	responsive.	activities is gender	
	assessment	E, g. Do not use harsh,	responsive.	
	opportunities in	threatening language or	E, g. Do not use harsh,	
	the lesson. Each	actions that instil fear in	threatening language or	
	lesson should	both females and males.	actions that instil fear in	
	include at least		both females and males.	
	two			
	opportunities	3.3. Ask tutors to	3.3. Discuss how GESI	
	to use	discuss how GESI issues	issues related to the	
	continuous	related to the teaching	teaching and learning	
	assessment to	and learning activities of	activities of the lesson	
	support student	the lesson would be	would be addressed.	
	teacher	addressed.		
	learning			
	Resources:	E g. (i). Pay attention to	E g. (i). Pay attention to	
0	links to the	slow learner.	slow learner.	
	existing PD	(ii). Assign leadership roles	(ii). Assign leadership	
	Themes, for	to females and males	roles to females and	
	example, action	equally.	males equally.	
	research,			
	questioning and	3.4. Guide tutors to	3.4. Explain how you	
	to other	explain how they would	would assist the	
	external	assist the student	student teachers to	
	reference	teachers to	demonstrate the 21 <sup>st</sup>	
	material:	demonstrate the 21 <sup>st</sup>	century skill in the	
	literature, on	century skill in the basic	basic school	
	web, Youtube,	school classroom.	classroom.	
	physical	E.g. (1) Digital Literacy		
	resources,	e.g. The use of power-		
	power point;	point to prepare and		
	how they	present lessons.		
	should be used.	(2) Development of		
	Consideration	leadership, collaborative		
	needs to be	and communicative		

			Г	
0	given to local availability guidance on	skills through group works and presentations.		
Ŭ	any power	presentations.		
	point	3.5. Ask tutors to read	3.5. Read the assessment	
	presentations,	the assessment	activities in the various	
	TLM or other	activities in the various	course manuals and	
	resources	course manuals and	identify areas that	
	which need to	identify areas that	require clarification.	
	be developed	require clarification.		
	to support			
	learning	Note: (i) Assist your		
$\succ$	Tutors should	colleagues to review the		
	be expected to	assessment in the course		
	have a plan for	manual to be in line with		
	the next lesson	the NTEAP.		
	for student	(ii) Inform tutors to ask		
	teachers	student teachers to prepare		
		power point presentations		
		on physical quantities.		
		These could be added to		
		their subject portfolio.		
		(iii). Inform tutors to ask		
		student teachers to prepare		
		a LESSON PLAN on the		
		topic/sub-strand		
		"Measurement". Integrate		
		two cross cutting issues and		
		two 21 <sup>st</sup> century skills.		
		This could be one of their		
		subject projects for the		
		semester.		
		3.6. Lead tutors to identify	3.6. Identify the	
		the needed inclusive	inclusive resources	
		resources for teaching and	needed for teaching	
		learning of the concepts in	and learning of the	
		both CoE and basic school	concepts in both CoE	
		classrooms.	and basic school	
			classrooms.	
		E.g., Games-Bingo, Audio-	E.g., Games-Bingo,	
		visuals from YouTube in	Audio-visuals from	
		relation to teaching	YouTube in relation to	
		measurement, samples of	teaching measurement,	
		individual tutor learning	samples of individual	
		plans.	tutor learning plans.	

A Fuchaetien and	Note: (i). Make sure the resources are enough and appropriate to all learners (males, females and persons with SEN). (ii). Let everybody have a concrete plan for teaching the given topics, thus, the activities agreed on by the group to be followed.	Note: Make sure the resources are enough and appropriate to all learners (males, females and persons with SEN)	15 mins
4. Evaluation and review of session: a. Tutors need to identify critical friends to observe lessons and report at next session b. Identifying and addressing any outstanding issues relating to the lesson/s for clarification	<ul> <li>4.1. Ask tutors to identify a critical friend who took part in the PD session to sit in their class during lesson to provide feedback and report on observations made in the next PD session.</li> <li>4.2. Discuss with tutors anything relating to Lesson 1 that needs clarification.</li> <li>Note: In the case of unresolved issues consult the subject writing leads.</li> </ul>	<ul> <li>4.1. Identify a critical friend who took part in the PD session to sit in your class during lesson to provide feedback and report on observations made in the next PD session.</li> <li>4.2. Discuss anything relating to Lesson 1 that needs clarification.</li> </ul>	15 mins
	4.3. Encourage tutors to read lesson 2 from the PD manual and find relevant materials for the next session.	4.3. Read lesson 2 from the PD manual and find relevant materials for the next session.	

### **Tutor PD Session**

### Age Levels/s: JHS

Course Title/s: Physics- Properties of Matter and Electromagnetism Chemistry: Chemistry Around Us Lesson Title: Physics- Fluid at rest Chemistry: Chemical bonding in substances Name of Subject/s: Physics & Chemistry

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

Focus: the bullet points provide the frame for what is to be done in the session. The SWL should use the bullets to guide what they write for the SL/HoD and tutors to do and say during each session. Each bullet needs to be addressed and specific reference should be made to the course manual/s.	Guidance notes on Leading the session. What the SL/HoDs will have to say during each stage of the session	Guidance Notes on Tutor Activity during the PD Session. What PD Session participants (Tutors) will do during each stage of the session.	Time in session
1 Introduction to the session	Start the session with an ice breaker.		20 mins
<ul> <li>Review prior learning</li> <li>A critical friend to share findings for a short discussion and lessons learned</li> <li>Reading and discussion of the introductory sections of the lesson up to and including learning outcomes and indicators</li> <li>Overview of content and</li> </ul>	<ul> <li>1.1. Ask tutors in their subject groups to write one thing that didn't go on well in the reviewed lesson of the previous PD session on a post in card and tell how it affected the lesson.</li> <li>1.2. Ask tutors to invite their critical friends to share their observations and have a brief discussion on the suggestions provided by the critical friends.</li> </ul>	<ul> <li>1.1. Write one thing that didn't go on well in the reviewed lesson of the previous PD session and tell how it affected your lesson.</li> <li>1.2. Invite your critical friends to share their observations made during lesson delivery and discuss the suggestions provided.</li> </ul>	

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identification of	1.3. Ask tutors to read the	1.3. Read and discuss the	
any distinctive	introduction of their	introductory sections	
aspects of the	respective course	of the lesson up to	
lesson/s,	manuals and discuss the	course learning	
NB The guidance for	course learning	outcomes and	
SL/HoD should	outcomes (CLOs) and	indicators from your	
identify, address	course learning	course manuals.	
•	-	course manuals.	
and provide	indicators (CLIs) in		
explanations for any	groups as appropriate.		
areas where tutors			
might require	Note (1): The topics and	Note (1): The topics and	
clarification on an	lesson	lesson	
aspect of the	introduction/descriptions for	introduction/descriptions	
lesson. SL/HoD take	lesson 2 at the various	for lesson 2 at the	
feedback to gauge	course levels are:	various course levels are:	
understanding and	JHS (Physics) Topic: Fluid at	JHS (Physics) Topic: Fluid	
support tutor	rest.	at rest.	
engagement.	Lesson Description - In this	Lesson Description - In	
NB SL/HoD should	lesson, Tutor discusses fluid	this lesson, Tutor	
ask tutors to plan	at rest with student	discusses fluid at rest	
for their teaching as	teachers. Thus, student	with student teachers.	
they go through the	teachers will be introduced	Thus, student teachers	
PD session	to measurements and	will be introduced to	
PD 36331011			
	calculations of density and	measurements and	
	relative density. Definition	calculations of density	
	and calculation of pressure	and relative density.	
	will also be introduced to	Definition and	
	student teachers.	calculation of pressure	
		will also be introduced to	
		student teachers.	
	JHS (Chemistry) Topic:	JHS (Chemistry) Topic:	
	Chemical bonding in	Chemical bonding in	
	substances	substances	
	Lesson Description - The	Lesson Description - The	
	lesson is designed to make	lesson is designed to	
	student teachers reflect	make student teachers	
	substances in the home and	reflect substances in the	
	environment and how they	home and environment	
	are formed (bonding) as well	and how they are formed	
	explain their characteristics	(bonding) as well explain	
	using the knowledge of how	their characteristics	
	they are formed.	using the knowledge of	
	, ,	how they are formed.	
	E.g., 2. Physics CLO:	E.g., 2. Physics CLO:	
	Demonstrate adequate	Demonstrate adequate	

knowledge of physics	knowledge of physics
principles in fluids at rest,	principles in fluids at rest,
basic fluid properties and	basic fluid properties and
the physical laws that govern fluid behaviour. (NTS	the physical laws that govern fluid behaviour.
2a, Pg. 20)	(NTS 2a, Pg. 20)
Physics CLI:	Physics CLI:
Provide worked examples on	Provide worked examples
relation of mass, volume	on relation of mass,
and density (m = vρ) and friction in liquid properties	volume and density (m = vρ) and friction in liquid
of viscous substance.	properties of viscous
-,	substance.
1.3.1. Guide tutors to	1.3.1. Explain how the
explain how the course learning outcomes and their	course learning outcomes and their
corresponding indicators are	corresponding indicators
related to student teachers'	are related to student
relevant previous	teachers' relevant
knowledge.	previous knowledge.
NOTE: This should enable	
tutors to, for instance, tell	
the possible preconceptions	
student teachers have about the various learning	
indicators.	
1.4.Ask tutors to identify	1.4. Identify and discuss
and discuss the distinctive features of	the distinctive features of lesson 2 for the two
lesson 2 for the two	courses from the course
courses from the course	manuals.
manuals.	
NOTE	NOTE
Distinctive Features JHS	Distinctive Features JHS
(Physics):	(Physics):
Measurement of Density and Polative	Measurement of Density and
Density and Relative density	Density and Relative density
<ul> <li>Calculation of</li> </ul>	<ul> <li>Calculation of</li> </ul>
Density and relative	Density and
density	relative density
Definition and adjustion of	Definition and calculation of
calculation of	calculation of

	nressure	nressure
	pressure	pressure ➤ Fluid at rest
	Fluid at rest (Density,	
	Relative density and	(Density, Relative
	pressure)	density and
		pressure)
	Distinctive Features JHS	Distinctive Features JHS
	(Chemistry):	(Chemistry):
	Physical Properties	Physical
	of Compounds	Properties of
	Chemical properties	Compounds
	> Bonding	> Chemical
		properties
		<ul> <li>Bonding</li> </ul>
As this course is	1.5. Guide tutors to discuss	1.5. Discuss the activities
dealing with	the activities that the	that the student
-		
supporting and/ or	student teachers are	teachers are
assessing the	supposed to undertake with	supposed to
Professional	their mentors by the end of	undertake with their
Teaching Portfolio	the extending placement	mentors by the end
Development and/	during post internship	of the extending
or the Classroom	seminar.	placement during
<b>Enquiry and Action</b>		post internship
Research Project		seminar.
Report writing,	Some Examples are:	Some Examples are:
Tutors should to be	> Undertake an action	> Undertake an action
provided with	research project to	research project to
guidance on what	improve the learning	improve the learning
to do including	opportunities of an	opportunities of an
organisation of	agreed group of pupils	agreed group of
Post Internship	to promote greater	pupils to promote
Seminar.	inclusion.	
Seminal.		greater inclusion.
	Discuss key features of the set of the se	
	the school curriculum,	Discuss key features
	including issues of	of the school
	continuity and	curriculum, including
	progression both within	issues of continuity
	their specialism and	and progression
	across all the subjects	both within their
	they will teach. (Refer to	specialism and
	Y3 STS Handbook, Page	across all the
	7.)	subjects they will
		teach. (Refer to Y3
		STS Handbook, Page
		7.)

1.6. In their subject groups, ask tutors to brainstorm on the meaning of teaching philosophy and together come out with the most appropriate meaning. Suggested Meaning of Teaching Philosophy: Teaching philosophy is a self-reflective statement of your ideas and beliefs about Teaching and learning.	1.6. Brainstorm on the meaning of teaching philosophy and together come out with the most appropriate meaning.	
<ul> <li>1.7. Lead tutors to describe how they will review the general guidelines/steps for writing teaching philosophy statement. with student teachers.</li> <li>Note: General guidelines for writing Teaching Philosophy Statement:</li> <li>1.Make your Teaching Statement brief and well written.</li> <li>2. Use a narrative, first person approach</li> <li>3. Make it specific rather than abstract.</li> <li>4. Be discipline-specific.</li> <li>5. Avoid jargon and technical terms, as they can be off-putting to some readers.</li> <li>6. Be sincere and unique.</li> <li>7. Be humble</li> <li>8. Revise</li> </ul>	1.7. Describe how you will review the general guidelines/steps for writing a teaching philosophy statement with student teachers.	
1.8. Ask tutors to write down their own example of teaching philosophy and share with the whole group.	<ol> <li>1.8. Write down your own example of a teaching philosophy statement and share it with the le group.</li> </ol>	

		[	
	Suggested Example of a		
	teaching philosophy:		
	I hoped to convey the sheer		
	joy of learning, the thrill of		
	understanding things about		
	the universe. I wanted to		
	pass on to students not only		
	the logic but the beauty of		
	science. Furthermore, I		
	wanted to do this in a way		
	that will be equally helpful		
	to kids studying science for		
	the first time.		
For each session	1.9. Ask tutors to identify	1.9. Identify the features	
remember this is	the features of GESI	•	
		of GESI responsive	
the final semester	responsive classroom	classroom set-up and	
before Students	set-up and explain how	explain how you can help	
begin teaching	they can help the initial	the initial teachers to	
provide prompts to	teachers to implement	implement them in the	
help support this	them in the basic school	basic school classroom	
transition for	classroom after posting.	after posting.	
planning and give			
regard for GESI,	Note:		
CCI, ICT etc.	To ensure GESI		
	responsiveness in the way a		
	classroom is set up, the		
	following needs to be		
	considered:		
	A classroom setup that		
	mixes girls and boys and		
	also considers		
	disabilities.		
	<ul> <li>Classroom setup that</li> </ul>		
	enhances the		
	participation of all		
	students		
	Arrangement of the		
	desks that allow		
	students with disabilities		
	to be comfortable		
	> Appropriate shelf		
	heights in the libraries		
	and laboratories.		
	<ul> <li>Stools in laboratories</li> </ul>		
	that are appropriate in		
	size and shape thus		
	enabling effective		

	narticipation of both		
	participation of both		
	girls and boys.		
	Fixtures and visual aids		
	on the walls that send		
	gender-responsive		
	messages		
	Appropriate size, shape		
	and weight of desks and		
	chairs.		
2 Concept	2.1. Ask tutors to list and	2.1. List and discuss the	15 mins
Development (New	discuss the major	major concepts in a	
learning likely to	concepts in lesson 2.	lesson	
arise in lesson/s):	E.g.		
Identification	JHS: (Physics)		
and discussion	<ul> <li>Measurement of Density</li> </ul>		
of new learning,	and Relative density.		
potential	<ul> <li>Calculation of Density</li> </ul>		
barriers to	and relative density.		
learning for	<ul> <li>Definition and</li> </ul>		
student	-,		
	calculation of pressure.		
teachers or	Teaching of fluid at rest		
students, new	(density, relative density		
concepts or	and pressure).		
pedagogy being			
introduced in	2.2. Ask tutors to discuss	2.2. Discuss the potential	
the lesson,	the potential	misconceptions and	
which need to	misconceptions and	barriers concerning the	
be explored	barriers concerning the	concepts listed.	
with the SL/HoD	concepts listed.		
NB The guidance for	NB: Misconceptions related		
SL/HoD should set	to the concepts are:		
out what they need	JHS (Physics)		
to do to introduce	(i). The weight of an object		
and explain the	determines if it will sink or		
issues/s with tutors,	float. Solution:		
they should take	Any object will either float		
feedback to gauge	or sink in water depending		
understanding and	on its <b>density</b> (how much a		
support tutor	certain volume of it weighs).		
engagement.	If it's denser than water, it		
	will usually sink; if it's less		
	dense, it will float. It doesn't		
	matter how big or small the		
	object is: a gold ring will sink		
	in water, while a piece of		
	plastic as big as a football		
	field will float.		

		1
(ii). An object, such as a		
boat, floats because water is		
pushing up on it.		
Solution:		
The air that is inside a ship is		
much less dense than water.		
That's what keeps it		
-		
floating. As a ship is set in		
water, it pushes down and		
displaces an amount of		
water equal to its weight.		
2.3. Ask tutors to	2.3. Identify the most	
identify the most	appropriate teaching	
appropriate teaching	strategies that can be	
strategies that can be	employed to best deliver	
employed to best deliver	the new concepts in both	
the new concepts in	CoE and basic school	
both CoE and basic	classrooms to achieve	
school classrooms to	the LOs and the LIs of the	
achieve the LOs and the	lesson.	
LIs of the lesson.		
	E.g. (i) Demonstration /	
E.g. (i) Demonstration /	practical activity that is	
practical activity that is	GESI responsive on how	
GESI responsive on how	an object floats in water	
an object floats in water	(Tutor guides student	
(Tutor guides student	teachers to do hands-	
teachers to do hands-	on/ practical activities,	
on/ practical activities,	discuss and calculate the	
discuss and calculate	density (m = $vp$ )and	
density (m = vp)and	relative density in an	
	-	
relative density in an	inclusive, multi-grade,	
inclusive, multi-grade,	and developmentally	
and developmentally	appropriate	
appropriate classrooms.)	classrooms.)	
(ii) Video/ multimedia	(ii) Video/ multimedia	
simulation on the	simulation on the	
concept of density and	concept of density and	
how objects float.	how objects float.	
(iii). Group presentation	(iii). Group presentation	
For <b>videos</b> on float and sink	For <b>videos</b> on float and	
go to:	sink go to:	
https://www.youtube.com/	https://www.youtube.co	
user/learningjunction	m/	
	•	
https://www.youtube.com/	user/learning junction	
watch?v=Oe6bDTL3YQg	https://www.youtube.co	

	https://www.youtube.com/	m/	
	watch?v=kE8I_M2pyg8	watch?v=Oe6bDTL3YQg	
		https://www.youtube.co	
		m/	
		watch?v=kE8I_M2pyg8	
3.Planning for	3.1. Ask tutors to read and	3.1. Read and discuss the	40 mins
teaching, learning	discuss the teaching and	teaching and learning	40 111113
and assessment	learning activities in the	activities in the course	
activities for the	course manuals for the two	manuals for the two	
lesson/s	course levels.	course levels.	
Reading and	Note: Tutors should go	Note: Go through the	
discussion of the	_	-	
	through the activities	activities one after	
teaching and	one after the other	the other taking into	
learning	taking into consideration	consideration the	
activities	the time available,	time available,	
Noting,	teaching and learning	resources and nature	
addressing, and	resources, characteristics	of learners, coherency	
explaining areas	of learners, coherency	and methodology.	
where tutors	and methodology.		
may require			
clarification	3.1.1. Assist tutors to	3.1.1. Identify and	
Noting	identify and discuss areas	discuss areas that	
opportunities	that need clarification.	need clarification.	
for making			
<i>explicit links</i> to	3.2. Lead tutors to discuss	3.2. Discuss how the	
the Basic School	how the varied activities	varied activities would	
Curriculum	would be carried out in both	be carried out in both	
Noting	CoE and basic school	CoE and basic school	
opportunities	classroom to achieve the	classroom to achieve the	
for integrating:	LOs and the LIs of lesson 2	LOs and the LIs of lesson	
GESI	from their course manuals.	2 from your course manuals.	
responsiveness and ICT and 21 <sup>st</sup>	<b>Note:</b> Ensure that the	<b>Note:</b> Ensure that the	
C skills			
	language used in instructing	language used in instructing learners to	
Reading,	learners to carry out the	carry out the varied	
discussion, and identification of	varied activities is gender	-	
continuous	responsive.	activities is gender	
	E.a. 1: Instand of "Whon	responsive.	
assessment	E.g., 1: Instead of "When	E. g.,1: Instead of "When	
opportunities in the lesson. Each	everyone contributes <u>his</u>	everyone contributes <u>his</u>	
lesson should	ideas, the discussion will be a success".	ideas, the discussion will be a success".	
include at least			
	It may read: "When	It may read: "When	
two	everyone contributes <u>his or</u>	everyone contributes <u>his</u>	
opportunities to	<u>her</u> ideas, the discussion will	<u>or her</u> ideas, the discussion will be a	
use continuous	be a success".		
assessment to		success".	

support student	2. Do not use harsh,	2. Do not use harsh,	
teacher	threatening language or	threatening language or	
learning, subject	actions that instil fear in	actions that instil fear in	
specific	both females and males.	both females and males.	
examples should			
be provided for		3.3. Discuss how GESI	
SL/HoD	3.3. Ask tutors to discuss	issues related to the	
Resources: links	how GESI issues related to	teaching and learning	
to the existing	the teaching and learning	activities of the lesson	
PD Themes, for	activities of the lesson	would be addressed.	
example, action	would be addressed.		
research,			
questioning and	E g. (i). Prepare and use TLRs	E g. (i). Prepare and use	
to other	that attract the attention	TLRs that attract the	
external		attention and interest	
	and interest of both		
reference	female and male	of both female and	
material:	students, such as a short	male students, such	
literature, on	video on science	as short video on	
web, Utube,	concepts to be learned.	science concept to be	
physical	(ii). Attract the interest of	learned.	
resources,	both female and male	(ii). Attract the interest of	
power point;	Students and motivate	both female and male	
how they should	them.	Students and motivate	
be used.		them.	
Consideration			
needs to be	3.4. Guide tutors to explain	3.4. Explain how you	
given to local	how they would assist the	would assist the	
availability	student teachers to	student teachers to	
Tutors should	demonstrate the 21 <sup>st</sup> skill in	demonstrate the 21 <sup>st</sup>	
be expected to	the basic school classroom.	century skill in the	
have a plan for	E.g. (1) Digital Literacy	basic school	
the next lesson		classroom.	
	e.g. The use of power-	classi oom.	
for student	point to prepare and		
teachers	present lessons.		
	(2) Development of		
	digital literacy,		
	collaborative and		
	communicative skills		
	through group works		
	and presentations.		
	3.5. Ask tutors to read the	3.5. Read the assessment	
	assessment activities in the	activities in the various	
	various course manuals and	course manuals and	
	identify areas that require	identify areas that	
	clarification.	require clarification.	

r			
	Note: (i) Assist your		
	colleagues to review the		
	assessment in the course		
	manual to be in line with the		
	NTEAP.		
	(ii) Independent study: Tutor		
	quides student teachers to		
	do exercises in their		
	workbooks individually on		
	definition and calculation of		
	pressure.		
	These could be added to		
	their subject portfolio.		
	(m)		
	(iii). Inform tutors to ask		
	student teachers to prepare		
	a LESSON PLAN on the		
	topic/sub-strand		
	"Density and relative		
	density". Integrate two		
	cross-cutting issues and two		
	21 <sup>st</sup> century skills.		
	This could be one of their		
	-		
	subject projects for the		
	semester.		
	2.6. Lood tutors to identify	2.6. Identify the inclusive	
	3.6. Lead tutors to identify	3.6. Identify the inclusive	
	the needed inclusive	resources needed for	
	resources for teaching and	teaching and learning of	
	learning of the concepts in	the concepts in both CoE	
	both CoE and basic school	and basic school	
	classrooms.	classrooms.	
	E.g., Games-Going Fishing,	E.g., Games-Going	
	Audio-visuals from YouTube	Fishing, Audio-visuals	
	in relation to teaching	from YouTube in relation	
	density and relative density	to teaching density and	
	as well as calculations of	relative density as well as	
		,	
	pressure.	calculations of pressure.	
	Note:	Note:	
	(i). Make sure the resources	(i). Make sure the	
	are enough and appropriate	resources are enough	
	to all learners (females,	and appropriate to all	
	males, and persons with	learners (females, males	
	SEN).	and persons with SEN).	
	(ii). Let everybody have a	. ,	
	concrete plan for teaching		
	the given topics, thus, the		
1			

	activities agreed on by the		
	5 ,		
	group to be followed.		45 .
4. Evaluation and	4.1. Ask tutors to	4.1. Identify a critical	15 mins
review of session:	identify a critical friend	friend who took part	
Tutors should	who took part in this PD	in the PD session on	
Identifying	session to sit in their	lesson 2 to sit in your	
critical friends	class during the lesson	class during lesson to	
to observe	to provide feedback and	provide feedback and	
lessons and	report on observations	report on	
report at next	made in the next PD	observations made in	
session	session.	the next PD session.	
Identifying and			
addressing any	4.2. Discuss with tutors	4.2. Discuss anything	
outstanding	anything relating to	relating to Lesson 2 that	
issues relating	Lesson 2 that needs	needs clarification.	
to the lesson/s	clarification.		
for clarification	Note:		
	(i). In the case of unresolved		
	issues consult the subject		
	writing leads.		
	(ii). Encourage tutors to read		
	lesson 3 from both the		
	course manual and PD		
	manual and find relevant		
	materials for the next		
	-		
	session.		

#### **Tutor PD Session**

Name of Subject/s: Physics &

Chemistry

#### Age Levels/s: JHS

Course Title/s: Physics- Properties of Matter and Electromagnetism Chemistry: Chemistry Around Us Lesson Title: Physics- Electricity Chemistry: Hydrogen ion Concentration (pH) in Systems

Focus: the bullet Guidance notes on **Guidance Notes on Tutor** Time in session points provide the Leading the session. What Activity during the PD frame for what is to the SL/HoDs will have to Session. What PD Session be done in the say during each stage of participants (Tutors) will session. The SWL the session do during each stage of should use the the session. bullets to guide what they write for the SL/HoD and tutors to do and say during each session. Each bullet needs to be addressed and specific reference should be made to the course manual/s. 1 Introduction to Start the session with an 20 mins the session ice breaker. Review prior learning 1.1. Ask tutors in their 1.1. Write two things > A critical friend distinct groups to you learned during the to share findings write two things they previous PD session on for a short learned during the a post in card and tell discussion and previous PD session on how it affected your lessons learned a post in card and tell lesson positively. Reading and how it affected their discussion of the lesson positively. introductory sections of the 1.2. Ask tutors to invite 1.2. Invite your critical lesson up to and their critical friends to friends to share their including share their observations made learning observations and have during lesson delivery outcomes and a brief discussion on and discuss the indicators the suggestions suggestions provided. Overview of provided by the critical content and friends.

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

identification of any distinctive aspects of the lesson/s, NB The guidance for SL/HoD should identify, address and provide explanations for any areas where	1.3. Ask tutors to read the introduction of their respective course manuals and discuss the course learning outcomes (CLOs) and course learning indicators (CLIs) in groups as appropriate.	1.3. Read and discuss the introductory sections of the lesson up to course learning outcomes and indicators from your course manuals.	
tutors might require clarification on an aspect of the lesson. SL/HoD take feedback to gauge understanding and support tutor engagement.	Note (1): The topics and lesson introduction/descriptions for lesson 2 at the various course levels are: JHS (Physics) Topic: Electricity	Note (1): The topics and lesson introduction/descriptions for lesson 2 at the various course levels are: JHS (Physics) Topic: Electricity	
NB SL/HoD should ask tutors to plan for their teaching as they go through the PD session	Lesson Description - In this lesson, Tutor discusses Electricity with student teachers. The following topics will be introduced to student teachers under Current Electricity; Electric circuits, Potential difference (v), Resistance (Ω) and Ohm's law.	Lesson Description - In this lesson, Tutor discusses Electricity with student teachers. The following topics will be introduced to student teachers under Current Electricity; Electric circuits, Potential difference (v), Resistance (Ω), and Ohm's law.	
	JHS (Chemistry) Topic: Hydrogen ion Concentration (pH) in Systems Lesson Description - The lesson is designed to further improve student teachers conceptual understanding of chemicals (Acids and Alkalis or bases) and to	JHS (Chemistry) Topic: Hydrogen ion Concentration (pH) in Systems Lesson Description - The lesson is designed to further improve student teachers' conceptual understanding of chemicals (Acids and Alkalis or bases) and to	
	guide student teachers to be able to present this in practical ways for the JHS learner. E.g., 2. Chemistry CLOs: ➤ Demonstrate	guide student teachers to be able to present this in practical ways for the JHS learner. E.g., 2. Chemistry CLOs: ➤ Demonstrate	

(Physics): ➤ Current Electricity	(Physics): Current Electricity
NOTE Distinctive Features JHS	NOTE Distinctive Features JHS
1.4, Ask tutors to identify and discuss the distinctive features of lesson 3 for the two courses from the course manuals.	1.4. Identify and discuss the distinctive features of lesson 3 for the two courses from the course manuals.
NOTE: This should enable tutors to, for instance, tell the possible preconceptions student teachers have about the various learning indicators.	
1.3.1. Guide tutors to explain how the course learning outcomes and their corresponding indicators are related to student teachers' relevant previous knowledge.	1.3.1. Explain how the course learning outcomes and their corresponding indicators are related to student teachers' relevant previous knowledge.
<ul> <li>Chemistry CLIs:</li> <li>Present concept maps on pH in systems in the home.</li> <li>Demonstrate how to explain the concepts to their peers.</li> </ul>	<ul> <li>Chemistry CLIs:</li> <li>Present concept maps on pH in systems in the home.</li> <li>Demonstrate how to explain the concepts to their peers.</li> </ul>
<ul> <li>2c, p.13)</li> <li>Demonstrate the ability to explain the concepts of pH to JHS learners.</li> </ul>	<ul> <li>2c, p.13)</li> <li>Demonstrate the ability to explain the concepts of pH to JHS learners.</li> </ul>
knowledge and skills in identifying pH in systems (NTS	knowledge and skills in identifying pH in systems (NTS

	(Electric circuits,	(Electric circuits,
	Potential difference	Potential difference
	(v), Resistance ( $\Omega$ ) and	(v), Resistance (Ω) and
	Ohm's law)	Ohm's law)
	Distinctive Features JHS	Distinctive Features JHS
	(Chemistry):	(Chemistry):
	<ul> <li>The concepts of pH</li> </ul>	<ul> <li>The concepts of pH</li> </ul>
	(Hydrogen ion	(Hydrogen ion
	concentration in	concentration in
	systems	systems
	Importance of pH in	Importance of pH in
	the food industry.	the food industry.
As this course is	1.5. Ask tutors to	1.5. List the thematic
dealing with	individually list the	areas which the classroom
supporting and/ or	thematic areas which the	inquiry and action
assessing the	classroom inquiry and	research write-up follow
Professional	action research write-up	and share with the whole
	follows and share with the	
Teaching Portfolio		group.
Development and/	whole group.	
or the Classroom		
Enquiry and Action	An Example:	
Research Project	Chapter One.	
Report writing,	Title: Introduction	
Tutors should to be	Sub-headings:	
provided with	Background to the	
guidance on what to	Study	
do including	<ul><li>Statement of the</li></ul>	
organisation of Post	Problem	
-		
Internship Seminar.	Purpose of the	
	Study/Objectives	
	of the Study	
	Research	
	Questions	
	Hypothesis (if any)	
	<ul> <li>Significance of the</li> </ul>	
	Study.	
	<ul> <li>Delimitation</li> </ul>	
	<ul><li>Limitation(s)</li></ul>	
	<ul> <li>Definition of Terms</li> </ul>	
	(if any)	
	Organisation of the	
	rest of the Study	
	1.5.1. Guide tutors to	1.5.1. Explain how you will
	explain how they will	review the scope of each
	review the scope of each	thematic area of a
	I CVIEW THE SCOPE OF EACH	

1		-
thematic area of a	classroom inquiry and	
classroom inquiry and	action research project	
action research project	report/write-up with	
report/write-up with	student teachers during	
student teachers during	the post-internship	
-	seminar.	
the post-internship	seminar.	
seminar.		
For Example:		
Chapter One.		
Title: Introduction		
Sub-headings		
<ul> <li>Background to the</li> </ul>		
_		
Study It brings		
forth the historical and		
contextual information		
surrounding the issue		
at hand.		
Statement of the		
ProblemThis section		
provides a brief		
description of an issue		
or issues under		
investigation in a		
selected area of study.		
Research Question		
Research questions		
arean answerable		
inquiry into a		
particular issue or		
concern. They are		
questions that the		
researcher seeks to		
find answers to after		
the study. etc.		
	1 C Discuss have a	
1.6. In their subject	1.6. Discuss how you	
groups, ask tutors to	would share the purposes	
discuss how they would	of the Teacher Licensure	
share the purposes of the	Examination with student	
Teacher Licensure	teachers during the post-	
Examination with student	internship seminar.	
teachers during the post-		
internship seminar.		
Note: The purpose of the		
teacher licensure		
examination is to ensure:		

	<ul> <li>That schools across Ghana have quality teachers;</li> <li>Standardisation of teaching across Ghana.</li> <li>Improvement in professionalism in school teaching.</li> <li>Preparation of teachers to be accepted globally.</li> </ul>		
	1.7. Lead tutors to identify the licensing process for Newly Qualified Teachers (NTQs) which would be shared with the student teachers during the post- internship seminar.	1.7. Identify the licensing process for Newly Qualified Teachers (NTQs) which you have to share with the student teachers during the post-internship seminar.	
	Note: The summary of licensing process for NQTs is: 1. NQTs acquire provisional licenses to be posted as national service personnel. 2. The NQTs must meet Continuous		
	<ul> <li>Professional</li> <li>Development (CPD)</li> <li>requirement. That is,</li> <li>they have to build CPD</li> <li>points and portfolio.</li> <li>3. Acquisition of full</li> <li>license. This can only</li> <li>be achieved through</li> <li>the assessment of the</li> <li>NQT's portfolio.</li> </ul>		
For each session remember this is the final semester before Students begin teaching provide prompts to	1.8. Ask tutors to identify decisions that needed to be made during GESI responsive lesson planning and explain how they can	1.8. Identify decisions that needed to be made during GESI responsive lesson planning and explain how you can help the initial teachers to implement	

help support this transition for planning and give regard for GESI, CCI, ICT etc.	help the initial teachers to implement them in the basic school classroom after posting.	them in the basic school classroom after posting.	
	Note: To ensure GESI responsiveness lesson planning, the following wide range of decisions needed to be made: > Choice of learning materials to use > Methodologies > Content > Learning activities > Language use > Classroom setup > Classroom interaction > Assessment of the learning/ learner > Fair knowledge of the background of learners to inform all the above.		
	<ul> <li>1.9. Ask tutors to discuss GESI responsive teaching methodologies and learning activities and how they would help the initial teachers to implement them in the basic school classroom after posting.</li> <li>Note:</li> <li>GESI Responsive Teaching Methodologies</li> <li>&gt; Select teaching methodologies that will ensure equal</li> </ul>	1.9. Discuss GESI responsive teaching methodologies and learning activities and how you would help the initial teachers to implement them in the basic school classroom after posting.	
	<ul> <li>participation of girls,</li> <li>boys, and students</li> <li>with special needs.</li> <li>➢ Ensure that dominant</li> <li>individuals do not</li> </ul>		

	sideline less assertive ones. ➤ Employ differentiated		
	••••••		
	Employ differentiated		1
	teaching approaches		
	suitable for all		
	learners.		
	Protect students with		
	disability from abuse		
	or bullying by other		
	students.		
	GESI Responsive Learning		
	Activities		
	<ul> <li>The lesson plan should</li> </ul>		
	make allowance for all		
	3		
	students to participate		
	in the learning activity.		
	-		
	-		
	students with disability		
	have a chance to use		
	the equipment and		
	chemicals.		
	There should also be		
	equal participation in		
	such activities as		
	makina presentations.		
	5 5		
	-		
	2		
	5		
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oncept	2.1. Ask tutors to list	2.1. List and explain the	15 mins
elopment (New	and explain the major	major concepts in lesson	
ning likely to	concepts in lesson 3.	3.	
e in lesson/s):	E.g.		
dentification	JHS: (Physics)		
and discussion of	Current Electricity		
new learning,	> Electric circuits,		
potential			
elopment (New ning likely to e in lesson/s): dentification and discussion of new learning,	<ul> <li>When doing science experiments, ensure that girls, boys, and students with disability have a chance to use the equipment and chemicals.</li> <li>There should also be equal participation in such activities as making presentations.</li> <li>When assigning projects, ensure that both females and males are given leadership positions and roles.</li> <li>Take into account how the learning materials will be distributed equally to both girls and boys, especially in case of shortage.</li> <li>Ask tutors to list and explain the major concepts in lesson 3.</li> <li>E.g.</li> <li>Current Electricity</li> <li>Electric circuits,</li> </ul>	major concepts in lesson	15 min

	[		
barriers to	(v),		
learning for	Resistance (Ω)and		
student teachers	<ul><li>Ohm's law)</li></ul>		
or students, new			
concepts or	JHS: (Chemistry)		
pedagogy being	Concepts of pH		
introduced in	(Hydrogen ion		
the lesson,	concentration in		
which need to			
	systems <ul> <li>Importance of the pH</li> </ul>		
be explored with	, , , ,		
the SL/HoD	in the food industry.		
NB The guidance for			
SL/HoD should set	2.2. Ask tutors to	2.2. Discuss the potential	
out what they need	discuss the potential	misconceptions and	
to do to introduce	misconceptions and	barriers concerning the	
and explain the	barriers with respect	concepts listed.	
issues/s with tutors,	to the concepts listed.		
they should take	NB: Misconceptions		
feedback to gauge	related to the concepts		
understanding and	are:		
support tutor	JHS (Physics)		
engagement.	(i). Some student teachers		
00.000	think that potential		
	difference is different from		
	voltage simply because of		
	the word potential.		
	Solution: 'potential		
	difference and voltage'		
	are synonymous. They		
	mean exactly the same		
	thing, and are also		
	measured in volts.		
	'Potential' and 'voltage',		
	on the other hand, are not		
	synonymous. Potential		
	exists at one point;		
	voltage, or potential		
	difference, exists		
	between two points.		
	(ii). Electricity does not		
	pass-through water		
	bodies.		
	Solution:		
	Electricity flows through		

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water because it contains ions of dissolved salts and metals. Distilled water, which does not contain impurities, does not conduct electricity.		
2.3. Ask tutors to identify the most appropriate teaching strategies that can be employed to best deliver the new concepts in both CoE and basic school classroom to achieve the LOs and the LIs of the lesson.	2.3. Identify the most appropriate teaching strategies that can be employed to best deliver the new concepts in both CoE and basic school classroom to achieve the LOs and the LIs of the lesson.	
E.g. (i) Simulations and multimedia, posters, projectors Demonstration / practical activity that is GESI responsive on how to complete an electric circuit. ii. Tutor Presents a checklist on some pH systems in the immediate school environment to student teachers and directs them, in mixed ability groups to walk around the school/college premises to identify and fill out the checklist for discussion later in the classroom. Student teachers, in their groups, return to the class, under		
the guidance of the Tutor discuss their findings and cross share ideas. (iii). Group presentation For videos on float and sink go to:		

https://sciencing.co. can-affected-change	-
levels6165622.html.	
https://www.youtub	e com
/	
watch?v=id1yK29TTc	сс,
https://www.youtub	e.com
/	
watch?v=d8f85k3Lw	wA,
https://www.youtub	е.
com/watch?v=9X5D	TFYgts
Q, https://www.yout	ube.
com/watch?v=v9-	
9MfJMtyg	

3.Planning for	3.1. Ask tutors to read and	3.1. Read and discuss the	40 mins
teaching, learning	discuss the	appropriateness of the	
and assessment	appropriateness of the	teaching and learning	
activities for the	teaching and learning	activities in the course	
lesson/s	activities in the course	manuals for the two	
Reading and	manuals for the two-	course levels.	
discussion of the	course levels.	Note: Tutors should go	
teaching and	Note: Tutors should go	through the activities	
learning	through the activities one	one after the other	
activities	after the other taking into	taking into	
Noting,	consideration the	consideration the	
addressing, and	coherency, methodology,	coherency,	
explaining areas	time available, teaching	methodology, time	
where tutors	and learning resources,	available, teaching and	
may require	and characteristics of	learning resources, and	
clarification	learners as well as GESI	characteristics of	
Noting	related issues. E.g.,	learners as well as GESI	
opportunities for	Consider how to arrange	related issues. E.g.,	
making explicit	the classroom and interact	Consider how to	
links to the Basic	with the students to	arrange the classroom	
School	promote equal	and interact with the	
Curriculum	participation of all	students to promote	
Noting	students.	equal participation of	
opportunities for	Plan in advance to ask	all students.	
integrating: GESI	substantive questions to	Plan in advance to ask	
responsiveness	all students. Etc.	substantive questions	
and ICT and 21 <sup>st</sup>		to all students. Etc.	
C skills		211 Identify and	
Reading, discussion, and	3.1.1. Assist tutors to	3.1.1. Identify and discuss areas that need	
identification of	identify and discuss areas that need	clarification.	
continuous	clarification.		
assessment	clarification.		
opportunities in	3.2. Lead tutors to discuss	3.2. Discuss how the	
the lesson. Each	how the varied activities	varied activities would be	
lesson should	would be carried out in	carried out in both CoE	
include at least	both CoE and basic school	and basic school	
two	classrooms to achieve the	classroom to achieve the	
opportunities to	LOs and the LIs of lesson 3	LOs and the LIs of lesson 3	
use continuous	from their course	from your course	
assessment to	manuals.	manuals.	
support student	<b>Note:</b> Ensure that the	<b>Note:</b> Ensure that the	
teacher learning,	language used in	language used in	
subject specific	instructing learners to	instructing learners to	
examples should	carry out the varied	carry out the varied	
be provided for	activities is gender-	activities is gender	
SL/HoD	responsive.	responsive.	
-,			

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Resources: links	E.g.,1: Instead of "When	E. g.1: Instead of "When	
to the existing	everyone contributes <u>his</u>	everyone contributes <u>his</u>	
PD Themes, for	ideas, the discussion will	ideas, the discussion will	
example, action	be a success".	be a success".	
research,	It may read: "When	It may read: "When	
questioning and	everyone contributes <u>his</u>	everyone contributes <u>his</u>	
to other external	<u>or her</u> ideas, the discussion	<u>or her</u> ideas, the	
reference	will be a success".	discussion will be a	
material:		success".	
literature, on			
web, Utube,	3. Do not use harsh,	2. Do not use harsh,	
physical	threatening language	threatening language or	
resources,	or actions that instill	actions that instil fear in	
power point;	fear in both females	both females and males.	
how they should	and males.		
be used.			
Consideration	3.3. Ask one tutor to	3.3. Model the teaching of	
needs to be	model the teaching of	the concept of	
given to local	the concept of	electricity.	
availability	electricity.	,	
Tutors should be	,		
expected to have	3.4. Ask tutors to discuss	3.4. Discuss how GESI	
a plan for the	how GESI issues related to	issues related to the	
next lesson for	the teaching and learning	teaching and learning	
student teachers	activities of the lesson	activities of the lesson	
	would be addressed.	would be addressed.	
	E g. (i). Prepare and use	E g. (i). Prepare and use	
	TLRs that attract the	TLRs that attract the	
	attention and interest	attention and interest	
	of both female and	of both female and	
	male students, such as	male students, such as	
	a short video on	short video on science	
	science concepts to be learned.	concept to be learned.	
	(ii). Attract the interest of	(ii) Attract the interact of	
		(ii). Attract the interest of both famale and male	
	both female and male	both female and male	
	students, motivate them	students, motivate them	
	and provide relevance to	and provide relevance to	
	the lesson learned.	the lesson learned.	
	2 E. Cuido tutoro to	2 E Evolain hawway	
	3.5. Guide tutors to	3.5. Explain how you	
	explain how they would	would assist the student	
	assist the student teachers	teachers to demonstrate	
	to demonstrate the 21st-	the 21 <sup>st</sup> century skill in the	
	century <sup>st</sup> century skill in	basic school classroom.	
	the basic school		
I	I	i l	I

classroom.		
E.g. (1) Student teachers		
to use Open Courseware,		
Open Learning Imitative,		
and Open Course Library		
, , ,		
to search for additional		
information. This will		
enable them to acquire		
digital literacy skills		
(2) Digital Literacy skills		
e.g. The use of power-		
point to prepare and		
present lessons.		
(3) Development of critical		
thinking and problem-		
solving skills, collaborative		
and communicative skills		
through group works and		
presentations.		
3.6. Ask tutors to read the	3.6. Read the assessment	
assessment activities in	activities in the various	
the various course	course manuals and	
manuals and identify areas	identify areas that require	
that require clarification.	clarification.	
Note: (i) Assist your		
colleagues to review the		
assessment in the course		
manual to be in line with		
the NTEAP.		
(ii) Independent study:		
Tutor guides student		
teachers to do exercises in		
their workbooks		
individually on how to		
draw a simple electrical		
circuit and how to do		
calculations involving the		
application of the concept		
on ohms law.		
These could be added to		
their subject portfolio.		
(iii). Inform tutors to ask		
		1
student teachers to		Į [
prepare a LESSON PLAN on		

	the topic/sub-strand "Electricity". Integrate two cross cutting issues and two 21 <sup>st</sup> century skills. <b>This could be one of their</b> <b>subject projects for the</b> <b>semester.</b>		
	3.7. Lead tutors to identify the needed inclusive resources for teaching and learning of the concepts in both CoE ad basic school classrooms. <i>E.g., COKO Games-</i> <i>https://www.cokogames.</i>	3.7. Identify the inclusive resources needed for teaching and learning of the concepts in both CoE and basic school classrooms. <i>E.g., E.g., COKO Games-</i> <i>https://www.cokogames.</i>	
	com/ohm-simulation- interactive-ohms-law), Audio-visuals from YouTube about teaching electricity and potential difference as well as calculations involving ohm's law concept.	com/ohm-simulation- interactive-ohms-law), Audio-visuals from YouTube in relation to teaching electricity and potential difference as well as calculations involving ohm's law concept.	
	Note: (i). Make sure the resources are enough and appropriate to all learners (females, males and persons with SEN). (ii). Let everybody have a concrete plan for teaching the given topics, thus, the activities agreed on by the group to be followed.	Note: (i). Make sure the resources are enough and appropriate to all learners (females, males and persons with SEN)	

4. Evaluation and	4.1. Engage tutors in	4.1. Provide feedback	15 mins
review of session:	providing feedback of	on this PD session	
	the PD session taking	taking into	
Tutors should	into consideration –	consideration – Clarity	
Identifying	Clarity of concepts,	of concepts,	
critical friends to	pedagogical	pedagogical	
observe lessons	approaches employed,	approaches employed,	
and report at	ICT integration, GESI,	ICT integration, GESI,	
next session	Twenty First Century	Twenty First Century	
Identifying and	Skills (NTS 1a, 3i,) and	Skills (NTS 1a, 3i,) and	
addressing any	make notes that will	make notes that will	
outstanding	help them to teach	help you to teach	
issues relating to	Lesson 3.	Lesson 3.	
the lesson/s for			
clarification	4.2. Ask tutors to	4.2. Identify a critical	
	identify a critical friend	friend who took part in	
	who took part in this	the PD session on	
	PD session to sit in	lesson 3 to sit in your	
	their class during	class during lesson to	
	lesson to provide	provide feedback and	
	feedback and report	report on observations	
	on observations made	made in the next PD	
	in the next PD session.	session.	
	4.3. Discuss with tutors	4.3. Discuss anything	
	anything relating to	relating to Lesson 3 that	
	Lesson 3 that needs	needs clarification.	
	clarification.		
	Note:		
	(i). In the case of		
	unresolved issues consult		
	the subject writing leads.		
	(ii). Encourage tutors to		
	read lesson 4 from both		
	the course manual and PD		
	manual and find relevant		
	materials for the next		
	session.		

#### **Tutor PD Session**

## Age Levels/s: Course Titles:

Physics - Properties of Matter and Electromagnetism. Chemistry - *Chemistry Around Us* Lesson Title: Chemistry- Hydrogen ion Concentration (pH) in Systems. Physics- Electricity. Name of Subject/s: Physics and Chemistry

Focus: the bullet	Guidance notes on	Guidance Notes on Tutor	Time in
points provide the	Leading the session. What	Activity during the PD	session
frame for what is to	the SL/HoDs will have to	Session. What PD Session	
be done in the	say during each stage of	participants (Tutors) will	
session. The SWL	the session	do during each stage of	
should use the		the session.	
bullets to guide what			
they write for the			
SL/HoD and tutors to			
do and say during			
each session. Each			
bullet needs to be			
addressed and			
specific reference			
should be made to			
the course manual/s.			
1 Introduction to the	Begin the PD session with		20 mins
session	an ice-breaker.		
Review prior			
learning	1.1. Ask tutors to	1.1, Discuss the successes	
A critical friend to	discuss the successes	and challenges of the PD	
share findings for	and challenges of the	session for lesson 3.	
a short discussion	PD session for lesson		
and lessons	3.		
learned			
Reading and	1.2. Ask critical friends	1.2. Share your	
discussion of the	who sat in different	observations with the	
introductory	lessons during the	larger group as critical	
sections of the	actual teaching of	friends who sat in	
lesson up to and	lesson 3 to share their	different lessons	
including learning	observations with the	during the actual	
outcomes and	larger group.	teaching of lesson 3.	
indicators			
Overview of	1.3. Ask tutors to read	1.3. Read the	
content and	the introduction,	introduction, lesson	

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

identification of any distinctive aspects of the lesson/s, NB The guidance for SL/HoD should identify, address and provide explanations for any areas where tutors might require clarification on an aspect of the lesson. SL/HoD take feedback to gauge understanding and support tutor engagement. NB SL/HoD should ask tutors to plan for their teaching as they go through the PD session

lesson description and the purpose of lesson 4 in the course manual and indicate how they are related to student teachers' relevant previous knowledge.

### Note

*Topics and brief lesson descriptions for lesson 4 are:* 

Physics - In this lesson, Tutor discusses Electricity with student teachers. The following topics will be introduced to student teachers under electricity; identification of cell (chargeable and nonchargeable) and electric power. In this lesson student teachers will overcome their misconceptions in *identification of cell* (chargeable and nonchargeable) and Electric power, and basically learn *how to teach these topics* to the basic school learner. **Chemistry-** The lesson is designed to further *improve student teachers* conceptual understanding of chemicals (Acids and Alkalis or bases) and to quide student teachers to be able to present this in practical ways for the JHS learner. The following topics will be introduced to student teachers: Concept of buffer, Buffers and their applications.

description and the purpose of lesson 4 in the course manual and indicate how they are related to student teachers' relevant previous knowledge.

## Note

Topics and brief lesson descriptions for lesson 4 are: Physics - In this lesson, Tutor discusses Electricity with student teachers. The following topics will *be introduced to student* teachers under electricity; identification of cell (chargeable and nonchargeable) and electric power. In this lesson student teachers will overcome their misconceptions in identification of cell (chargeable and nonchargeable) and Electric power, and basically learn how to teach these topics to the basic school learner. **Chemistry-** The lesson is designed to further improve student teachers conceptual understanding of chemicals (Acids and Alkalis or bases) and to quide student teachers to be able to present this in practical ways for the JHS learner. The following topics will be introduced to student

teachers: Concept of buffer, Buffers and their

**B.Ed in Initial Teacher Education - Science Year 4** 

	applications.
1.4. Ask tutors to read,	1.4. Read, identify and
identify and discuss	discuss the LOs and
the LOs and LIs of	Lls of lesson 4 in the
lesson 4 in the course	course manuals.
manuals.	
<u>Chemistry:</u>	<u>Chemistry:</u>
<u>L.O</u>	<u>L.O</u>
Demonstrate knowledge	Demonstrate knowledge
and skills in identifying	and skills in identifying
buffers in systems (NTS 2c,	buffers in systems (NTS
p.13) Demonstrate the	2c, p.13) Demonstrate
ability to explain the	the ability to explain the
concepts of pH to JHS	concepts of pH to JHS
learners.	learners.
	<u>U</u>
<u>Ll</u> Dreamann a cheolalist of	Prepare a checklist of
Prepare a checklist of	buffers.
buffers. Demonstrate an	Demonstrate an
understanding of buffers	understanding of buffers by explaining to peers.
by explaining to peers.	Physics:
<i>Physics:</i>	LO
LO	Draw simple electrical
Draw simple electrical	circuits, solve basic
circuits, solve basic	problems in electricity
problems in electricity and	and state the importance
state the importance of	of electricity and
electricity and magnetism.	magnetism. (NTS 1a &1b,
(NTS 1a &1b, 2a &2c, Pg.	2a &2c, Pg. 18 & 20).
18 & 20).	
1.5. Guide tutors to	1.5. Explain how the
explain how the	course learning
course learning	outcomes and their
outcomes and their	corresponding indicators are related
corresponding indicators are related	to student teachers'
to student teachers'	relevant previous
relevant previous	knowledge.
knowledge.	knowledge.
LI	LI
<u></u> Provide a chart showing	Provide a chart showing
the drawings of simple	the drawings of simple
electrical circuits, some	electrical circuits, some
basic solutions in	basic solutions in

	electricity, list the	electricity, list the
	importance of electricity	importance of electricity
	and magnetism and	and magnetism and
	gadgets that Hands-on	gadgets that Hands-on
	Practical activities on	Practical activities on
	identification of cells	identification of cells
	(chargeable and non-	(chargeable and non-
	chargeable) and	chargeable) and
	calculations in electric	calculations in electric
	power, and sharing ideas	power, and sharing ideas
	in class. Student teachers	in class. Student teachers
	use electromagnetic	use electromagnetic
	properties.	properties
	1.6. Ask tutors to	1.6. Identify and
	identify and explain	explain the distinctive
	the distinctive features	features of lesson 4
		for the two courses.
	of lesson 4 for the two	
	courses.	Note: Examples of
	Note: Examples of	distinctive features of
	distinctive features of	electricity are:
	electricity are:	Cells (chargeable and
	Cells (chargeable and	non-chargeable) and
	non-chargeable) and	calculations on
	calculations on electric	electric power.
	power.	Examples of
	•	distinctive features of
	Examples of	
	distinctive features of	Buffer are:
	Buffer are:	Buffers in biological
	Buffers in biological	system – food and blood,
	system – food and	pH, acids and bases.
	blood, pH, acids and	
	bases.	
As this course is	1.7. Ask tutors to	1.7. Describe how you
dealing with	describe how they will	will assist student
supporting and/ or	assist student teachers	teachers to discuss
assessing the	to discuss the effects	the effects of the
Professional	of the interventions of	interventions of their
	their Classroom	Classroom Enguiry
Teaching Portfolio		
Development and/	Enquiry and Action	and Action Research
or the Classroom	Research on learners.	on learners.
Enquiry and Action	Refer to STS Handbook	Refer to STS Handbook
Research Project	pg. 91-100.	pg. 91-100.
Report writing,		
Tutors should to be		
provided with		
guidance on what to		

do including			
organisation of Post			
Internship Seminar.			
For each session	1.8. Lead discussions	1.8. Discuss how you will	
remember this is the	on how to help the	help the student teachers	
	student teachers to	•	
final semester before		to integrate ICT tools and GESI issues in their	
Students begin	integrate ICT tools and		
teaching provide	GESI issues in their	lessons when posted.	
prompts to help	lessons when posted.	E.g., Using Microsoft	
support this	E.g., Using Microsoft	Excel and Word processor	
transition for	Excel and Word	to plan lessons and	
planning and give	processor to plan	design inclusive TLRs.	
regard for GESI, CCI,	lessons and design		
ICT etc.	inclusive TLRs.		45 1
2 Concept	2.1. Ask tutors to use think	2.1. Use thinks pair share	15 mins
Development (New	pair share to identify and	to identify and explain	
learning likely to	explain the main concepts	the main concepts of	
arise in lesson/s) :	of Lesson 4 from the	Lesson 4 from the course	
Identification and	course manuals.	manuals.	
discussion of new	Examples of main	Examples of main	
learning,	concept/ new learning of	concept/ new learning of	
potential barriers	lesson 4 are:	lesson 4 are:	
to learning for	<b>Physics</b> -Drawing of simple	Physics-Drawing of	
student teachers	electrical circuits, the skill	simple electrical circuits,	
or students, new	of solving basic problems	the skill of solving basic	
concepts or	in electricity.	problems in electricity.	
pedagogy being	<b>Chemistry</b> -buffers in	<b>Chemistry</b> -buffers in	
introduced in the	biological system	biological system	
lesson, which			
need to be	2.2 Ask tutors to identify	2.2. Identify and discuss	
explored with the	and discuss any GESI	any GESI issues related to	
SL/HoD	issues related to the new	the new concepts of	
NB The guidance for	concepts of Lesson 4 from	Lesson 4 from the course	
SL/HoD should set	the course manuals.	manuals.	
out what they need	E.g., Concepts must reflect	E.g., Concepts must	
to do to introduce	the diversity of ALL	reflect the diversity of ALL	
and explain the	learners and should not	learners and should not	
issues/s with tutors,	reinforce false gender	reinforce false gender	
they should take	assumptions or	assumptions or	
feedback to gauge	stereotypes.	stereotypes.	
understanding and			
support tutor	2.3. Ask tutors in	2.3. In mixed-gender	
engagement.	mixed-gender groups	groups, (where	
	(where applicable), to	applicable), discuss	
	discuss and share	and share potential	
	potential barriers to	barriers to the	
	teaching and learning	teaching and learning	

		<u></u>	
	of the new concepts of	of the new concepts	
	Lesson 4.	of Lesson 4.	
	A potential barrier	A potential barrier	
	(Physics)- Have the	(Physics)- Have the	
	misconception on	misconception on	
	chargeable and non-	chargeable and non-	
	chargeable cells, thus, all	chargeable cells, thus, all	
	electrical cells are	electrical cells are	
	chargeable.	chargeable.	
	Suggested solution to the	Suggested solution to	
	potential barrier- Ask	the potential barrier- Ask	
	learners to read on	learners to read on	
	Electrical Cell before the	Electrical Cell before the	
	-	start of the lesson.	
	start of the lesson.		
	2.4. Ask tutors to	2.4. Discuss the	
	discuss the	appropriateness of the	
	appropriateness of the	teaching strategies	
	teaching strategies	suggested in the course	
	suggested in the	manuals for teach lesson	
	course manuals for	4 and suggest alternative	
	teach lesson 4 and	ones if possible.	
	suggest alternative		
	ones if possible.		
	Example of Teaching	Example of Teaching	
	Strategies from the	Strategies from the	
	course manuals:	course manuals:	
	Using simulations and	Using simulations and	
	multimedia presentations,	multimedia	
	demonstration, group	presentations,	
	work and discussion.	demonstration, group	
		work and discussion.	
3.Planning for	3.1. Lead discussion	3.1. Discuss through	40 mins
teaching, learning	with tutors through	questions and	
and assessment	questions and answers	answers the various	
activities for the	on the various	suggested teaching	
lesson/s	suggested teaching	and learning activities	
Reading and	and learning activities	from the course	
discussion of	from the course	manuals to be used in	
the teaching	manuals to be used in	delivery lesson 4.	
and learning	delivery lesson 4.		
activities	NB: Carefully review with	NB: Carefully review with	
<ul><li>Noting,</li></ul>	your colleagues the	your colleagues the	
addressing,	language used in the	language used in the	
auuressing,	iunguuge useu in the	iunguuge useu in the	
and explaining	activities of the course	activities of the course	

		an annual ta an also the an	
	areas where	manual to make them	manual to make them
	tutors may	gender responsive and	gender responsive and
	require	inclusive if appropriate.	inclusive if appropriate.
	clarification		
$\succ$	Noting	3.2. Discuss with	3.2. Discuss in your
	opportunities	tutors how GESI	groups how GESI
	for making	responsiveness, ICT and	responsiveness, ICT and
	explicit links	21 <sup>st</sup> Century skills will	21 <sup>st</sup> Century skills will
	to the Basic	help to promote the	help to promote the
	School	delivery of the lessons in	delivery of the lessons
	Curriculum	both the B.Ed. and Basic	in both the B.Ed. and
$\succ$	Noting	School Curricula.	Basic School Curricula.
-	opportunities		
	for	Examples of 21 <sup>st</sup> century	Examples of 21 <sup>st</sup> century
	integrating:	skills from the course	skills from the course
	GESI	manual and other	manual and other
	responsivenes	sources:	sources:
	s and ICT and	Ccommunication skills,	Ccommunication skills,
	21 <sup>st</sup> C skills	collaboration, observation	collaboration,
≻			observation and enquiry
	U/	and enquiry skills, digital	
	discussion,	literacy, creativity,	skills, digital literacy,
	and	personal development and	creativity, personal
	identification	global citizenship.	development and global
	of continuous		citizenship.
	assessment		
	opportunities	Examples of GESI	Examples of GESI
	in the lesson.	responsiveness from the	responsiveness from the
	Each lesson	course manual and other	course manual and other
	should include	sources:	sources:
	at least two	Making reasonable	Making reasonable
	opportunities	adjustments for physically	adjustments for
	to use	challenged learners.	physically challenged
	continuous	Both male and female	learners.
	assessment to	learners playing leading	Both male and female
	support	roles in a group task.	learners playing leading
	student	The use of braille and	roles in a group task.
	teacher	audio machines.	The use of braille and
	learning,		audio machines.
	subject		
	specific	Examples of ICT tools	Examples of ICT tools
	examples	from the course manual	from the course manual
	should be	and other sources:	and other sources:
	provided for	<i>Office 365 vs G-suite for</i>	<i>Office 365 vs G-suite for</i>
	SL/HoD	education, Google meet	education, Google meet
≻	Resources:	for online teaching,	for online teaching,
	links to the	Google classroom for	Google classroom for
	existing PD	online assignment	online assignment
			omine assignment

	<b>T</b> I <b>C</b>			
	Themes, for	submissions, plagiarism	submissions, plagiarism	
	example,	checking software, tools	checking software, tools	
	action	for checking grammar	for checking grammar	
	research,	errors online.	errors online.	
	questioning			
	and to other	3.3. Ask tutors to read	3.3. Read the	
	external	the assessment	assessment section in	
	reference	section in the course	the course manuals	
	material:	manuals and discuss	and discuss how they	
	literature, on	how they align with	align with the NTEAP.	
	web, Utube,	the NTEAP.	ungh with the fire of the	
		the NTLAF.		
	physical			
	resources,	3.3.1. Ask tutors to	3.3.1. Discuss how you	
	power point;	discuss how they will	will guide student	
	how they	guide student teachers	teachers to do hands-	
	should be	to do hands-on/	on/ practical activities	
	used.	practical activities on	on identification of	
	Consideration	identification of cells	cells (chargeable and	
	needs to be	(chargeable and non-	non-chargeable cells)	
	given to local	chargeable cells) and	and buffer solutions in	
	availability	buffer solutions in	inclusive classrooms	
$\triangleright$	Tutors should	inclusive classrooms	and submit a typed	
,	be expected	and submit a typed	report on them.	
	to have a plan	report on them.	report on them.	
	for the next	Note:	Note:	
	lesson for			
		(This report could be used	(This report could be used	
	student teachers	as their subject project).	as their subject project).	
	teachers	Student teachers, in pairs,	Student teachers, in pairs,	
		(male and females as	(male and females as	
		appropriate) should also	appropriate) should also	
		provide charts on current	provide charts on current	
		electricity just after the	electricity just after the	
		lesson.	lesson.	
			1033011.	
		(This report could be used	(This report could be used	
		as part of their subject	as part of their subject	
		portfolio).	portfolio).	
		3.4. Ask tutors to	3.4. Projector or watch a	
		project or watch a video,	video, as	
		as appropriate, on	appropriate, on	
		different types of cells	different types of	
		(chargeable and non-	cells (chargeable and	
		chargeable) and buffer	non-chargeable) and	
		solutions in their groups	buffer solutions in	
		and discuss how this	their groups and	

	concept will be presented to the student teachers. (i) Electric Power - YouTube (ii) Respiratory Buffer System - YouTube	discuss how this concept will be presented to the student teachers. (i) Electric Power - YouTube (ii) Respiratory Buffer System - YouTube	
	<b>NB:</b> Let everybody have a concrete plan for teaching the given topics, thus, the activities agreed on by the group to be followed.	<b>NB:</b> Let everybody have a concrete plan for teaching the given topics, thus, the activities agreed on by the group to be followed.	
<ul> <li>4. Evaluation and review of session:</li> <li>➤ Tutors should Identifying critical friends to observe lessons and report at next session</li> <li>➤ Identifying and addressing any</li> </ul>	4.1. Ask tutors to identify a critical friend who took part in the PD session to sit in their class during the lesson to provide feedback to you and report on observations made in the next PD session.	4.1. Identify a critical friend who took part in the PD session to sit in your class during lesson to provide feedback to you and report on observations made in the next PD session.	15 mins
outstanding issues relating to the lesson/s for clarification	<ul> <li>4.2. Discuss with tutors anything relating to Lesson 4 that needs clarification. Note:</li> <li>(i). In the case of unresolved issues consult the subject writing leads.</li> <li>(ii). Encourage tutors to read lesson 5 from the PD manual and find relevant materials for the next session.</li> </ul>	<ul> <li>4.2. Discuss in your groups anything relating to Lesson 4 that needs clarification.</li> <li>Note:</li> <li>(i). In the case of unresolved issues consult the subject writing leads.</li> <li>(ii). Read lesson 5 from the PD manual and find relevant materials for the next session.</li> </ul>	

#### **Tutor PD Session**

Name of Subject/s:

**Physics and Chemistry** 

## Age Levels/s: Course Titles:

Physics - Properties of Matter and Electromagnetism. Chemistry - *Chemistry Around Us* Lesson Title: Chemistry- Electrolytes and non-electrolytes. Physics: Magnet and Electromagnet

**Guidance Notes on Tutor** Focus: the bullet Time in Guidance notes on points provide the Activity during the PD session Leading the session. frame for what is to What the SL/HoDs will Session. What PD Session be done in the have to say during each participants (Tutors) will session. The SWL stage of the session do during each stage of should use the the session. bullets to guide what they write for the SL/HoD and tutors to do and say during each session. Each bullet needs to be addressed and specific reference should be made to the course manual/s. 1 Introduction to the Begin the PD session with 20 mins session an ice-breaker. Review prior learning 1.1. Ask tutors to 1.1, Discuss the successes A critical friend to discuss the successes and challenges of the PD session for lesson 4. share findings for and challenges of the a short discussion PD session for lesson and lessons 4. learned Reading and Ask critical friends 1.2. 1.2. In your groups, discussion of the who sat in different invite your critical introductory lessons during the friends to share their sections of the actual teaching of observations made lesson up to and lesson 4 to share their during delivery of observations with the including learning lesson 4 and discuss outcomes and larger group. the suggestions indicators provided. Overview of content and 1.3. Ask tutors to read 1.3. Read the identification of the introduction, introduction, lesson

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

any distinctive	lesson description and	description and the
aspects of the	the purpose of lesson	purpose of lesson 5 in
lesson/s,	5 in the course	the course manual
NB The guidance for	manual and indicate	and indicate how they
SL/HoD should	how they are related	are related to student
identify, address and	to student teachers'	teachers' relevant
provide explanations	relevant previous	previous knowledge.
for any areas where	knowledge.	
tutors might require	_	
clarification on an	Note	Note
aspect of the lesson.	Topics and brief lesson	Topics and brief lesson
SL/HoD take	descriptions for lesson 4	descriptions for lesson 4
feedback to gauge	are:	are:
understanding and	Physics - The main topic	<b>Physics</b> - The main topic
support tutor	for this lesson is Magnet	for this lesson is Magnet
engagement.	and Electromagnet. In this	and Electromagnet. In this
NB SL/HoD should	lesson, Tutor discusses	lesson, Tutor discusses
ask tutors to plan for	properties of a magnet	properties of a magnet
their teaching as they	and magnetic field with	and magnetic field with
go through the PD	student teachers. Again,	student teachers. Again,
session	student teachers will be	student teachers will be
30331011	guided to overcome their	guided to overcome their
	misconceptions in	misconceptions in
	properties of magnets	properties of magnets and
	and magnetic field, and	magnetic field, and
	basically learn how to	basically learn how to
	teach these topics to the basic school learner.	teach these topics to the basic school learner.
	<b>Chemistry-</b> The lesson is	Chemistry- The lesson is
	designed to further	designed to further
	improve student teachers'	improve student teachers'
	knowledge and	knowledge and
	understanding on	understanding on
	electrolytes and non-	electrolytes and non-
	electrolytes and to guide	electrolytes and to guide
	them to be able to teach	them to be able to teach
	same concepts for the JHS	same concepts for the JHS
	learner.	learner.
	1.4. Ask tutors to read,	1.4. Read, identify and
	identify and discuss	discuss the LOs and LIs
	the LOs and LIs of	of lesson 5 in the
	lesson 4 in the course	course manuals.
	manuals.	

Chemistry:	<u>Chemistry:</u>
<u>L.O</u>	L.O
Explain the use for	Explain the use for
electrolytes and non-	electrolytes and non-
electrolytes (NTS 2c, p. 13,	electrolytes (NTS 2c, p. 13,
<i>3i, 3i, p.14).</i>	<i>3i, 3i, p.14).</i>
5, 5, 5, 5, 2, 1,	<i>Si, Si, p. 1</i> ,
<u> 11</u>	LI
Prepare model	Prepare model
experimental set-up to	experimental set-up to
show the use of	show the use of
electrolyte in electrical	electrolyte in electrical
conductivity.	conductivity.
<u>Physics:</u>	Physics:
<u>LO</u>	<u>LO</u>
Demonstrate	Demonstrate
understanding of magnets	understanding of magnets
and electromagnetics	and electromagnetics
(NTS 1b, 3a, 3e & 3j).	(NTS 1b, 3a, 3e & 3j).
(i). Draw magnetic field	(i). Draw magnetic field
lines.	lines.
(ii) Show the relationship	(ii) Show the relationship
between electric and	between electric and
magnetic field lines.	magnetic field lines.
1.5. Guide tutors to	1.5. Explain how the
explain how the	course learning
course learning	outcomes and their
outcomes and their	corresponding
corresponding	indicators are related
indicators are related	to student teachers'
to student teachers'	relevant previous
	knowledge.
relevant previous	KIIOWIEUge.
knowledge.	
1.6. Ask tutors to	1.6. Identify and
identify and explain	explain the distinctive
the distinctive	features of lesson 5
features of lesson 5	for the two courses.
for the two courses.	Note: Examples of
Note: Examples of	distinctive features of
distinctive features of	lesson 5 are:
lesson 5 are:	Electric field- an electric
Electric field- an electric	property associated

	property associated with	with each point in space	
	each point in space when	when charge is present	
	charge is present in any	in any form.	
	form.	Magnetic field-is a	
	Magnetic field-is a vector	vector field that	
	field that describes the	describes the magnetic	
	magnetic influence on	influence on moving	
	moving electric charges,	electric charges, electric	
	electric current, and	current, and magnetic	
	magnetic materials.	materials.	
	Magnetic field lines- are	Magnetic field lines-	
	a visual tool used to	are a visual tool used to	
	represent magnetic fields.	represent magnetic	
	Electrolytes- a liquid or	fields.	
	gel which contains ions	Electrolytes- a liquid or	
	e.g., K <sup>+</sup> , Na <sup>+</sup> ,Cl <sup>-</sup> ions in	gel which contains ions	
	solution.	e.g., K <sup>+</sup> , Na <sup>+</sup> ,Cl <sup>-</sup> ions in	
		solution.	
As this course is	1.7. Ask tutors to	1.7. Describe how you	
dealing with	describe how they will	will assist student	
supporting and/ or	assist student	teachers to discuss	
assessing the	teachers to discuss	the effects of the	
Professional	the effects of the	interventions of their	
Teaching Portfolio	interventions of their	Classroom Enquiry	
Development and/	Classroom Enquiry	and Action Research	
or the Classroom	and Action Research	on learners.	
<b>Enquiry and Action</b>	on learners.	Refer to STS Handbook	
Research Project	Refer to STS	pg. 91-100.	
Report writing,	Handbook pg. 91-100.	<i>pg</i> ·	
Tutors should to be	Hanabook pg. 51 100.		
provided with			
•			
guidance on what to			
do including			
organisation of Post			
Internship Seminar.			
For each session	1.8. Lead discussions	1.8. Discuss how you	
remember this is the	on how tutors will	will help the student	
final semester before	help the student	teachers to integrate	
Students begin	teachers to integrate	Cross-cutting Issues	
teaching provide	Cross-cutting Issues	and GESI issues in	
prompts to help	and GESI issues in	their lessons when	
support this	their lessons when	posted.	
transition for	posted.		
planning and give			
regard for GESI, CCI,	E.g., Using mobile	E.g., Using mobile phones	
ICT etc.	phones to show image,	to show image, power	
	power points and videos	points and videos to	

	to enhance learning.	enhance learning.	
	Lesson plans should make	Lesson plans should make	
	allowance for all students	allowance for all students	
	to participate in the	to participate in the	
	learning activity. When	learning activity. When	
	doing science	doing science	
	experiments, ensure that	experiments, ensure that	
	girls, boys and students	girls, boys and students	
	with disability have a	with disability have a	
	chance to use the	chance to use the	
	equipment and chemicals.	equipment and chemicals.	
2 Concept	2.1. Ask tutors to identify	2.1. Identify and explain	15 mins
Development (New	and explain the main	the main concepts of	
learning likely to	concepts of Lesson 5 from	Lesson 5 from the course	
arise in lesson/s):	the course manuals.	manuals.	
Identification and	Examples of main	Examples of main	
discussion of new	concept/ new learning of	concept/ new learning of	
learning,	lesson 5 are:	lesson 5 are:	
potential barriers	<b>Physics</b> - Properties of	<b>Physics</b> - Properties of	
to learning for	magnets and magnetic	magnets and magnetic	
student teachers	field.	field.	
or students, new			
concepts or	Chemistry- Electrolytes	Chemistry- Electrolytes	
pedagogy being introduced in the	and Non electrolytes.	and Non electrolytes.	
lesson, which	2.2. Lead discussions	2.2. Discuss alternative	
need to be	on alternative	strategies to be	
explored with the	strategies to be	employed to teach the	
SL/HoD	employed to teach	new concepts.	
NB The guidance for	the new concepts.		
SL/HoD should set	Eg. Using audio visual	Eg. Using audio visual	
out what they need	materials to teach the	materials to teach the	
to do to introduce	concepts.	concepts.	
and explain the			
issues/s with tutors,	2.3. Ask tutors to identify	2.3. Identify and discuss	
they should take	and discuss any GESI	any GESI issues related to	
feedback to gauge	issues related to the new	the new concepts of	
understanding and	concepts of Lesson 5 from	Lesson 5 from the course	
support tutor	the course manuals.	manuals.	
engagement.	E.g., Equity and SEN:	E.g., Equity and SEN:	
	through appropriate	through appropriate	
	gender and equity	gender and equity	
	sensitive group work to	sensitive group work to	
	protect vulnerable	protect vulnerable student	
	student teachers,	teachers, establish an	
	establish an interactive	interactive and inclusive	

	and inclusive classroom	classroom atmosphere.	
	atmosphere.		
		<ul> <li><i>classroom atmosphere.</i></li> <li>2.4. In mixed-gender groups, (where applicable), discuss and share potential barriers to the teaching and learning of the new concepts of Lesson 5.</li> </ul>	
	attract magnets		
	aluminum, copper, gold and silver.		
3.Planning for	3.1. Ask tutors to read	3.1. Read and discuss	40 mins
teaching, learning	and discuss the	the various teaching	
and assessment	various teaching and	and learning activities	
activities for the	learning activities	suggested in the	
lesson/s	suggested in the	course manuals to be	
Reading and	course manuals to be	used to achieve the	
discussion of the	used to achieve the	LOs and LIs of lesson	
teaching and	LOs and LIs of lesson	5.	
learning	5.		
activities ➤ Noting,	NB: Find out if anything		
<ul> <li>Noting, addressing, and</li> </ul>	needs clarification in the various groups and do		
explaining areas	that immediately with		
where tutors	them.		
may require			
clarification	3.2. Discuss with tutors	3.2. Discuss in your	
Noting	how GESI	groups how GESI	
opportunities for	responsiveness, ICT	responsiveness, ICT	
making <i>explicit</i>	and 21 <sup>st</sup> Century skills	and 21 <sup>st</sup> Century skills	
<i>links</i> to the Basic	will help to promote	will help to promote	
School	the delivery of the	the delivery of the	

A	Noting opportunities for integrating: GESI responsiveness and ICT and 21 <sup>st</sup> C skills Reading, discussion, and identification of continuous assessment opportunities in the lesson. Each lesson should include at least	B.Ed. and Basic School Curricula. Examples of 21 <sup>st</sup> century skills from the course manual and other sources: Digital literacy, Ccommunication skills, collaboration, observation and enquiry skills, creativity, personal development and global citizenship.	B.Ed. and Basic School Curricula. Examples of 21 <sup>st</sup> century skills from the course manual and other sources: Digital literacy, Ccommunication skills, collaboration, observation and enquiry skills, digital literacy, creativity, personal development and global citizenship.	
	integrating: GESI responsiveness and ICT and 21 <sup>st</sup> C skills Reading, discussion, and identification of continuous assessment opportunities in the lesson. Each lesson should	Examples of 21 <sup>st</sup> century skills from the course manual and other sources: Digital literacy, Ccommunication skills, collaboration, observation and enquiry skills, creativity, personal development and global	Examples of 21 <sup>st</sup> century skills from the course manual and other sources: Digital literacy, Ccommunication skills, collaboration, observation and enquiry skills, digital literacy, creativity, personal development	
	responsiveness and ICT and 21 <sup>st</sup> C skills Reading, discussion, and identification of continuous assessment opportunities in the lesson. Each lesson should	skills from the course manual and other sources: Digital literacy, Ccommunication skills, collaboration, observation and enquiry skills, creativity, personal development and global	skills from the course manual and other sources: Digital literacy, Ccommunication skills, collaboration, observation and enquiry skills, digital literacy, creativity, personal development	
	and ICT and 21 <sup>st</sup> C skills Reading, discussion, and identification of continuous assessment opportunities in the lesson. Each lesson should	skills from the course manual and other sources: Digital literacy, Ccommunication skills, collaboration, observation and enquiry skills, creativity, personal development and global	skills from the course manual and other sources: Digital literacy, Ccommunication skills, collaboration, observation and enquiry skills, digital literacy, creativity, personal development	
	C skills Reading, discussion, and identification of continuous assessment opportunities in the lesson. Each lesson should	manual and other sources: Digital literacy, Ccommunication skills, collaboration, observation and enquiry skills, creativity, personal development and global	manual and other sources: Digital literacy, Ccommunication skills, collaboration, observation and enquiry skills, digital literacy, creativity, personal development	
	Reading, discussion, and identification of continuous assessment opportunities in the lesson. Each lesson should	<i>sources</i> : Digital literacy, Ccommunication skills, collaboration, observation and enquiry skills, creativity, personal development and global	<i>sources</i> : Digital literacy, Ccommunication skills, collaboration, observation and enquiry skills, digital literacy, creativity, personal development	
	discussion, and identification of continuous assessment opportunities in the lesson. Each lesson should	Digital literacy, Ccommunication skills, collaboration, observation and enquiry skills, creativity, personal development and global	Ccommunication skills, collaboration, observation and enquiry skills, digital literacy, creativity, personal development	
	identification of continuous assessment opportunities in the lesson. Each lesson should	Ccommunication skills, collaboration, observation and enquiry skills, creativity, personal development and global	collaboration, observation and enquiry skills, digital literacy, creativity, personal development	
	continuous assessment opportunities in the lesson. Each lesson should	collaboration, observation and enquiry skills, creativity, personal development and global	and enquiry skills, digital literacy, creativity, personal development	
	assessment opportunities in the lesson. Each lesson should	and enquiry skills, creativity, personal development and global	literacy, creativity, personal development	
	opportunities in the lesson. Each lesson should	creativity, personal development and global	personal development	
	the lesson. Each lesson should	development and global		
	lesson should		and global citizenship.	
		citizenship.		
		Evennelos of CESI	Evennelos of CESI	
	two	Examples of GESI responsiveness from the	Examples of GESI	
	opportunities to use continuous	course manual and other	responsiveness from the course manual and other	
	assessment to	sources:	sources:	
	support student	Both male and female	Both male and female	
	teacher learning,	learners playing leading	learners playing leading	
	-			
	•	Examples of ICT tools	Examples of ICT tools	
	SL/HoD	from the course manual	from the course manual	
$\triangleright$	Resources: links	and other sources:	and other sources:	
	to the existing	Office 365, Google	Office 365, Google	
	PD Themes, for	classroom for online	classroom for online	
	example, action	assignment submissions,	assignment submissions,	
	research,	plagiarism checking	plagiarism checking	
		online.	online.	
	. ,			
	•		•	
	•		alight with the NTLAF.	
		3.3.1. Ask tutors to	3.3.1. Discuss how you	
			-	
	-	•	-	
	Tutors should be	•		
	expected to have	•		
	Resources: links to the existing PD Themes, for example, action research, questioning and to other external reference material: literature, on web, Utube, physical resources, power point; how they should be used. Consideration needs to be given to local availability Tutors should be	and other sources: Office 365, Google classroom for online assignment submissions,	and other sources: Office 365, Google classroom for online assignment submissions,	

a plan for the	establishing the	properties of magnet in	
next lesson for	properties of magnet	an inclusive, multi-	
student teachers	in an inclusive, multi-	grade and	
	grade, and	developmentally	
	developmentally appropriate classroom	appropriate classroom and submit a typed	
	and submit a typed	report on them.	
	report on them.	report on them.	
	Note:	Note:	
	(This report could be used	(This report could be used	
	as their subject project).	as their subject project).	
	Student teachers, in pairs,	Student teachers, in pairs,	
	(male and females as	(male and females as	
	appropriate) should also	appropriate) should also	
	provide a 30 min. lesson	provide a 30 min. lesson	
	plan on how to teach the	plan on how to teach the	
	concept of electrolytes	concept of electrolytes	
	and non-electrolytes to	and non-electrolytes to	
	JHS 3 learners.	JHS 3 learners.	
	(This report could be used	(This report could be used	
	as part of their subject	as part of their subject	
	portfolio).	portfolio).	
	3.4. Ask tutors to	3.4. Project or watch a	
	project or watch a video,	video, as	
	as appropriate, on	appropriate, on	
	electrolytes and non-	electrolytes and non-	
	electrolytes in their	electrolytes in their	
	groups and discuss how	groups and discuss	
	this concept will be presented to the	how this concept will	
	student teachers.	be presented to the student teachers.	
	What Are Electrolytes? -	What Are Electrolytes? -	
	YouTube	YouTube	
	<b>NB:</b> Let everybody have a	<b>NB:</b> Let everybody have a	
	concrete plan for teaching	concrete plan for teaching	
	the given topics, thus, the	the given topics, thus, the	
	activities agreed on by the group to be followed.	activities agreed on by the group to be followed.	
4. Evaluation and	4.1. Ask tutors to identify	4.1. Identify a critical	15 mins
review of session:	a critical friend who took	friend who took part in	
Tutors should	part in the PD session to	the PD session to sit in	
Identifying critical	sit in their class during	your class during lesson to	

friends to observe	lesson to provide	provide feedback to you
lessons and	feedback to you and	and report on
report at next	report on observations	observations made in the
session	made in the next PD	next PD session.
Identifying and addressing any	session.	
outstanding	4.2. Discuss with	4.2. Discuss in your
issues relating to	tutors anything relating to	groups anything relating
the lesson/s for	Lesson 5 that needs	to Lesson 5 that needs
clarification	clarification.	clarification.
	Note:	Note:
	(i). In the case of	(i). In the case of
	unresolved issues consult	unresolved issues consult
	the subject writing leads.	the subject writing leads.
	(ii). Encourage tutors to	(ii). Read lesson 6 from
	read lesson 6 from the PD	the PD manual and find
	manual and find relevant	relevant materials for the
	materials for the next	next session.
	session.	

# **Tutor PD Session**

## Age Levels/s: Course Titles:

Physics - Properties of Matter and
Electromagnetism.
Chemistry - Chemistry Around Us
Lesson Title:
Chemistry- Course Review 1 with STS seminar
Physics: Course Review 1 with STS seminar

Name of Subject/s: Physics and Chemistry

Tutor PD Session for Lesson 6 in the Course Manual

Focus: the bullet	Guidance notes on	Guidance Notes on Tutor	Time in
points provide the	Leading the session.	Activity during the PD	session
frame for what is to	What the SL/HoDs will	Session. What PD Session	
be done in the	have to say during each	participants (Tutors) will	
session. The SWL	stage of the session	do during each stage of	
should use the		the session.	
bullets to guide what			
they write for the			
SL/HoD and tutors to			
do and say during			
each session. Each			
bullet needs to be			
addressed and			
specific reference			
should be made to			
the course manual/s.			
1 Introduction to the	Start the lesson with an		20 mins
session	ice braker.		
Review prior	RIDDLE, RIDDLE!		
learning	Many have heard it, but		
A critical friend	nobody has seen it. It will		
to share findings	not speak back unless		
for a short	spoken to. What is it? An		
discussion and	Echo.		
lessons learned	1.1 Ask tutors to tell how	1.1 Tell how useful the	
Reading and	useful the previous	previous lessons	
discussion of the	lessons of the PD	of the PD session	
introductory	session were and how	were and how it	
sections of the	it influenced their	influenced your	
lesson up to and	teaching positively,	teaching	
including	challenges and if	positively,	
learning	possible subject ways	challenges and if	
outcomes and	to improve upon the	possible subject	
indicators	next PD session	way to improve	
Overview of	lesson.	upon the next PD	
content and		session lessons.	

identification of	1.2 Ask a critical friend to	1.2 A critical friend	
any distinctive	give feedback on	gives feedback on	
aspects of the	observation during	observation during	
lesson/s,	the enactment of the	enactment of the	
NB The guidance for	lessons and what they	lessons and what	
SL/HoD should	have learned.	they have learnt.	
-	NB: Thing's tutor might	they have learnt.	
identify, address and	5 5		
provide explanations	have observed; tutor's		
for any areas where	choice of words,		
tutors might require	pedagogical content		
clarification on an	knowledge, content		
aspect of the lesson.	knowledge subject		
SL/HoD take	matter, ICT tools, GESI		
feedback to gauge	and the use of NTEAP		
understanding and			
support tutor	1.3 Ask tutors to use	1.3 Think-pair-share to	
engagement.	Think-pair-share to	present the	
NB SL/HoD should	present the	introductory section of	
ask tutors to plan for	introductory section	the lesson 1 -5 up to	
their teaching as	of the lesson 1 -5 up	and including the	
they go through the	to and including the	learning outcomes	
PD session	learning outcomes	(LOs) in phase groups.	
	(LOs) in phase groups.		
	1.4 Guide tutors to	1.4 Explain how the	
	explain how the course	course learning outcomes	
	learning outcomes and	and their corresponding	
	their corresponding	indicators are related to	
	indicators are related to	student teachers' relevant	
	student teachers' relevant	previous knowledge in	
	previous knowledge in	lessons 1-5 and state their	
	lesson 1-5 and state their	expectations of the PD	
	expectations of the PD	Session.	
	Session.		
	The topics and lesson		
	descriptions for lesson at		
	the various course levels		
	are:		
	JHS (Physics) Topic:		
	Course Review		
	Lesson Description - It is		
	also expected that		
	Student teachers will		
	reflect during this lesson		
	on their own progress in the course		
	JHS (Chemistry) Topic:		

	Course Douise Luith CTC		]
	Course Review I with STS		
	seminar		
	Lesson Description - This		
	lesson is a review and		
	audit of the lessons for		
	the first half of the		
	semester as well as		
	review and discussion of		
	lessons learned, reflection		
	on observations made		
	during the supported		
	teaching in schools (STS).		
As this course is	1.5. Lead tutors to review	1.5. Review the various	
dealing with	the various post	post internship seminar	
supporting and/ or	internship seminar	activities of lessons	
assessing the	activities of lessons	1,2,3,4 and 5 and share	
Professional	1,2,3,4 and 5 and share	your experiences with the	
Teaching Portfolio	their experiences with the	whole group.	
Development and/	whole group.		
or the Classroom			
Enquiry and Action	Examples: Post internship		
Research Project	seminar activities for		
Report writing,	lessons 1 and 2;		
Tutors should to be	(1) The importance of		
provided with	professional		
guidance on what to	teaching portfolio		
do including	is:		
organisation of Post	For promotion		
Internship Seminar.	> It is a		
	characteristic of		
	professional		
	teacher		
	It serves as records		
	and a reference		
	material of one's		
	professional work		
	over time.		
	(2) Some artefacts found		
	in a professional teaching		
	portfolio are;		
	Curriculum Vitae		
	(CV)		
	Teaching		
	philosophy		
	<ul> <li>Sample lesson</li> </ul>		
	plans		
	•		
	Sample scheme of		

	learning		
	Teaching and		
	learning resources		
	with annotated		
	descriptions.		
	Reflections on		
	lessons.		
	(3) General guidelines for		
	writing Teaching		
	Philosophy Statement:		
	1.Make your Teaching		
	Statement brief and well		
	written.		
	2. Use a narrative, first		
	person approach		
	3. Make it specific rather		
	than abstract.		
	4. Be discipline-specific.		
	5. Avoid jargon and		
	technical terms, as they		
	can be off-putting to		
	some readers.		
	6. Be sincere and unique.		
	7. Be humble		
	8. Revise		
For each session	1.6 Ask tutors to review	1.6. Review the different	
remember this is the	the different GESI, CCI,	GESI, CCI, and ICT issues	
final semester before	and ICT issues raised in	raised in lessons 1,2,3,4,	
Students begin	lessons 1,2,3,4, and 5, tell	and 5, tell how those	
teaching provide	how those issues raised	issues raised impacted	
prompts to help	impacted positively in	positively in your previous	
support this	their previous lessons and	lessons and what you	
transition for	what they need to do to	need to do to improve	
planning and give	improve upon	upon incorporating GESI,	
regard for GESI, CCI,	incorporating GESI, CCI,	CCI, and ICT features in	
ICT etc.	and ICT features in their	your subsequent lessons.	
	subsequent lessons.		
	Example:		
	(1) To ensure GESI		
	responsiveness in the way		
	a classroom is set up, the		
	following needs to be		
	considered:		
	A classroom setup that		
	mixes girls and boys		
	and also considers		

	disabilities.		
	<ul> <li>Classroom setup that</li> </ul>		
	enhances the		
	participation of all		
	students		
	<ul> <li>Arrangement of the</li> </ul>		
	desks that allow		
	students with		
	disabilities to be		
	comfortable		
	(2) Examples of cross-		
	cutting issues are;		
	The use of ICT		
	Equity		
	Inclusivity		
2 Concert	<ul> <li>Gender issues</li> <li>2.1. Ack tutors to identify</li> </ul>	2.1. Idon+:fr.fom:!!:=====!	1 [
2 Concept	2.1 Ask tutors to identify	2.1. Identify familiar and	15 mins
Development (New	familiar and unfamiliar	unfamiliar concepts in the	
learning likely to	concepts in their lessons	lessons and discuss with	
arise in lesson/s):	and discuss with the	the larger group.	
Identification and	larger group.		
discussion of new			
learning,	2.2 Ask tutors to outline	2.2. Outline possible	
potential barriers	possible challenging areas	challenging areas.	
to learning for	e.g.:		
student teachers	Possible challenging:		
or students, new	lack of understanding and		
concepts or	possible misconception to		
pedagogy being	some concepts not		
introduced in the	adequately dealt with.		
lesson, which	Lessons not appropriately		
need to be	understood by student		
explored with the	teachers.		
SL/HoD			
NB The guidance for	2.3. Ask tutors to	2.3. Identify the most	
SL/HoD should set	identify the most	appropriate teaching	
out what they need	appropriate teaching	strategies that can be	
to do to introduce	strategies that can be	employed to best deliver	
and explain the	employed to best	the new concepts in both	
issues/s with tutors,	deliver the new	CoE and basic school	
they should take	concepts in both CoE	classroom to achieve the	
feedback to gauge	and basic school	LOs and the LIs of the	
understanding and	classrooms to achieve	lesson.	
support tutor	the LOs and the LIs of		
engagement.	the lesson.		
	a. Discussion, group		
	work in same		

[			1
	ability group		
	works.		
	b. Presentations and		
	peer review.		
	c. e-learning		
	Opportunities:		
	OERs and Video		
	presentations		
	from		
	https://www.ncbi.nlm.nih		
	.gov/pmc/articles/PMC53		
	3116/		
	https://www.nap.edu/rea		
	d/5287/chapter/3#13		
3.Planning for	3.1 Ask tutors to suggest	3.1 Suggest teaching and	40 mins
teaching, learning		learning activities for	
and assessment	activities for the	the lessons taking into	
activities for the	lesson taking into	account GESI issues.	
lesson/s	account GESI issues.		
<ul> <li>Reading and</li> </ul>	Eg.	Eg.	
discussion of	-	-	
	,	i. Provision made for	
teaching and	physically challenged	physically challenged	
learning	ii. Both genders take	ii. Both genders take	
activities	leading roles in group	leading roles in group	
Noting,	tasks	tasks	
addressing, ar	nd iii. Even distribution of	iii. Even distribution of	
explaining are	eas questions to different	questions to different	
where tutors	categories of learners	categories of learners	
may require	based on gender, ability,	based on gender, ability,	
clarification	previous experience, etc.	previous experience, etc.	
Noting			
opportunities	for 3.2 Ask tutors to identify	3.2 Identify and discuss	
making <i>explic</i>	-	areas that need	
links to the Ba		clarification if any.	
School			
Curriculum	3.3. Lead tutors to discuss	3.3 Discuss how the	
	how the different	different activities	
Noting			
opportunities		would be carried out	
integrating: G		in both CoE and basic	
responsivene		school classroom to	
and ICT and 2		achieve the LOs and	
C skills	LIs of lesson 1-5 from	the LIs of lesson 1-5	
<ul><li>Reading,</li></ul>	their course manuals.	from their course	
discussion, an	d	manuals.	
identification			
continuous	3.4 Ask tutors to model a	3.4 Model a presentation	
assessment	presentation of a	of a concept using ICT	
assessment	presentation of a		

<ul> <li>opportunities in the lesson. Each lesson should include at least two opportunities to use continuous assessment to support student teacher learning, subject specific examples should be provided for SL/HoD</li> <li>Resources: links to the existing PD Themes, for example, action research, questioning and to other external reference material: literature, on web, Utube,</li> </ul>	concept using ICT tools and taking into consideration GESI issues and 21 <sup>st</sup> Century skill (eg. Both genders take the leading roles in their groups and in the demonstration of the use of ICT tools) to teach their lessons. 3.5 Ask tutors to read and discuss the assessment activities in the various course manuals and identify areas that require clarification. e.g: of subject portfolio Student teachers' presentations on any of the lessons from 1-5 during group work and model work presentation helps to assess them of	<ul> <li>tools and taking into consideration GESI issues and 21<sup>st</sup> Century skills (eg. Both genders take the leading roles in their groups and in the demonstration of the use of ICT tools) to teach their lessons.</li> <li>3.5 Read and discuss the assessment activities in the various course manuals and identify areas that require clarification.</li> </ul>	
<ul> <li>physical</li> <li>resources, power</li> <li>point; how they</li> <li>should be used.</li> <li>Consideration</li> <li>needs to be</li> <li>given to local</li> <li>availability</li> <li>Tutors should be</li> <li>expected to have</li> <li>a plan for the</li> <li>next lesson for</li> <li>student teachers</li> </ul>	learning. 3.6 Guid tutors to identify the needed inclusive resources for teaching and learning of the concepts in both CoE and basic school classrooms. E.g. Cardboards, Course manual, Flip charts, Poster paper, computers with internet access https://www.ncbi.nlm.nih .gov/pmc/articles/PMC53 3116/ https://www.nap.edu/rea d/5287/chapter/3#13	3.6 Identify the inclusive resources needed for teaching and learning of the concepts in both CoE and basic school classrooms. <i>E.g.</i> <i>Cardboards, Course</i> <i>manual, Flip charts,</i> <i>Poster paper,</i> <i>computers with internet</i> <i>access</i> <i>https://www.ncbi.nlm.nih</i> <i>.gov/pmc/articles/PMC53</i> <i>3116/</i> <i>https://www.nap.edu/rea</i> <i>d/5287/chapter/3#13</i>	

<ul> <li>4. Evaluation and review of session:</li> <li>Tutors should Identifying critical friends to observe lessons and report at next session</li> <li>Identifying and addressing any outstanding issues relating to the lesson/s for clarification</li> </ul>	<ul> <li>Note:</li> <li>Let everybody should have a concrete plan for teaching the given topics, thus, the activities agreed on by the group to be followed.</li> <li>4.1 Ask tutors question to help them in self- evaluation as well as encourage tutors to provide feedback of the PD session taking into consideration inclusivity – how to be patient with stammers, using tactile and audio devices for visually challenged, paying attention to all courses, etc.</li> </ul>	4.1 Provide feedback of the PD session taking into consideration inclusivity – how to be patient with stammers, using tactile and audio devices for visually challenged, paying attention to all courses, etc.	15 mins
	4.2 Ask tutors to identify unresolved issues relating to this lesson for clarification	4.2 identify unresolved issues relating to this lesson for clarification	
	4.3 Ask a critical friend to observe your teaching and record his/her findings to be presented after delivery or in the Next PD session	4.3 a critical friend to observe your teaching and record his/her findings to be presented after delivery or in the Next PD session.	

Age Levels/s: JHS (Chemistry): Water JHS (Physics): Magnet and Electromagnet Name of Subject/s: Chemistry and Physics

Tutor PD Session for Lesson 7 in the Course Manual
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po fra be se: shu bu thu SL, do ea bu ad sp shu	cus: the bullet ints provide the ime for what is to done in the ssion. The SWL ould use the llets to guide what ey write for the /HoD and tutors to and say during ch session. Each llet needs to be dressed and ecific reference ould be made to e course manual/s.	Guidance notes on Leading the session. What the SL/HoDs will have to say during each stage of the session	Guidance Notes on Tutor Activity during the PD Session. What PD Session participants (Tutors) will do during each stage of the session.	Time in session
11	ntroduction to the	Start with an icebreaker.		20 mins
	ssion			
	Review prior learning	1.1. Ask tutors in their subject groups to write	1.1. Write things they learnt in lesson 7 PD	
	A critical friend to share findings for a short discussion	things they learnt in lesson 7 PD sessions.	sessions.	
>	and lessons learned Reading and discussion of the introductory	1.2. Ask tutors to explain how they applied what they have written in their varied lessons to the whole group.	1.2. Explain how you applied what you have written to the whole group	
	sections of the lesson up to and including learning outcomes and indicators Overview of	1.3. Invite critical friends to share their findings for a short discussion	1.3. Critical friends to share their findings for a short discussion	
	content and identification of any distinctive aspects of the lesson/s, 5 The guidance for	1.4. Ask tutors to read and discuss the Introductory sections of the lesson up to learning indicators from their course manuals.	1.4. Read and discuss the Introductory sections of the lesson up to learning indicators from their course manuals.	

SL/HoD should	LO: demonstrate skills in	LO: demonstrate skills in
identify, address and	teaching Basic School	teaching Basic School
provide explanations	Physics and in using Basic	Physics and in using Basic
for any areas where	School Science Curriculum	School Science Curriculum
tutors might require	Materials for lessons	Materials for lessons
clarification on an	planning and delivering.	planning and delivering.
aspect of the lesson.	(NTS 1b, 3a, 3e & 3j)	(NTS 1b, 3a, 3e & 3j)
SL/HoD take	LI: Provide Lesson plan on	LI: Provide Lesson plan on
feedback to gauge	teaching some concepts	teaching some concepts
understanding and	and show Video clip on	and show Video clip on
support tutor	teaching some topics in	teaching some topics in
engagement.	Basic School Physics.	Basic School Physics.
NB SL/HoD should		
ask tutors to plan for	1.5. Guide tutors to	1.5. Explain how the
their teaching as they	explain how the course	course learning
go through the PD	learning outcomes and	outcomes and their
session	their corresponding	corresponding
	indicators are related to	indicators are related
	student teachers'	to student teachers'
	relevant previous	relevant previous
	knowledge.	knowledge.
	kilowiedge.	knowledge.
	Note: The topics and lesson	
	descriptions for lesson 7 at	
	the various course levels	
	are:	
	JHS (Physics) Topic: Basic	
	School Physics Curriculum	
	Materials.	
	Lesson Description Under	
	this topic Tutor discusses	
	the Syllabus, Teachers'	
	Handbook and Pupils	
	Textbook with student	
	teachers. Student teachers	
	will be guided on how to	
	use syllabus, teacher's	
	handbook and pupil's	
	textbook to teach the basic	
	school learner.	
	JHS (Chemistry) Topic: Types	
	of Climates and their effect	
	on food	
	Lesson Description -Climate,	
	which is an aggregation of	
	daily weather changes	
	adily weather changes	

	influences agriculture and vegetation within our various communities and the world over.	
	1.6. Ask tutors to identify and discuss the distinctive features of lesson 8 for the two courses from the course manuals.	1.6. Identify and discuss the distinctive features of lesson 8 for the two courses from the course manuals
	<ul> <li>JHS (Chemistry):</li> <li>➤ Types of world climates.</li> <li>➤ Activities of crop production</li> <li>JHS (Physics):</li> <li>➤ Teaching of how to use Teachers' Handbook and Pupils Textbook to and</li> </ul>	
	Pupils Textbook to teach the Basic School Learner	
As this course is dealing with supporting and/ or assessing the Professional	1.7. Ask tutors to explain how they will organise post internship seminar for student teachers	1.7. Explain how they will organise post internship seminar for student teachers.
Teaching Portfolio Development and/ or the Classroom Enquiry and Action Research Project Report writing, Tutors should to be provided with guidance on what to do including organisation of Post Internship Seminar.	1.8. Ask tutors to list the artefacts of a professional teaching portfolio and show how they will help student teachers to develop their own professional teaching portfolio in their respective basic schools when posted. <i>(Refer to Y3 STS</i> )	1.8. List the artefacts of a professional teaching portfolio and show how they will help student teachers to develop their own professional teaching portfolio in their respective basic schools when posted. <i>(Refer to Y3 STS</i> )
	Handbook Pg. 114-118). Some artefacts found in a professional teaching portfolio are; ➤ Curriculum Vitae	Handbook Pg. 114- 118).

For each session remember this is the final semester before Students begin teaching provide prompts to help support this transition for planning and give regard for GESI, CCI, ICT etc.	<ul> <li>(CV)</li> <li>Teaching philosophy</li> <li>Sample lesson plans</li> <li>Sample scheme of learning</li> <li>Teaching and learning resources with annotated descriptions.</li> <li>Reflections on lessons.</li> </ul> 1.9. Ask tutors explain how they would assist initial teachers to discuss some professional practices of their mentors and co- mentees. (Refer to NTS 1a, 3a, 3e and 3j Pg.14). 1.10. Ask tutors to identify the cross- cutting issues in the course manuals and explain how they can help the initial teachers to implement them in the basic school classroom after posting. Examples of cross-cutting issues are; The use of ICT Equity Inclusivity Gender issues.	<ul> <li>1.9. Explain how they would assist initial teachers to discuss some professional practices of their mentors and comentees. (Refer to NTS 1a, 3a, 3e and 3j Pg.14).</li> <li>1.10. Identify the cross-cutting issues in the course manuals and explain how they can help the initial teachers to implement them in the basic school classroom after posting.</li> </ul>	
<ul> <li>2 Concept</li> <li>Development (New</li> <li>learning likely to</li> <li>arise in lesson/s):</li> <li>➢ Identification and</li> <li>discussion of new</li> <li>learning,</li> <li>potential barriers</li> <li>to learning for</li> <li>student teachers</li> </ul>	<ul> <li>2.1. Ask tutors to list and discuss the major concepts in lesson 7.</li> <li>E.g.</li> <li>JHS: (PHYSICS)</li> <li>Teaching of how to use Teachers' Handbook and Pupils Textbook to teach the Basic School Learner.</li> </ul>	2.1. List and discuss the major concepts in lesson 7.	15 mins

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or students, new concepts or pedagogy being introduced in the lesson, which need to be explored with the SL/HoD NB The guidance for SL/HoD should set out what they need to do to introduce and explain the issues/s with tutors, they should take feedback to gauge understanding and support tutor engagement.	<ul> <li>2.2. Ask tutors to discuss the potential misconceptions and barriers with respect to the concepts listed.</li> <li>NB: Misconceptions related to the concepts are: JHS (Physics)</li> <li>Student teachers may lack the skills of how to use the Syllabus, Teachers' Handbook and Pupils Textbook Solution:</li> <li>Student teachers answer open-ended questions, interactive discussion on syllabus, teachers' handbook and pupils' textbook in mixed ability/ gender-based groups of 3 members.</li> </ul>	2.2. Discuss the potential misconceptions and barriers with respect to the concepts listed.	
	<ul> <li>2.3. Ask tutors to identify the most appropriate teaching strategies that can be employed to best deliver the new concepts in both CoE and basic school classroom to achieve the LOs and the LIs of the lesson.</li> </ul>	2.3. Identify the most appropriate teaching strategies that can be employed to best deliver the new concepts in both CoE and basic school classroom to achieve the LOs and the LIs of the lesson.	
	E.g. (i) Practical manipulation of simple machines. (ii) Video/ multimedia simulation on a typical measurement skill that is GESI responsive. (iii). Group presentation		

3.P	lanning for	3.1. Guide tutors to read	3.1.Read and discuss the	40 mins
	iching, learning	and discuss the teaching	teaching and learning	
	d assessment	and learning activities in	activities in the course	
	ivities for the	the course manuals for	manuals for the two	
	son/s	the two course levels.	course levels	
	Reading and	Note: Tutors should go		
Í	discussion of the	through the activities one		
		after the other taking into		
	teaching and	consideration the time		
~	learning activities			
	Noting,	available, resources and		
	addressing, and	nature of learners,		
	explaining areas	coherency and		
	where tutors may	methodology.		
	require			
	clarification	3.1.1. Assist tutors to	3.1.1. Discuss areas that	
$\triangleright$	Noting	identify and discuss areas	need clarification.	
1	opportunities for	that need clarification.		
	making <i>explicit</i>			
	links to the Basic	3.2. Lead tutors to	3.2.Discuss how the	
	School	discuss how the	different activities	
	Curriculum	different activities	would be carried out	
$\succ$	Noting	would be carried out in	in both CoE and basic	
	opportunities for	both CoE and basic	school classroom to	
	integrating: GESI	school classroom to	achieve the LOs and	
	responsiveness	achieve the LOs and the	the LIs of lesson 8	
	and ICT and 21 <sup>st</sup> C	LIs of lesson 8 from	from their course	
	skills	their course manuals.	manuals	
$\triangleright$	Reading,			
	discussion, and	Note:	Note:	
	identification of	<ul> <li>Pays attention to all</li> </ul>	Pays attention to all	
	continuous	learners, especially girls	learners, especially	
	assessment	and students with	girls and students with	
	opportunities in	Special Educational	Special Educational	
1	the lesson. Each	Needs, ensuring their	Needs, ensuring their	
1	lesson should	progress. (NTS 3f)	progress. (NTS 3f)	
1	include at least	<ul> <li>Employs instructional</li> </ul>	<ul> <li>Employs instructional</li> </ul>	
	two opportunities	strategies appropriate	strategies appropriate	
	to use continuous	for mixed ability,	for mixed ability,	
	assessment to	multilingual and multi-	multilingual and	
1		-	5	
1	support student	age classes. (NTS 3g)	multi-age classes.	
1	teacher learning,		(NTS 3g)	
	subject specific			
	examples should	3.3. Ask tutors to discuss	3.3. Discuss how GESI	
	be provided for	how GESI issues related	issues related to the	
	SL/HoD	to the teaching and	teaching and learning	
$\triangleright$	Resources: links	learning activities of the	activities of the lesson	
	to the existing PD	lesson would be	would be addressed	

	Themes, for	addressed.		
	example, action			
	research,	E g. (i). Pay attention to		
	questioning and	slow learner.		
	to other external	(ii). Assign leadership roles		
	reference	to females and males		
	material:	equally.		
	literature, on	equally.		
	web, Utube,	3.4. Guide tutors to	3.4. Guide tutors to	
	physical	explain how they would	explain how they	
	resources, power	assist the student	would assist the	
	point; how they	teachers to	student teachers to	
	should be used.	demonstrate the 21 <sup>st</sup>	demonstrate the 21 <sup>st</sup>	
	Consideration	century skill in the basic	century skill in the	
	needs to be given	school classroom.	basic school	
	to local		classroom.	
			classi oom.	
$\triangleright$	availability Tutors should be	Eq. (1) Digital Literacy or	Eq. (1) Digital Literacy	
		E.g. (1) Digital Literacy e.g.	E.g. (1) Digital Literacy	
	expected to have	The use of power-point to	e.g. The use of power-	
	a plan for the next lesson for	prepare and present	point to prepare and	
		lessons.	present lessons.	
	student teachers	(2) Development of	(2) Development of	
		leadership, collaborative	leadership, collaborative	
		and communicative skills	and communicative skills	
		through group works and	through group works and	
		presentations.	presentations.	
		3.5. Ask tutors to read	3.5.Read the assessment	
		the assessment	activities in the	
		activities in the various	various course	
		course manuals and	manuals and identify	
		identify areas that	areas that require	
		require clarification.	clarification	
		Note:		
		(i) Assist your colleagues to		
		review the assessment in		
		the course manual to be in		
		line with the NTEAP.		
		(ii) Student teachers doing		
		short presentations (3-5		
		minutes each) on how to		
		use Teachers' Handbook		
		and Pupils Textbook to		
		teach the Basic School		
		Learner (Reflection on		
		presentations)		

	· · · · · · ·		1
	These could be added to		
	their subject presentations		
	on physical quantities		
	portfolio.		
	3.6. Lead tutors to identify	3.6. Identify the inclusive	
	the needed inclusive	resources needed for	
	resources for teaching and	teaching and learning	
	learning of the concepts in	of the concepts in	
	both CoE and basic school	both CoE and basic	
	classrooms.	school classrooms	
	Note:	Note:	
	(i). Make sure the resources	(i). Make sure the	
	are enough and appropriate	resources are enough and	
	to all learners (males,	appropriate to all learners	
	females and persons with	(males, females and	
	SEN).	persons with SEN).	
	(ii). Let everybody have a	(ii). Let everybody have a	
	concrete plan for teaching	concrete plan for teaching	
	the given topics, thus, the	the given topics, thus, the	
	activities agreed on by the	activities agreed on by the	
	group to be followed		
4. Evaluation and	4.1. Ask tutors to	group to be followed.	15 mins
review of session:		4.1. Identify a critical	12 111112
review of session.	identify a critical friend	friend who took part in the PD session to sit in	
Tutors should	who took part in the PD session to sit in their		
		their class during lesson	
Identifying critical friends to observe	class during lesson to	to provide feedback and	
	provide feedback and	report on observations	
lessons and	report on observations	made in the next PD	
report at next	made in the next PD	session.	
session	session.		
Identifying and			
addressing any	4.2. Discuss with tutors	4.2. Discuss anything	
outstanding issues	anything relating to	relating to Lesson 7 that	
relating to the	Lesson 7 that needs	needs clarification.	
lesson/s for	clarification.	Note:	
clarification	Note:	(i). In the case of	
	(i). In the case of unresolved	unresolved issues consult	
	issues consult the subject	the subject writing leads.	
	writing leads.	(ii). Encourage tutors to	
	(ii). Encourage tutors to	read lesson 8 from the PD	
	read lesson 8 from the PD	manual and find relevant	
	manual and find relevant	materials for the next	
	materials for the next	session.	
1	session.		

# Age Levels/s:Name of Subject/s: Chemistry and PhysicsJHS (Chemistry)Types of Climates and their effect on foodJHS (Physics)Basic School Physics Curriculum Materials.Tutor PD Session for Lesson 8 in the CourseManual

-		<u> </u>			· · · · ·	
	cus: the bullet		ance notes on Leading		lance Notes on Tutor	Time in
	ints provide the		ession. What the		vity during the PD	session
	me for what is to	-	DDs will have to say		ion. What PD Session	
	done in the		g each stage of the		icipants (Tutors) will	
	ssion. The SWL	sessio	วท		uring each stage of	
	ould use the			the	session.	
	llets to guide what					
	ey write for the					
SL/	HoD and tutors to					
do	and say during					
ea	ch session. Each					
bu	llet needs to be					
ad	dressed and					
spe	ecific reference					
sho	ould be made to					
the	e course manual/s.					
-	ntroduction to the	Start	with an icebreaker.			20 mins
ses	ssion					
$\triangleright$	Review prior	1.1.	Ask tutors in their	1.1.	Write 4 things they	
	learning		subject groups to		learnt in lesson 7 PD	
$\triangleright$	A critical friend to		write 4 things they		sessions.	
	share findings for		learnt in lesson 7 PD			
	a short discussion		sessions.			
	and lessons					
	learned	1.2	Ask tutors to explain	1.2.	Explain how you	
$\triangleright$	Reading and		how they applied		applied what you	
ŕ	discussion of the		what they have		have written to the	
	introductory		written in their varied		whole group	
	sections of the		lessons to the whole		whole group	
	lesson up to and					
	including learning		group.			
	outcomes and	1 2	Invite the critical	1.3.	Critical friends to	
		1.3.		1.5.		
~	indicators		friends to share their		share their findings	
	Overview of		findings for a short		for a short	
	content and		discussion		discussion	
	identification of					
	any distinctive	1.4.	Ask tutors to read	1.4.		
	aspects of the		and discuss the		introductory	
	lesson/s,		introductory sections		sections of the	
NB	The guidance for		of the lesson up to		lesson up to learning	

SL/HoD should	learning indicators	indicators from their
identify, address and	from their course	course manuals.
provide explanations	manuals.	
for any areas where		
tutors might require	LO: demonstrate skills in	LO: demonstrate skills in
clarification on an	teaching Basic School	teaching Basic School
aspect of the lesson.	Physics and in using Basic	Physics and in using Basic
SL/HoD take	School Science Curriculum	School Science Curriculum
feedback to gauge	Materials for lessons	Materials for lessons
understanding and	planning and delivering.	planning and delivering.
support tutor	(NTS 1b, 3a, 3e & 3j)	(NTS 1b, 3a, 3e & 3j)
engagement.	LI: Provide Lesson plan on	LI: Provide Lesson plan on
NB SL/HoD should	teaching some concepts	teaching some concepts
ask tutors to plan for	and show Video clip on	and show Video clip on
their teaching as they	teaching some topics in	teaching some topics in
go through the PD	Basic School Physics.	Basic School Physics.
session		
	1.5. Guide tutors to	1.5. Explain how the
	explain how the	course learning
	course learning	outcomes and their
	outcomes and their	corresponding
	corresponding	indicators are
	indicators are related	related to student
	to student teachers'	teachers' relevant
	relevant previous	previous
	knowledge.	knowledge.
	Note: The tension and leaven	
	Note: The topics and lesson	
	descriptions for lesson 7 at	
	the various course levels	
	are:	
	JHS (Physics) Topic: Basic	
	School Physics Curriculum	
	Materials.	
	Lesson DescriptionUnder	
	this topic Tutor discusses	
	the Syllabus, Teachers'	
	Handbook and Pupils	
	Textbook with student	
	teachers. Student teachers	
	will be guided on how to	
	use syllabus, teacher's	
	handbook and pupil's	
	textbook to teach the basic	
	school learner.	
	JHS (Chemistry) Topic: Types	

	of Climate and their effect on food Lesson Description -Climate, which is an aggregation of daily weather changes influences agriculture and vegetation within our various communities and the world over.		
	1.6. Ask tutors to identify and discuss the distinctive features of lesson 8 for the two courses from the course manuals.	<ul> <li>1.6. Identify and discuss the distinctive features of lesson 8 for the two courses from the course manuals</li> </ul>	
	<ul> <li>JHS (Chemistry):</li> <li>➤ Types of world climates.</li> <li>➤ Activities of crop production</li> <li>JHS (Physics):</li> <li>➤ Teaching of how to use Teachers' Handbook and Pupils Textbook to teach the Basic Cabact Learner</li> </ul>		
As this course is dealing with supporting and/ or assessing the Professional Teaching	School Learner 1.7. Ask tutors to explain how they will organise post internship seminar for student teachers	1.7. Explain how they will organise post internship seminar for student teachers	
Portfolio Development and/ or the Classroom Enquiry and Action Research Project Report writing, Tutors should to be provided with guidance on what to do including organisation of Post Internship Seminar.	1.8. Ask tutors to list the artefacts of a professional teaching portfolio and show how they will help student teachers to develop their own professional teaching portfolio in their respective basic schools when posted. <i>(Refer to Y3 STS</i> <i>Handbook Pg. 114-</i>	1.8. List the artefacts of a professional teaching portfolio and show how they will help student teachers to develop their own professional teaching portfolio in their respective basic schools when posted. <i>(Refer to Y3 STS</i> <i>Handbook Pg. 114- 118).</i>	

	118).		
	<ul> <li>Some artefacts found in a professional teaching portfolio are;</li> <li>Curriculum Vitae (CV)</li> <li>Teaching philosophy</li> <li>Sample lesson plans</li> <li>Sample scheme of learning</li> <li>Teaching and learning resources with annotated descriptions.</li> <li>Reflections on lessons.</li> </ul>	1.9. Explain how they	
	they would assist initial teachers to discuss some professional practices of their	would assist initial teachers to discuss some professional practices of their	
	mentors and co- mentees. (Refer to NTS 1a, 3a, 3e and 3j Pg.14).	mentors and co- mentees. (Refer to NTS 1a, 3a, 3e and 3j Pg.14).	
For each session remember this is the	1.10. Ask tutors to identify the cross-cutting issues in	1.10. Identify the cross- cutting issues in the	
final semester before Students begin teaching provide	the course manuals and explain how they can help the initial teachers to	course manuals and explain how they can help the initial teachers to	
prompts to help support this	implement them in the basic school classroom after	implement them in the basic school classroom	
transition for planning and give regard for GESI, CCI, ICT etc.	posting. Examples of cross-cutting issues are; ➤ The use of ICT ➤ Equity ↓ Inclusivity	after posting.	
2 Concent	<ul> <li>Inclusivity</li> <li>Gender issues</li> <li>Ask tutors to list and</li> </ul>	2.1 List and discuss the	15 mins
2 Concept Development (New learning likely to arise in lesson/s) :	<ol> <li>Ask tutors to list and discuss the major concepts in lesson 8.</li> <li>E.g.</li> </ol>	2.1. List and discuss the major concepts in lesson 8.	15 mins
<ul> <li>Identification and discussion of new learning, potential barriers to learning for</li> </ul>	JHS: (PHYSICS) Teaching of how to use Teachers' Handbook and Pupils Textbook to teach the Basic School		

	Logradu	
student teachers	Learner.	
or students, new		2.2 Discuss the metantic
concepts or	2.2. Ask tutors to discuss	2.2. Discuss the potential
pedagogy being	the potential	misconceptions and
introduced in the	misconceptions and	barriers with respect
lesson, which	barriers with respect	to the concepts
need to be	to the concepts listed.	listed.
explored with the	NB: Misconceptions related	
SL/HoD	to the concepts are:	
NB The guidance for	JHS (Physics)	
SL/HoD should set	Student teachers may	
out what they need	lack the skills of how	
to do to introduce	to use the Syllabus,	
and explain the	Teachers' Handbook	
issues/s with tutors,	and Pupils Textbook	
they should take	Solution:	
feedback to gauge	Student teachers answer	
understanding and	open-ended questions,	
support tutor	interactive discussion	
engagement.	on syllabus, teachers'	
	handbook and pupils'	
	textbook in mixed	
	ability/ gender based	
	groups of 3 members.	
		2.2 Identify the meet
	2.3. Ask tutors to identify	2.3. Identify the most
	the most appropriate	appropriate teaching
	teaching strategies	strategies that can
	that can be employed	be employed to best
	to best deliver the	deliver the new
	new concepts in both	concepts in both CoE
	CoE and basic school	and basic school
	classroom to achieve	classroom to achieve
	the LOs and the LIs of	the LOs and the LIs
	the lesson.	of the lesson.
	E.g. (i) Practical	
	manipulation of	
	simple machines.	
	(ii) Video/ multimedia	
	simulation on a typical	
	measurement skill	
	that is GESI	
	responsive.	
	(iii). Group presentation	

2 Diamaing for	2.1		2.1	Dood and discuss the	40 mains a
3.Planning for	3.1.		3.1.	Read and discuss the	40 mins
teaching, learning		and discuss the		teaching and	
and assessment		teaching and learning		learning activities in	
activities for the		activities in the course		the course manuals	
lesson/s		manuals for the two		for the two course	
Reading and		course levels.		levels	
discussion of the	Note	e: Tutors should go			
teaching and learning		through the activities			
activities		one after the other			
Noting, addressing,		taking into			
and explaining areas		consideration the time			
where tutors may		available, resources			
require clarification		and nature of learners,			
Noting opportunities		coherency and			
for making explicit		methodology.			
links to the Basic					
School Curriculum	3.2.	Assist tutors to	3.2.	Discuss areas that	
Noting opportunities		identify and discuss		need clarification.	
for integrating: GESI		areas that need			
responsiveness and		clarification.			
ICT and 21 <sup>st</sup> C skills					
Reading, discussion,	3.3.	Lead tutors to discuss	2 2	Discuss how the	
and identification of	5.5.	how the different	5.5.	different activities	
continuous		activities would be		would be carried out	
assessment		carried out in both		in both CoE and	
opportunities in the		CoE and basic school		basic school	
lesson. Each lesson		classroom to achieve		classroom to achieve	
should include at		the LOs and the LIs of		the LOs and the LIs	
least two		lesson 8 from their		of lesson 8 from	
opportunities to use		course manuals.		their course manuals	
continuous		course manuals.			
assessment to	Mate		N/~+.		
support student	Note		Note		
teacher learning ,		Pays attention to all		Pays attention to all	
subject specific		learners, especially		learners, especially	
examples should be		girls and students with		girls and students	
provided for SL/HoD		Special Educational		with Special	
Resources: links to		Needs, ensuring their		Educational Needs,	
the existing PD		progress.( NTS 3f)		ensuring their	
Themes, for example,	$\succ$	Employs instructional		progress.( NTS 3f)	
action research,		strategies appropriate	$\succ$	Employs	
questioning and to		for mixed ability,		instructional	
other external		multilingual and multi-		strategies	
reference material:		age classes.(NTS 3g).		appropriate for	
literature, on web,				mixed ability,	
Utube, physical				multilingual and	
resources, power				multi-age	

point; how they		classes.(NTS 3g)
should be used.		
Consideration needs to be given to local availability	3.4. Ask tutors to discuss how GESI issues related to the teaching and learning activities of the lesson would be addressed.	3.4. Discuss how GESI issues related to the teaching and learning activities of the lesson would be addressed
	E g. (i). Pay attention to slow learner. (ii). Assign leadership roles to females and males equally.	
	<ul> <li>3.5. Guide tutors to explain how they would assist the student teachers to demonstrate the 21<sup>st</sup> century skill in the basic school classroom.</li> <li>E.g. (1) Digital Literacy e.g. The use of power- point to prepare and present lessons.</li> <li>(2) Development of leadership, collaborative and communicative skills through group works and presentations.</li> </ul>	<ul> <li>3.5. Explain how you would assist the student teachers to demonstrate the 21<sup>st</sup> century skill in the basic school classroom.</li> <li>E.g. (1) Digital Literacy e.g. The use of power-point to prepare and present lessons.</li> <li>(2) Development of leadership, collaborative and communicative skills through group works and presentations.</li> </ul>
	3.6. Ask tutors to read the assessment activities in the various course manuals and identify areas that require clarification.	3.6. Read the assessment activities in the various course manuals and identify areas that require clarification
	Note: (i) Assist your colleagues to review the assessment in the course manual to be in line with the NTEAP.	

	<ul> <li>(ii) Student teachers doing short presentations (3- 5 minutes each) on how to use Teachers' Handbook and Pupils Textbook to teach the Basic School Learner (Reflection on presentations)</li> <li>These could be added to their subject presentations on physical quantities portfolio.</li> </ul>		
	3.7. Lead tutors to identify the needed inclusive resources for teaching and learning of the concepts in both CoE and basic school classrooms.	3.7. Identify the needed inclusive resources for teaching and learning of the concepts in both CoE and basic school classrooms	
	Note: (i). Make sure the resources are enough and appropriate to all learners (males, females and persons with SEN). (ii). Let everybody have a concrete plan for	Note: (i). Make sure the resources are enough and appropriate to all learners (males, females and persons with SEN).	
	teaching the given topics, thus, the activities agreed on by the group to be followed	(ii). Let everybody have a concrete plan for teaching the given topics, thus, the activities agreed on by the group to be followed	
<ul> <li>4. Evaluation and review of session:</li> <li>Tutors should Identifying critical friends to observe lessons and report at next session</li> </ul>	4.1. Ask tutors to identify a critical friend who took part in the PD session to sit in their class during lesson to provide feedback and report on observations made in the next PD session.	4.1. Identify a critical friend who took part in the PD session to sit in their class during lesson to provide feedback and report on observations made in the next PD	15 mins

4. Identifying and addressing any		session.
outstanding issues relating to the lesson/s for clarification	4.2. Discuss with tutors anything relating to Lesson 8 that needs clarification.	4.2. Discuss with tutors anything relating to Lesson 8 that needs clarification.
	Note: (i). In the case of unresolved issues consult the subject writing leads. (ii). Encourage tutors to read lesson 9 from the PD manual and find relevant materials for the next session.	Note: (i). In the case of unresolved issues consult the subject writing leads. (ii). Encourage tutors to read lesson 9 from the PD manual and find relevant materials for the next session.

 Age Levels/s:JHS

 Name of Subject/s:
 JHS (PHYSICS): Basic School Physics Curriculum

 Materials
 JHS (CHEMISTRY): Climatic effects on nutrition in foods

 Tutor PD Session for Lesson 9 in the Course Manual

Guidance notes on Leading	Guidance Notes on Tutor	Time in
-		session
		36331011
-		
5035011		
Start the PD session with		20 mins
		20 111113
	1 1 In your distinctive	
	,	
<b>-</b> .		
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-		
-	•	
-		
1.2 Ask a critical friend	1.2 A critical friend to	
	_	
-	•	
,		
<b>–</b> .		
- · · ·		
1.3. Ask tutors to read	1.3. Read individually	
	'	
-	-	
	Guidance notes on Leading the session. What the SL/HoDs will have to say during each stage of the session Start the PD session with an icebreaker. 1.1. Ask tutors in their distinctive groups to write two things that didn't go on well in lesson 8 of the previous PD session on a post in card and tell how it affected the lesson. 1.2. Ask a critical friend to give feedback on his/ her observation of the previous enacted lesson laying emphasis on clarity of content, assessment strategies, ICT integration, GESI, 21 <sup>st</sup> Century. 1.3. Ask tutors to read individually and discuss in pairs the introductory	the session. What the SL/HoDs will have to say during each stage of the sessionActivity during the PD Session. What PD Session participants (Tutors) will do during each stage of the session.Start the PD session with an icebreaker.1.1. In your distinctive groups write two things that didn't go on well in lesson 8 of the previous PD session on a post in card and tell how it affected the lesson.1.1. In your distinctive groups write two things that didn't go on well in lesson 8 of the previous PD session on a post in card and tell how it affected the lesson.1.2. Ask a critical friend to give feedback on his/ her observation of the previous enacted lesson laying emphasis on clarity of content, assessment strategies, ICT integration, GESI, 21 <sup>st</sup> Century.1.2. Read individually and discuss1.3. Ask tutors to read individually and discuss1.3. Read individually and discuss in pairs

	1		
identify, address and	sections of the lesson	sections of the lesson	
provide explanations	up to the purpose and	up to and including	
for any areas where	indicate how they are	Learning Outcomes	
tutors might require	related to student	indicators in the	
clarification on an	teachers' relevant	course manual and	
aspect of the lesson.	previous knowledge.	indicate how they are	
SL/HoD take		related to student	
feedback to gauge		teachers' relevant	
understanding and		previous knowledge.	
support tutor	Note:		
engagement.	Physics-	Physics- Lesson title -	
NB SL/HoD should	Lesson title - Climatic	Climatic effects on	
ask tutors to plan for	effects on nutrition in foods	nutrition in foods	
their teaching as they	Lesson description:	Lesson description:	
go through the PD	This lesson looks at the	This lesson looks at the	
session	relationship between	relationship between	
30331011	climate, availability of	climate, availability of	
	nutrients and food	nutrients and food	
	-	2	
	production.	production.	
	Chemistry-Lesson title -	Chemistry-Lesson title -	
	Basic School Physics	Basic School Physics	
	Curriculum Materials	Curriculum Materials	
	Lesson description:	Lesson description:	
	The main topic for this	The main topic for this	
	lesson is basic school	lesson is basic school	
	physics curriculum	physics curriculum	
	materials. Under this topic	materials. Under this	
	Tutor discusses the rational,	topic Tutor discusses the	
	general aims, objectives,	rational, general aims,	
	and organisation of the	objectives, and	
	syllabus (Profile Dimension)	organisation of the	
	with student teachers.	syllabus (Profile	
	Student teachers will be	Dimension) with student	
	guided on how to develop	teachers. Student	
	rational, general aims,	teachers will be guided on	
	objectives, and organisation	how to develop rational,	
	of the syllabus (Profile	general aims, objectives,	
	Dimension)	and organisation of the	
	,	syllabus (Profile	
		Dimension)	
	1.4 Ask tutors to read and	1.4. Read and discuss	
	discuss the Learning	the Overview of	
	Outcomes and the	content and	
	learning indicators of the	identification of any	
	lesson 9 in the course	distinctive aspects of	
	manual	lesson 9 in the course	

Eg. PHYSCIS – LO	manual.	
Demonstrate skills in	E.g., PHYSICS – LO	
teaching Basic School	Demonstrate skills in	
Physics and in using Basic	teaching Basic School	
School Science Curriculum	Physics and in using Basic	
Materials for lessons	School Science Curriculum	
planning and delivering.	Materials for lesson	
(NTS 1b, 3a, 3e & 3j)	planning and delivery.	
LI		
	(NTS 1b, 3a, 3e & 3j)	
Provide Lesson plan on		
teaching some concepts	Provide Lesson plan on	
and show Video clip on	teaching some concepts	
teaching some topics in	and show Video clip on	
Basic School Physics.	teaching some topics in	
CHEMISTRY:	Basic School Physics.	
LO	CHEMISTRY:	
Demonstrate	LO	
understanding of the effect	Demonstrate	
of climatic change on	understanding of the	
, ,		
nature of the soil for plant	effect of climatic change	
crops and nutritive value of	on nature of the soil for	
produced crops for farm	plant crops and nutritive	
animals and farmed fish.	value of produced crops	
LI	for farm animals and	
Report in diverse forms	farmed fish.	
	LI	
	Report in diverse forms	
1.5 Ask tutors to identify	1.5. Identify and	
and discuss the distinctive	discuss the distinctive	
features of lesson 9 for the	features of lesson 9	
various levels from the	form your various	
course manual.	levels.	
Distinctive features		
	Distinctive	
JHS: PHYSCIS	features	
Rational, general		
aims, objectives, and	JHS: PHYSCIS	
organisation of the	Rational, general	
syllabus (Profile	aims, objectives,	
Dimension)	and organisation	
JHS: CHEMISTRY	of the syllabus	
Climate	(Profile	
availability of	Dimension)	
nutrients	JHS: CHEMISTRY	
food production	Climate	
	availability of	
1	1	

		nutrients	
		<ul> <li>food production</li> </ul>	
As this course is	1.6 Ask tutors to describe	1.6 Describe how you will	
dealing with	how they will assist student	assist student teachers to	
supporting and/ or	teachers to discuss the	discuss the effects of the	
assessing the	effects of the interventions	interventions of their	
Professional	of their Classroom Enquiry	Classroom Enquiry and	
<b>Teaching Portfolio</b>	and Action Research on	Action Research on	
Development and/	learners.	learners.	
or the Classroom	Refer to STS Handbook pg.	Refer to STS Handbook	
<b>Enquiry and Action</b>	91-100.	pg. 91-100	
Research Project		, ,	
Report writing,			
Tutors should to be			
provided with			
guidance on what to			
do including			
organisation of Post			
Internship Seminar.			
For each session	1.7 Ask tutors question on	1.7 Answer questions on	
remember this is the	how they can assist student	how you can facilitate	
final semester before	teachers to incorporate 21 <sup>st</sup>	student teachers to	
Students begin	century ICT, cross-cutting	incorporate 21 <sup>st</sup> century	
teaching provide	and GESI issue in daily STS	ICT, cross-cutting and	
prompts to help	lessons.	GESI issue in daily STS	
support this	e.g – How to use computer	lesson.	
transition for	or mobile phone to search		
planning and give	for information on the		
regard for GESI, CCI,	internet.	e.g – How to use	
ICT etc.		computer or mobile	
		phone to search for	
		information on the	
		internet.	
2 Concept	2.1 Ask tutors to identify	2.1 identify and explain	15 mins
Development (New	and explain the main	the main concepts of	
learning likely to	concepts of Lesson 9 from	Lesson 9 from the course	
arise in lesson/s):	the course manuals.	manuals	
Identification and			
discussion of new	Physics- Climatic effects on	Physics- Climatic effects	
learning,	nutrition in foods	on nutrition in foods	
potential barriers			
to learning for	<b>Chemistry</b> Basic School	Chemistry Basic School	
student teachers	Physics Curriculum	Physics Curriculum	
or students, new	Materials	Materials	
concepts or			
pedagogy being	2.2Ask tutors to outline and	2.2 Outline and discuss	
introduced in the	discuss possible potential	possible potential	

La cara da tala			
lesson, which	barriers areas in teaching	barriers areas in teaching	
need to be	the various concept listed.	the various concept	
explored with the		listed.	
SL/HoD	Example:		
NB The guidance for	JHS: (chemistry)-Learners	JHS: (chemistry)-Learners	
SL/HoD should set	sometimes think that poor	sometimes think that	
out what they need	climatic conditions and	poor climatic conditions	
to do to introduce	subsequent famines are	and subsequent famines	
and explain the	punishments from gods or	are punishments from	
issues/s with tutors,	evil deeds by community	gods or evil deeds by	
they should take	members	community members	
feedback to gauge	JHS: (Physcis)	JHS: (Physcis)	
understanding and	Student teachers may lack	Student teachers may	
support tutor	the skills of developing	lack the skills of	
engagement.	rational, general aims,	developing rational,	
	objectives, and organisation	general aims, objectives,	
	of the syllabus (Profile	and organisation of the	
	Dimension)	syllabus (Profile	
		Dimension)	
	2.3 In pairs ask tutors to	2.3 In pairs identify and	
	identify and discuss the	discuss the needed	
	needed pedagogy to be	pedagogy to be used in	
	used in the lesson 9 to	the lesson 9 to deliver the	
	deliver the new concepts in	new concepts in both CoE	
	both CoE and basic school	and basic school	
	classroom to achieve the	classroom to achieve the	
	LOs and the LIs of the	LOs and the LIs of the	
	lesson.	lesson.	
	Pedagogy:		
	Discussion, Practical		
	manipulation of simple		
	machines Independent,		
	Inquiry and reflections e-		
	learning opportunities.		
	rearning opportunities.		
	2.4 Ask tutors to identify	2.4 identify and discuss	
	and discuss how GESI issues	how GESI issues can be	
	can be integrated in the	integrated in the teaching	
	teaching of the new	of the new concepts of	
	concepts of Lesson 9 from	Lesson 9 from the course	
	the course manuals.	manuals.	
	Note: refer to GESI session 0	Note: refer to GESI	
2 Dianning for	for examples.	session 0 for examples.	10 min -
3.Planning for	3.1 Ask tutors to read	3.1 Read through the	40 mins
teaching, learning	through the teaching and	teaching and learning	
and assessment	learning activities of Lesson	activities of Lesson 9 from	

act	ivities for the	9 from the course manual	the course manual and	
les	son/s	and suggest other teaching	suggest other teaching	
$\succ$	Reading and	and learning activities for	and learning activities for	
	discussion of the	teaching the various	teaching the various	
	teaching and	courses.	courses.	
	learning activities	NB: Make sure the teaching		
$\triangleright$	Noting,	and learning activities for		
	addressing, and	teaching the various grade		
	explaining areas	levels are suitable for all		
	where tutors may	learners (males, females		
	require	and physically challenged).		
	clarification	and physically chancinged).		
$\triangleright$	Noting	3.2 Guide tutors to identify	3.2 Identify areas that	
Í	opportunities for	areas that need	need clarification and	
	making <i>explicit</i>	clarification and how to	how to address it in the	
	links to the Basic	address it in the lesson.	lesson.	
	School Curriculum			
$\triangleright$		3.3 Ask tutors in their	3.3 In your various	
	opportunities for	various groups/levels to	groups/levels discuss how	
	integrating: GESI	discuss how the	the different activities	
	responsiveness	different activities	would be carried out in	
	and ICT and 21 <sup>st</sup> C	would be carried out in	both CoE and basic school	
	skills	both CoE and basic	classroom to achieve the	
$\triangleright$	Reading,	school classroom to	LOs and the LIs of the	
-	discussion, and	achieve the LOs and the	course manual for lesson	
	identification of	Lis of the course manual	9.	
	continuous	for lesson 9.	5.	
	assessment			
	opportunities in	3.4 Ask tutors to discuss	3.4 Discuss how GESI	
	the lesson. Each	how GESI issues related	issues related to the	
	lesson should	to the teaching and	teaching and learning	
	include at least	learning activities of	activities of lesson 9	
	two opportunities	lesson 9 would be	would be addressed.	
	to use continuous	addressed.		
	assessment to			
	support student	E g. leadership roles should		
	teacher learning,	be equally assigned to		
	subject specific	both females and males.		
	examples should			
	be provided for	3.5 Ask tutors to identify	3.5 Identify two 21 <sup>st</sup>	
	SL/HoD	two 21 <sup>st</sup> century skills	century skills that can	
$\triangleright$	Resources: links	that can be developed	be developed in the	
	to the existing PD	in the learners and	learners and assist the	
	Themes, for	assist the student	student teachers to	
	example, action	teachers to	demonstrate it in the	
	research,	demonstrate it in the	basic school	
	questioning and	basic school classroom.	classroom.	
L	1			

to other external	Eg. The use of power		
reference	point to deliver an		
material:	inquiry lesson.		
literature, on	inquiry lesson.		
web, Utube,	3.6 Ask tutors to Read,	3.6 Read, identify and	
		discuss the continuous	
physical	identify and discuss the		
resources, power	continuous assessment	assessment opportunities	
point; how they	opportunities in the	in the lesson 9.	
should be used.	lesson 9.		
Consideration			
needs to be given			
to local			
availability			
Tutors should be			
expected to have			
a plan for the			
next lesson for			
student teachers			
4. Evaluation and	4.1 Ask tutors to identify a	4.1 Identify a critical	15 mins
review of session:	critical friend from the	friend from the same or	
	same or related	related discipline to	
Tutors should	discipline to observe the	observe the enactment of	
Identifying critical	enactment of their	their lesson and provide	
friends to observe	lesson and provide	feedback during the next	
lessons and	feedback during the	PD Session (NTS 1a).	
report at next	next PD Session (NTS		
session	1a).		
Identifying and			
addressing any	4.2 Ask tutors to identify	4.2 Identify unresolved	
outstanding issues	unresolved issues	issues relating to this	
relating to the	relating to this lesson 9	lesson 9 for clarification	
lesson/s for	for clarification.		
clarification	<b>NB:</b> Take note of all		
	unresolved issues that may		
	need further research or		
	consultation.		
	4.3. Ask tutors to read	4.3. Read through lesson	
	through lesson 10	10 before the next PD.	
	before the next PD.		

Age Levels/s: JHS (Physics)

# Name of Subject/s:

Skills in teaching Basic school Physics Further studies on the Secondary School Chemistry Curriculum

JHS (Chemistry)

# Tutor PD Session for Lesson 10 in the Course Manual

po fra be ses sho bu the SL/ do eao bu ado spo sho	cus: the bullet ints provide the me for what is to done in the ssion. The SWL buld use the llets to guide what ey write for the /HoD and tutors to and say during ch session. Each llet needs to be dressed and ecific reference buld be made to e course manual/s.	Guidance notes on Leading the session. What the SL/HoDs will have to say during each stage of the session	Guidance Notes on Tutor Activity during the PD Session. What PD Session participants (Tutors) will do during each stage of the session.	Time in session
	ntroduction to the	Start the PD session with an		20 mins
	ssion	icebreaker.		
	Review prior			
8	learning A critical friend to share findings for a short discussion and lessons	1.1. Ask tutors in their subject groups to write things they learnt in lesson 9 PD sessions.	1.1.Write things they learnt in lesson 9 PD sessions.	
~	learned Reading and discussion of the introductory sections of the lesson up to and	1.2. Ask tutors to explain how they applied what they have written in their varied lessons to the whole group.	1.2.Explain how you applied what you have written to the whole group	
~	including learning outcomes and indicators Overview of content and	<ol> <li>Invite critical friends to share their findings for a short discussion</li> </ol>	1.3.Critical friends to share their findings for a short discussion	
NB	identification of any distinctive aspects of the lesson/s, The guidance for	1.4. Ask tutors to read and discuss the Introductory sections of the lesson up to learning indicators from	1.4.Read and discuss the Introductory sections of the lesson up to learning indicators from their course	

SL/HoD should	their course manuals.	manuals.	
identify, address and			
provide explanations	LO: demonstrate skills in	. LO: demonstrate skills in	
for any areas where tutors might require	teaching Basic School Physics and in using Basic	teaching Basic School Physics and in using Basic	
clarification on an	School Science Curriculum	School Science	
aspect of the lesson.	Materials for lessons	Curriculum Materials for	
SL/HoD take	planning and delivering.	lessons planning and	
feedback to gauge	(NTS 1b, 3a, 3e & 3j)	delivering. (NTS 1b, 3a,	
understanding and	LI: Provide Lesson plan on	3e & 3j)	
support tutor	teaching some concepts	LI: Provide Lesson plan on	
engagement.	and show Video clip on	teaching some concepts	
NB SL/HoD should	teaching some topics in	and show Video clip on	
ask tutors to plan for	Basic School Physics.	teaching some topics in	
their teaching as they		Basic School Physics.	
go through the PD session	1.5. Guide tutors to	1.5.Explain how the	
	explain how the course	course learning	
	learning outcomes and	outcomes and their	
	their corresponding	corresponding	
	indicators are related to	indicators are related	
	student teachers'	to student teachers'	
	relevant previous	relevant previous	
	knowledge.	knowledge.	
	<i>Note:</i> The topics and lesson		
	descriptions for lesson 10 at		
	the various course levels		
	are:		
	JHS (Physics) Topic: Skills in		
	teaching Basic school		
	Physics.		
	Lesson Description The		
	lesson students will be		
	expected to communicate their own physics questions		
	and findings bearing in		
	mind that studies physics		
	involve fundamental		
	concepts, such as how		
	matter moves through		
	space and time, their		
	energy and forces' effect on		
	that matter.		
	•		

	JHS (Chemistry) Topic:		
	Further studies on the		
	Secondary School Chemistry		
	Curriculum		
	Lesson Description - The		
	lesson is designed to embed		
	concepts in chemistry as		
	education in this field is		
	-		
	facing a challenge of		
	students losing interest in		
	learning the subject.		
	1.6. Ask tutors to	1.6.Identify and discuss	
	identify and discuss the	the distinctive	
	distinctive features of	features of lesson 10	
	lesson 10 for the two	for the two courses	
	courses from the course	from the course	
	manuals.	manuals	
	manuals.	manuals	
	JHS (Chemistry):		
	Formation of day		
	and night		
	JHS (Physics):		
	<ul> <li>Experimental</li> </ul>		
	Process		
	1100000		
As this course is	1.7.Ask tutors to explain	1.7. Explain how you	
dealing with	how they would assist	would assist initial	
supporting and/ or	initial teachers to	teachers to discuss	
assessing the	discuss some	some professional	
Professional	professional practices of	practices of their	
Teaching Portfolio	their mentors and co-	mentors and co-	
Development and/	mentees from the NTS.	mentees from the	
or the Classroom	Refer to NTS:	NTS.	
Enquiry and Action	Professional Values and	Refer to NTS:	
Research Project	Attitudes	Professional Values and	
Report writing,	1(a) critically and	Attitudes	
Tutors should be	collectively reflects to	1(a) critically and	
provided with	improve teaching and	collectively reflects to	
guidance on what to	learning.	improve teaching and	
do including	Professional Knowledge	learning.	
organisation of Post	2(c) Has secure content	Professional Knowledge	
Internship Seminar.			
	knowledge, pedagogical	2(c) Has secure content	
	knowledge, pedagogical knowledge and pedagogical	2(c) Has secure content knowledge, pedagogical	

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	in.	knowledge for the school	
	2(f) Takes accounts of and	and grade they teach in.	
	respects learners' cultural,	2(f) Takes accounts of	
	linguistic, socio-economic	and respects learners'	
	and educational	cultural, linguistic, socio-	
	backgrounds in planning	economic and	
	and teaching.	educational backgrounds	
	Professional Practice	in planning and teaching.	
	3(a) Plans and delivers	Professional Practice	
	varied and challenging	3(a) Plans and delivers	
	lessons, showing a clear	varied and challenging	
	grasp of the intended	lessons, showing a clear	
	outcomes of their teaching.	grasp of the intended	
	3(c) Creates a safe,	outcomes of their	
	encouraging learning	teaching.	
	environment.	3(c) Creates a safe,	
	3 (d) Manages behaviour	encouraging learning	
	and learning with small and	environment.	
	large classes.	3 (d) Manages behaviour	
	3(g) Employs instructional	and learning with small	
	strategies appropriate for	and large classes.	
	mixed ability, multilingual	3(g) Employs	
	and multi-age classes.	instructional strategies	
	5	appropriate for mixed	
		ability, multilingual and	
		multi-age classes.	
For each session	1.8. Ask tutors to	1.8.Identify the cross-	
remember this is the	identify the cross-	cutting issues in the	
final semester before	cutting issues in the	course manuals and	
Students begin	course manuals and	explain how they can	
teaching provide	explain how they can	help the initial	
prompts to help	help the initial teachers	teachers to	
support this	to implement them in	implement them in	
transition for	the basic school	the basic school	
planning and give	classroom after posting.	classroom after	
regard for GESI, CCI,	l l l l l l l l l l l l l l l l l l l	posting.	
ICT etc.		P	
	Examples of cross-cutting	Examples of cross-cutting	
	issues are;	issues are;	
	The use of ICT	The use of ICT	
	<ul> <li>Equity</li> </ul>	<ul> <li>Equity</li> </ul>	
	<ul><li>Inclusivity</li></ul>	<ul> <li>Inclusivity</li> </ul>	
	<ul> <li>Gender issues</li> </ul>	Gender issues	
		0011001 133003	

2 Concept	2.1. Ask tutors to list and	2.1. List and discuss	15 mins
Development (New	discuss the major	the major concepts in	
learning likely to	concepts in lesson 10.	lesson 10.	
arise in lesson/s):			
<ul> <li>Arise in lesson/s):</li> <li>➢ Identification and discussion of new learning, potential barriers to learning for student teachers or student teachers or students, new concepts or pedagogy being introduced in the lesson, which need to be explored with the SL/HoD</li> <li>NB The guidance for SL/HoD should set out what they need to do to introduce and explain the issues/s with tutors, they should take feedback to gauge understanding and support tutor engagement.</li> </ul>	<ul> <li>2.2. Ask tutors to discuss the potential misconceptions and barriers in the course manual with respect to the concepts.</li> <li>2.3. Ask tutors to identify the most appropriate teaching strategies that can be employed to best deliver the new concepts in both CoE and basic school classroom to achieve the LOs and the LIs of the lesson.</li> <li><i>E.g. (i) Practical manipulation of simple machines. (ii) Video/ multimedia simulation on a typical measurement skill that is GESI responsive. (iii). Group presentation</i></li> </ul>	<ul> <li>2.2. Discuss the potential misconceptions and barriers in the course manual with respect to the concepts.</li> <li>2.3. Identify the most appropriate teaching strategies that can be employed to best deliver the new concepts in both CoE and basic school classroom to achieve the LOs and the LIs of the lesson.</li> </ul>	
3.Planning for	3.1. Guide tutors to read	3.1.Read and discuss the	40 mins
teaching, learning	and discuss the teaching	teaching and learning	
and assessment	and learning activities in	activities in the	
activities for the	the course manuals for	course manuals for	
lesson/s	the two course levels.	the two course levels	
Reading and	Note: Tutors should go		
discussion of the	through the activities		
teaching and learning activities	one after the other		
	taking into consideration the time		
Noting, addressing,	available, resources and		
and explaining areas where tutors may	nature of learners,		
require clarification	coherency and		
Noting opportunities	methodology.		
for making <i>explicit</i>	methodology.		
links to the Basic			

School Curriculum Noting opportunities for integrating: GESI responsiveness and ICT and 21 <sup>st</sup> C skills	<ul> <li>3.2. Assist tutors to identify and discuss areas that need clarification.</li> </ul>	3.2.Discuss areas that need clarification.
Reading, discussion, and identification of continuous assessment opportunities in the lesson. Each lesson should include at least two opportunities to use continuous	3.3. Lead tutors to discuss how the different activities would be carried out in both CoE and basic school classroom to achieve the LOs and the LIs of lesson 10 from their course manuals.	3.3.Discuss how the different activities would be carried out in both CoE and basic school classroom to achieve the LOs and the LIs of lesson 10 from their course manuals
assessment to	Note:	Note:
support student teacher learning, subject specific examples should be provided for SL/HoD Resources: links to the existing PD Themes, for example, action research, questioning and to other external reference material: literature, on web, Utube, physical	<ul> <li>Pays attention to all learners, especially girls and students with Special Educational Needs, ensuring their progress.(NTS 3f)</li> <li>Employs instructional strategies appropriate for mixed ability, multilingual and multi- age classes.(NTS 3g)</li> </ul>	<ul> <li>Pays attention to all learners, especially girls and students with Special Educational Needs, ensuring their progress.(NTS 3f)</li> <li>Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes.(NTS 3g)</li> </ul>
resources, power point; how they should be used. Consideration needs to be given to local availability Tutors should be expected to have a plan for the next lesson for student teachers	<ul> <li>3.4. Ask tutors to discuss how GESI issues related to the teaching and learning activities of the lesson would be addressed.</li> <li>E g. (i). Pay attention to slow learner.</li> <li>(ii). Assign leadership roles to females and males equally.</li> </ul>	3.4. Discuss how GESI issues related to the teaching and learning activities of the lesson would be addressed
	3.5. Guide tutors to explain how they would assist the student teachers to	3.5. Guide tutors to explain how they would assist the student teachers to

[	L		
	demonstrate the 21 <sup>st</sup>	demonstrate the 21 <sup>st</sup>	
	century skill in the basic	century skill in the	
	school classroom.	basic school	
	E.g. (1) Digital Literacy	classroom.	
	e.g. The use of power-		
	point to prepare and	E.g. (1) Digital	
	present lessons.	Literacy e.g. The use	
	(2) Development of	of power-point to	
	leadership, collaborative	prepare and present	
	and communicative	lessons.	
	skills through group	(2) Development of	
	works and	leadership,	
	presentations.	collaborative and	
	presentations.	communicative skills	
		through group works	
		and presentations.	
		2 C Deed the sec	
	3.6. Ask tutors to read	3.6.Read the assessment	
	the assessment	activities in the	
	activities in the various	various course	
	course manuals and	manuals and identify	
	identify areas that	areas that require	
	require clarification.	clarification	
	Note:		
	(i) Assist your colleagues to		
	review the assessment in		
	the course manual to be in		
	line with the NTEAP.		
	(ii) Student teachers doing		
	short presentations (3-5		
	minutes each) on how to		
	use Teachers' Handbook		
	and Pupils Textbook to		
	teach the Basic School		
	Learner (Reflection on		
	presentations)		
	These could be added to		
	their subject presentations		
	on physical quantities		
	portfolio.		
	3.7. Lead tutors to	3.7. Identify the needed	
	identify the needed	inclusive resources	
	inclusive resources for	for teaching and	
		_	
	teaching and learning of	learning of the	
	the concepts in both	concepts in both CoE	
	CoE and basic school	and basic school	

	classrooms.	classrooms	
	Note:		
	(i). Make sure the resources	Note:	
	are enough and appropriate	(i). Make sure the	
	to all learners (males,	resources are enough	
	females and persons with	and appropriate to all	
	SEN).	learners (males, females	
	(ii). Let everybody have a	and persons with SEN).	
	concrete plan for teaching	(ii). Let everybody have a	
	the given topics, thus, the	concrete plan for	
	activities agreed on by the	teaching the given topics,	
	group to be followed.	thus, the activities	
		agreed on by the group	
		to be followed.	
4. Evaluation and	4.1.Ask tutors to identify a	4.1. Identify a critical	15 mins
review of session:	critical friend who took	friend who took part in	
	part in the PD session to	the PD session to sit in	
Tutors should	sit in their class during	their class during lesson	
Identifying	lesson to provide	to provide feedback and	
critical friends to	feedback and report on	report on observations	
observe lessons	observations made in	made in the next PD	
and report at	the next PD session.	session.	
next session			
Identifying and	4.2. Discuss with tutors	4.2. Discuss with tutors	
addressing any	anything relating to	anything relating to	
outstanding	Lesson 10 that needs	Lesson 10 that needs	
issues relating to	clarification.	clarification.	
the lesson/s for	Note:	Note:	
clarification	(i). In the case of unresolved	(i). In the case of	
	issues consult the subject	unresolved issues consult	
	writing leads.	the subject writing leads.	
	(ii). Encourage tutors to	(ii). Encourage tutors to	
	read lesson 11 from the PD	read lesson 11 from the	
	manual and find relevant	PD manual and find	
	materials for the next	relevant materials for the	
	session.	next session.	

# Age Levels/s: JHS

# Name of Subject/s: Physics & Chemistry

Course Title/s: Physics- Properties of Matter and Electromagnetism Chemistry: Chemistry Around Us Lesson Title: Physics- Skills in Teaching Basic School Physics Chemistry: Co-planning, Co-teaching and Coassessment

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

Focus: the bullet	Guidance notes on Leading	Guidance Notes on	Time in
points provide the	the session. What the	Tutor Activity during the	session
frame for what is to	SL/HoDs will have to say	PD Session. What PD	
be done in the	during each stage of the	Session participants	
session. The SWL	session	(Tutors) will do during	
should use the		each stage of the	
bullets to guide what		session.	
they write for the			
SL/HoD and tutors to			
do and say during			
each session. Each			
bullet needs to be			
addressed and			
specific reference			
should be made to			
the course manual/s.			
1 Introduction to the	Start the session with an		20 mns
session	icebreaker.		
Review prior			
learning	1.1. Ask tutors in their	1.1. Identify two	
A critical friend to	subject groups to	things you learned	
share findings for	identify two things they	during the previous	
a short discussion	learned during the	PD session and tell	
and lessons	previous PD session and	how they affected	
learned	tell how they affected	your lessons	
Reading and	their lessons positively.	positively.	
discussion of the			
introductory	1.2. Ask tutors to invite	1.2. Invite your	
sections of the	their critical friends to	critical friends to	
lesson up to and	share their observations	share their	
including learning	and have a brief	observations made	
outcomes and	discussion on the	during lesson	
indicators	suggestions provided by	delivery and discuss	
Overview of	the critical friends.	the suggestions	
content and		provided.	

identification of any distinctive aspects of the lesson/s, NB The guidance for SL/HoD should identify, address and provide explanations for any areas where tutors might require	1.3. Ask tutors to read the introduction of their respective course manuals and discuss the course learning outcomes (CLOs) and course learning indicators (CLIs) in groups as appropriate.	1.3. Read and discuss the introductory sections of the lesson up to course learning outcomes and indicators from your course manuals.	
clarification on an aspect of the lesson. SL/HoD take feedback to gauge understanding and support tutor engagement. NB SL/HoD should ask tutors to plan for their teaching as they	Note (1): The topics and lesson introduction/descriptions for lesson 11 at the various course levels are: JHS (Physics) Topic: Skills in teaching Basic school Physics	Note (1): The topics and lesson introduction/descriptions for lesson 11 at the various course levels are: JHS (Physics) Topic: Skills in teaching Basic school Physics	
go through the PD session	<i>Lesson Description</i> - The lesson is a furtherance to lesson 10 and must help students to understand that Physics gets involved in their daily life right from waking up in the morning	<i>Lesson Description</i> - The lesson is a furtherance to lesson 10 and must help students to understand that Physics gets involved in their daily life right from waking up in the morning	
	JHS (Chemistry) Topic: Co- planning, co-teaching and co-assessment Lesson Description – This lesson deals with interpreting, planning, executing and assessing lessons taught in reflective mode.	JHS (Chemistry) Topic: Co- planning, co-teaching and co-assessment Lesson Description – This lesson deals with interpreting, planning, executing and assessing lessons taught in reflective mode.	
	E.g., 2. Physics CLOs: Demonstrate skills in teaching Basic School Physics and in using Basic School Science Curriculum Materials for lessons planning and delivering. (NTS 1b, 3a, 3e & 3j)	E.g., 2. Physics CLOs: Demonstrate skills in teaching Basic School Physics and in using Basic School Science Curriculum Materials for lessons planning and delivering. (NTS 1b, 3a,	

	0.00	
Physics CLIs:	3e & 3j)	
Provide Lesson plan on	Physics CLIs:	
teaching some concepts	Provide Lesson plan on	
and show Video clip on teaching some topics in	teaching some concepts and show Video clip on	
Basic School Physics.	teaching some topics in	
Busic School Filysics.	Basic School Physics.	
E.g., 3. Chemistry CLOs:	Busic School Physics.	
Demonstrate understanding	E.g., 3. Chemistry CLOs:	
of curriculum, required	Demonstrate	
pedagogies and assessment	understanding of	
procedures. Understand	curriculum, required	
how learning occurs in	pedagogies and	
diverse contexts and apply	assessment procedures.	
this in their execution of co-	Understand how learning	
planned and co-taught	occurs in diverse contexts	
lesson	and apply this in their	
	execution of co-planned	
	and co-taught lesson	
Chemistry CLIs:	Chemistry CLIs:	
In pairs co-plan, co-teach, co-assess and co-reflect	In pairs co-plan, co- teach, co-assess and co-	
prepared 30-minute lesson	reflect prepared 30-	
from week 10.	minute lesson from week	
	10.	
	201	
1.3.1. Guide tutors to	1.3.1. Explain how the	
explain how the course	course learning	
learning outcomes and	outcomes and their	
their corresponding	corresponding indicators	
indicators are related to	are related to student	
student teachers' relevant	teachers' relevant	
previous knowledge.	previous knowledge.	
NOTE: This should enable		
tutors to tell the possible		
preconceptions student		
teachers have about the		
various learning indicators.		
1.4. Ask tutors to	1.4. Identify and discuss	
identify and discuss the	the distinctive features	
distinctive features of	of lesson 11 for the two	
lesson 11 for the two	courses from the course	
courses from the course	manuals.	
manuals.		

NOTE Distinctive Features JHS (Physics):	NOTE Distinctive Features JHS (Physics):
<ul> <li>Planning and designing experiments</li> <li>Communicating and reporting</li> <li>Discussions on experimental results.</li> </ul>	<ul> <li>Planning and designing experiments</li> <li>Communicating and reporting</li> <li>Discussions on experimental</li> </ul>

As this course is	1.5. Ask tutors to discuss	1.5. Discuss how you will
dealing with	how they will assist	assist student teachers
supporting and/ or	student teachers during	during the post
	-	
assessing the	the post internship	internship seminars to
Professional	seminars to practice the	practice the qualities of a
Teaching Portfolio	qualities of a	professional teacher
Development and/	professional teacher	when posted.
or the Classroom	when posted.	
Enquiry and Action		Some Qualities of a
Research Project	Some Qualities of a	Professional Teacher are:
Report writing,	Professional Teacher are:	Good teachers
Tutors should be	Good teachers are	are strong
provided with	strong	communicators
guidance on what to	communicators	<ul> <li>Good teachers</li> </ul>
do including	<ul> <li>Good teachers listen</li> </ul>	listen well.
-	well.	<ul> <li>Good teachers</li> </ul>
organisation of Post		
Internship Seminar.	<ul> <li>Good teachers focus</li> <li>Good teachers focus</li> </ul>	focus on
	on collaboration	collaboration
	Good teachers are	Good teachers
	adaptable.	are adaptable.
	Good teachers are	Good teachers
	engaging.	are engaging.
	Good teachers show	Good teachers
	empathy	show empathy
	Good teachers have	Good teachers
	patience.	have patience.
	<ul> <li>Professional</li> </ul>	Professional
	teachers Value real-	teachers Value
	world learning.	real-world
	<ul> <li>Professional</li> </ul>	learning.
	teachers share best	<ul> <li>Professional</li> </ul>
	practices	teachers share
	<ul> <li>Professional</li> </ul>	best practices
	teachers are life-	<ul> <li>Professional</li> </ul>
	_	-
	long learners.	teachers are life-
		long learners.
	1.C. Cuide tutere to surla'	1.C. Evalain the
	1.6. Guide tutors to explain	1.6. Explain the
	the classifications of the	classifications of the
	Newly Qualified Teachers	Newly Qualified Teachers
	(NQTs) roles and	(NQTs) roles and
	responsibilities in the	responsibilities in the
	portfolio assessment	portfolio assessment
	process and how they will	process and how you will
	discuss the classifications	discuss the classifications
	with the extending teachers	with the extending
	during the post internship	teachers during the post

seminar.	internship seminar.
Note: The classifications of the Newly Qualified Teachers (NQTs) in the portfolio assessment process are; > Collection > Selection > Reflection > Assessment	
<ul> <li>1.7. In their subject groups, ask tutors to discuss the Sample Portfolio Elements that would be used both by district and regional assessors and how they will share these sample portfolio elements with the student teachers during the post internship seminar. Note: Sample Portfolio Elements are;</li> <li>Teaching Philosophy</li> </ul>	1.7. Discuss the Sample Portfolio Elements that would be used both by district and regional assessors and how you will share these sample portfolio elements with the student teachers during the post internship seminar.
<ul> <li>Scheme of learning.</li> <li>Lesson plan.</li> <li>Report from Head of institution confirming that the teacher has taught for not less than 10 hours in a term (90 hours) for TCPD cycle.</li> <li>Reflective log/journal</li> <li>Teacher Training Logbook</li> <li>Action research</li> </ul>	
<ul> <li>conducted.</li> <li>Write up on assessment methods used with justification.</li> <li>Copies of learners' activities</li> <li>Photos/Videos on lessons</li> </ul>	

· · ·		
For each session	1.8. Ask tutors to identify	1.8. Identify decisions
remember this is the	decisions that needed to be	that needed to be made
final semester before	made during GESI	during GESI responsive
Students begin	responsive lesson planning	lesson planning how you
teaching provide	how they can help student	can help student
prompts to help	teachers to implement	teachers to implement
support this	them in the basic school	them in the basic school
transition for	classroom after posting.	classroom after posting.
planning and give	classicom arter posting.	Note:
	Note:	To ensure GESI
regard for GESI, CCI,		
ICT etc.	To ensure GESI	responsiveness lesson
	responsiveness lesson	planning, the following
	planning, the following	wide range of decisions
	wide range of decisions	needed to be made:
	needed to be made:	Choice of learning
	> Choice of learning	materials to use
	materials to use	Methodologies
	Methodologies	➢ Content
	Content	➤ Learning
	Learning activities	activities
	Language use	Language use
	<ul> <li>Classroom setup</li> </ul>	<ul> <li>Classroom setup</li> </ul>
	<ul> <li>Classroom</li> </ul>	<ul> <li>Classroom</li> </ul>
	interaction	interaction
	<ul> <li>Assessment of the</li> </ul>	<ul> <li>Assessment of the</li> </ul>
	-	-
	learning/learner	learning/learner
	Fair knowledge of the background of	Fair knowledge of the background
	the background of	the background
	learners to inform	of learners to
	all the above.	inform all the
		above.
	1.9.Ask tutors to discuss	1.9. Discuss GESI
	GESI responsive lesson	responsive lesson
	-	-
	planning activities and	planning activities
	how they would help	and how you would
	the initial teachers to	help the initial
	implement them in the	teachers to
	basic school classroom	implement them in
	after posting.	the basic school
		classroom after
		posting.
	Note:	Note:
	GESI Responsive Lesson	GESI Responsive Lesson
	Planning Activities:	Planning Activities:
	Reviews student	Reviews student
	attendance every 2-3	attendance every 2-3

[]		
	months (particularly for	months (particularly for
	females) - if there are	females) - if there are
	problems with	problems with
	attendance, the	attendance, the teacher
	teacher should follow	should follow up with the
	up with the head	head teacher and
	teacher and parents.	parents.
$\rightarrow$	Plan classroom seating	Plan classroom
	so that males and	seating so that males
	females are mixed, and	and females are mixed,
	so that pupils who need	and so that pupils who
	more support sit at the	need more support sit at
	front Protect students	the front Protect
	with disability from	students with disability
	abuse or bully by other	from abuse or bully by
	students.	other students.
$\succ$	Plan to use teaching	• Plan to use
	strategies that ensure	teaching strategies that
	equal participation of	ensure equal
	both females and	participation of both
	males. (Refer to	females and males.
	Guidance note for	(Refer to Guidance note
	integrating gender	for integrating gender
	equality and social	equality and social
	inclusion, Pg. 16)	inclusion, Pg. 16)

<ul> <li>2 Concept</li> <li>Development (New learning likely to arise in lesson/s):</li> <li>➢ Identification and discussion of new learning, potential barriers to learning for student teachers or student teachers or students, new concepts or pedagogy being introduced in the lesson, which need to be explored with the</li> </ul>	<ul> <li>2.1. Ask tutors to list and explain the major concepts in lesson 11.</li> <li><i>E.g.</i></li> <li><i>JHS: (Physics)</i></li> <li><i>Planning and designing.</i></li> <li><i>Communicating and reporting</i></li> <li><i>Practical activities.</i></li> <li><i>JHS: (Chemistry)</i></li> <li><i>Curriculum</i></li> <li><i>CO-plan, co-teach and co-assess</i></li> <li><i>Co-reflect.</i></li> <li>2.2 Ask tutors to discuss</li> </ul>	<ul> <li>2.1. List and explain the major concepts in lesson 11.</li> <li>2.2 Discuss the notential</li> </ul>	15 mins
explored with the SL/HoD NB The guidance for SL/HoD should set out what they need to do to introduce and explain the issues/s with tutors, they should take feedback to gauge understanding and support tutor engagement.	<ul> <li>2.2. Ask tutors to discuss the potential misconceptions and barriers with respect to the concepts listed.</li> <li>NB: Misconceptions related to the concepts are: JHS (Physics) (i). Some student teachers think that curriculum is just about the content.</li> <li>Solution: Curriculum is defined: Planned learning experiences with intended outcomes while recognizing the importance of possible unintended outcomes. There are three types of curriculum), (2) hidden (unofficial curriculum), and (3) absent or null (excluded curriculum).</li> </ul>	2.2. Discuss the potential misconceptions and barriers with respect to the concepts listed.	
	2.3. Lead tutors to discuss the potential barriers that may impede extending teachers' learning and	2.3. Discuss the potential barriers that may impede extending teachers' learning and application of concepts learned in	

application of several	hasia coho ala	
application of concepts learned in basic schools.	basic schools.	
learned in basic schools.		
E.g., Possible Barriers:		
Student teachers		
may lack the skills of		
applying some of the		
experimental		
process skills		
appropriately.		
<ul> <li>Large class size.</li> </ul>		
<ul> <li>Student teachers'</li> </ul>		
inability to design		
appropriate		
teaching and		
learning activities to		
aid in learners'		
acquisition of core		
transferrable skills.		
2.4. Ask tutors to	2.4. Identify the most	
identify the most	appropriate teaching	
appropriate teaching	strategies that can be	
strategies that can be	employed to best deliver	
employed to best	the new concepts in both	
deliver the new	CoE and basic school	
concepts in both CoE	classroom to achieve the	
and basic school	LOs and the LIs of the	
classroom to achieve	lesson.	
the LOs and the LIs of		
the lesson.		
E.g. (i) Teacher-led		
discussion on salient		
components of the		
curriculum to consider as		
translated into 30-minute		
lesson		
ii. Put students in pairs to		
enact the 30-minute lessons		
from week 10 (Each teaches		
a 30-minute lesson)		
(iii). Teacher-led whole-class		
reflective sessions.		
Students engaged in		
discussions on outcome of		
paired activities.		

(iv) E-Lerning/Practical Activity: Tutor guides student teachers in groups of 3 members each with mixed ability on how to communicate and report their experimental result. (v). E-Lerning/Practical Activity: Tutor allows student teachers to design their own experiments and provide how they will communicate and report their experimental results in their work book.	

3.P	anning for	3.1. Ask tutors to read and	3.1. Read and discuss the	40 mins
	ching, learning	discuss the appropriateness	appropriateness of the	
	assessment	of the teaching and learning	teaching and learning	
acti	vities for the	activities in the course	activities in the course	
less	on/s	manuals for the two course	manuals for the two	
$\succ$	Reading and	levels.	course levels.	
	discussion of the	Note: Tutors should go	Note: Tutors should go	
	teaching and	through the activities one	through the activities	
	learning	after the other taking into	one after the other	
	activities	consideration the	taking into	
$\succ$	Noting,	coherency, methodology.	consideration the	
	addressing, and	time available, teaching	coherency,	
	explaining areas	and learning resources, and	methodology. time	
	where tutors	characteristics of learners	available, teaching	
	may require	as well as GESI related	and learning	
	clarification	issues.	resources, and	
$\succ$	Noting	E.g., (i) Plan to use	characteristics of	
	opportunities for	exercises/activities that do	learners as well as	
	making <i>explicit</i>	not reinforce traditional	GESI related issues.	
	links to the Basic	gender roles and in some	E.g., (i) Plan to use	
	School	cases, actively challenges or	exercises/activities	
	Curriculum	reverses traditional gender	that do not reinforce	
	Noting	roles.	traditional gender	
	opportunities for	(ii) Review TLRs for	roles and in some	
	integrating: GESI	traditional gender roles and	cases, actively	
	responsiveness	ensures that materials are	challenges or reverses	
	and ICT and 21 <sup>st</sup>	distributed and used equally	traditional gender	
~	C skills	between females and males	roles.	
	Reading,		(ii) Review TLRs for	
	discussion, and identification of		traditional gender	
	continuous		roles and ensures that materials are	
	assessment		distributed and used	
	opportunities in		equally between	
	the lesson. Each		female and males	
	lesson should		Jennale and males	
	include at least	3.1.1. Assist tutors to	3.1.1. Identify and	
	two	identify and discuss	discuss areas that	
	opportunities to	areas that need	need clarification.	
	use continuous	clarification.		
	assessment to			
	support student	3.2. Lead tutors to discuss	3.2. Discuss how the	
	teacher learning,	how the varied activities	varied activities would	
	subject specific	would be carried out in	be carried out in both	
	examples should	both CoE and basic school	CoE and basic school	
	be provided for	classroom to achieve the	classroom to achieve the	
	SL/HoD	LOs and the LIs of lesson 11	LOs and the LIs of lesson	
I	1 -			1

<u> </u>			-	
	Resources: links	from their course manuals.	11 from your course	
	to the existing	Note: Ensure that the	manuals.	
	PD Themes, for	language used in instructing	Note: Ensure that the	
	example, action	learners to carry out the	language used in	
	research,	varied activities is gender	instructing learners to	
	questioning and	responsive.	carry out the varied	
	to other external		activities is gender	
	reference	E.g., 1: Instead of "When	responsive.	
	material:	everyone contributes his	E. g.,1: Instead of "When	
	literature, on	ideas, the discussion will be	everyone contributes <u>his</u>	
	web, Utube,	a success".	ideas, the discussion will	
	physical	It may read: "When	be a success".	
	resources,	everyone contributes <u>his or</u>	It may read: "When	
	power point;	<u>her</u> ideas, the discussion will	everyone contributes <u>his</u>	
		be a success".		
	how they should	be a success.	or her ideas, the	
	be used.		discussion will be a	
	Consideration		success".	
	needs to be	2 Do not uso harsh	2 Do not uso harsh	
	given to local	2. Do not use harsh,	2. Do not use harsh,	
~	availability	threatening language or	threatening language or	
	Tutors should be	actions that instil fear in	actions that instil fear in	
	expected to have	both females and males.	both females and males.	
	a plan for the			
	next lesson for	3.3. Ask two tutors to	3.3. Model how to co-	
	student teachers	model how to co-plan,	plan, co-teach and co-	
		co-teach and co-reflect	reflect a lesson based on	
		a lesson based on any	any selected concept in	
		selected concept in the	the semester.	
		semester.		
		3.4. Ask tutors to discuss	3.4. Discuss how GESI	
		how GESI issues related to	issues related to the	
		the teaching and learning	teaching and learning	
		activities of the lesson	activities of the lesson	
		would be addressed.	would be addressed.	
		E g. (i). Prepare and use	E g. (i). Prepare and use	
		TLRs that attract the	TLRs that attract the	
		attention and interest of	attention and interest	
		both female and male	of both female and	
		students, such as short	male students, such	
		video on science concept	as short video on	
		to be learned.	science concept to be	
		(ii). Attract the interest of	learned.	
		both female and male	(ii). Attract the interest of	
		students, motivate them	both female and male	
		and provide relevance to	students, motivate them	
L				

the lesson learned.	and provide relevance to	
	the lesson learned.	
3.5. Guide tutors to explain	3.5. Explain how you	
how they would assist the	would assist the student	
student teachers to	teachers to demonstrate	
demonstrate the 21 <sup>st</sup>	the 21 <sup>st</sup> century skill in	
century skill in the basic	the basic school	
school classroom.	classroom.	
E.g. (1) Student teachers to		
use Open Courseware, Open		
Learning Imitative and		
Open Course Library to		
search for additional information. This will		
enable them to acquire		
digital literacy skills		
(2) Digital Literacy skills e.g.		
The use of power-point to		
prepare and present		
lessons.		
(3) Development of critical		
thinking and problem-		
solving skills, collaborative		
and communicative skills		
through group works and		
presentations.		
3.6. Ask tutors to read the	3.6. Read the assessment	
assessment activities in the	activities in the various	
various course manuals and	course manuals and	
identify areas that require	identify areas that	
clarification.	require clarification.	
Note: (i) Assist your colleagues to review the		
assessment in the course		
manual to be in line with		
the NTEAP.		
(ii) Tutor guides student		
teachers in groups of 3		
members each with mixed		
ability to plan and design		
experiments in Basic School		
Physics concepts. (Student		
teachers should provide		
their plan and design of		

			,
	experiments in their work		
	books)		
	These could be added to		
	their subject portfolio.		
	(iii). Inform tutors to ask		
	student teachers to prepare		
	a LESSON PLAN on the		
	topic/sub-strand		
	"Electrical circuit". Integrate		
	-		
	two cross cutting issues and two 21 <sup>st</sup> century skills.		
	-		
	This could be one of their		
	subject projects for the		
	semester.		
	3.7. Lead tutors to identify	3.7. Identify the inclusive	
	the needed inclusive	resources needed for	
	resources for co-planning,	teaching and learning	
	co-teaching and co-	the concepts in both the	
	reflecting on any selected	CoE and basic school	
	concept within the	classrooms.	
	semester in both CoE and	E.g., Syllabus, teacher's	
	basic school classrooms.	handbook, pupil's	
	E.g., Syllabus, teacher's	textbook, student	
	handbook and pupil's	teachers ' book. ok.	
	textbook, student teacher's	Also, curriculum, lesson	
	workbook.	notes, internet (if	
	Also, curriculum, lesson	required), box.	
	notes, internet (if required),		
	box.	Note:	
	Note:	(i). Make sure the	
	(i). Make sure the resources	resources are enough	
	are enough and appropriate	and appropriate to all	
	to all learners (females,	learners (females, males	
	males and persons with	and persons with SEN).	
	SEN).	ii). Let everybody have a	
	(ii). Let everybody have a	concrete plan for	
	concrete plan for teaching	teaching the given topics,	
	the given topics, thus, the	thus, the activities	
	activities agreed on by the	agreed on by the group	
	group to be followed.	to be followed	
4. Evaluation and	4.1. Engage tutors in	4.1. Provide feedback	15 mins
review of session:	providing feedback of	on this PD session	
	this PD session taking	taking into	
Tutors should	into consideration –	consideration –	
Identifying critical	Clarity of concepts,	Clarity of concepts,	

~	friends to observe lessons and report at next session Identifying and addressing any outstanding issues relating to the lesson/s for clarification	pedagogical approaches employed, ICT integration, GESI, Twenty First Century Skills (NTS 1a, 3i,) and make notes that will help them to teach Lesson 11.	pedagogical approaches employed, ICT integration, GESI, Twenty First Century Skills (NTS 1a, 3i,) and make notes that will help you to teach Lesson 11.	
		4.2. Ask tutors to identify a critical friend who took part in this PD session to sit in their class during lesson to provide feedback and report on observations made in the next PD session.	4.2. Identify a critical friend who took part in this PD session lesson to sit in your class during lesson to provide feedback and report on observations made in the next PD session.	
		4.3. Lead tutors to discuss anything relating to Lesson 11 that needs clarification.	4.3. Discuss anything relating to Lesson 11 that needs clarification.	
		Note: (i). In the case of unresolved issues consult the subject writing leads. (ii). Encourage tutors to read lesson 12 (Review Lesson) from both the course manual and PD manual and find relevant materials for the next session. (iii) Ask tutors to find out the challenges student teachers faced during their entire extending teaching for discussion in the next lesson.	Note: (i) Read lesson 12 (Review Lesson) from both course manuals and PD manuals and find relevant materials for the next session. (ii)Find out the challenges student teachers faced during their entire extending teaching for discussion in the next lesson.	

Age Levels/s: JHS

# Name of Subject/s: Chemistry and Physics: Course Review II with STS seminar Semester 2

Year 4

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

po fra be ses sha bu the SL, do ea bu ad sp	cus: the bullet ints provide the ame for what is to done in the ssion. The SWL ould use the illets to guide what ey write for the /HoD and tutors to and say during ch session. Each illet needs to be dressed and ecific reference	Guidance notes on Leading the session. What the SL/HoDs will have to say during each stage of the session	Guidance Notes on Tutor Activity during the PD Session. What PD Session participants (Tutors) will do during each stage of the session.	Time in sess
	ould be made to			
	e course manual/s.	Start lesson with an		20 mins
	ntroduction to the ssion	icebreaker relevant to		20 mins
	Review prior	the course in the		
	learning	lesson.		
	A critical friend to			
A	share findings for a short discussion and lessons learned Reading and discussion of the introductory sections of the lesson up to and including learning outcomes and indicators	<ul> <li>1.1 Lead tutors to mention how students were well placed to employ the various strategies and skills during the Basic School classroom work including STS Field Experience.</li> <li>1.2. Ask tutors to tell how useful the previous PD</li> </ul>	<ul> <li>1.1. Mention how students were well placed to employ the various strategies and skills during the Basic School classroom work including STS Field Experience.</li> <li>1.2. How useful were the previous PD</li> </ul>	
> NE	indicators Overview of content and identification of any distinctive aspects of the lesson/s, 3 The guidance for	useful the previous PD sessions were and how they influenced their teaching over the weeks. 1.3. Ask a critical friend to give feedback on Lesson 7-	<ul> <li>the previous PD sessions and how have they influenced your teaching over the weeks.</li> <li>1.3. A critical friend to give feedback on</li> </ul>	

SL/HoD should	11 which they observed.	Lesson 7-11 which	٦
identify, address and	11 which they observed.	they observed.	
provide explanations		they observed.	
for any areas where	1.4. Ask tutors to read	1.4. Read and discuss the	
tutors might require	and discuss the	introductory sections of	
		-	
clarification on an	introductory sections of	the lesson up to and	
aspect of the lesson.	the lesson up to and	including learning	
SL/HoD take	including learning	outcomes and indicators	
feedback to gauge	outcomes and	of lesson 12.	
understanding and	indicators of lesson 12		
support tutor			
engagement.	Example;	Example;	
NB SL/HoD should	JHS (Chemistry)-This lesson	JHS (Chemistry)-This	
ask tutors to plan for	is a review and audit of the	lesson is a review and	
their teaching as they	lessons for the second half	audit of the lessons for	
go through the PD	of the semester as well as	the second half of the	
session	review and discussion of	semester as well as	
	lessons learned, reflection	review and discussion of	
	and peer review of teaching	lessons learned,	
	and learning portfolios.	reflection and peer	
		review of teaching and	
		learning portfolios.	
	JHS (physics) -The review	JHS (physics) -The review	
	and audit the lessons for	and audit the lessons for	
	the second half of the	the second half of the	
	semester (from lesson 7-	semester (from lesson 7-	
	lesson 11). It is also	lesson 11). It is also	
	expected that Student	expected that Student	
	, teachers will reflect during	teachers will reflect	
	this lesson on their own	during this lesson on	
	progress in the course.	their own progress in the	
	JHS- Learning Outcomes	course.	
	<i>i)</i> Be able to reflect on	JHS- Learning Outcomes	
	lessons and state	i) Be able to reflect on	
	new insights or grey	lessons and state new	
	areas needing	insights or grey areas	
	remedies	needing remedies	
	<i>ii)</i> Basis for co-planning	ii) Basis for co-	
	and co-teaching	planning and co-	
	JHS-Learning Indicators	teaching	
	<i>i)</i> Provide a reflection	JHS-Learning Indicators	
	report on STS and	i) Provide a reflection	
	demonstrations and	report on STS and	
	illustrations on a	demonstrations and	
	given media of	illustrations on a	
	lessons learnt so far.	given media of	
L	icessi is icarrie so jui	giten media oj	

	ii) Present teaching	lessons learnt so far.
	and learning e-	ii) Present teaching and
	portfolios developed	learning e-portfolios
	throughout	developed throughout
	_	, 5
	semester.	semester.
	1.5. Lead tutors in pairs	1.5. In pairs discuss the
	to discuss the distinctive	distinctive aspects of
	aspects of lesson 7-11	lesson 7- 11 such as
	such as fundamental	fundamental concepts
	concepts and	and developing
	developing awareness	awareness of equity and
	of equity and diversity	diversity issues and
	issues and issues on ICT	issues on ICT
As this course is	1.6. Ask tutors to bring	1.6. Bring out and
dealing with	out and discuss the	discuss the challenges
supporting and/ or	challenges the student	the student teachers
assessing the	teachers said they faced	said they faced during
Professional	during the entire	the entire extending
Teaching Portfolio	extending teaching.	teaching.
	extending teaching.	teaching.
Development and/		
or the Classroom	1.6.1. Ask tutors to explain	1.6.1. Explain how you
Enquiry and Action	how they will assist the	will assist the student
Research Project	student teachers to	teachers to overcome
Report writing,	overcome their	their challenges so as
Tutors should be	challenges so as to	to prevent them from
provided with	prevent them from	occurring in their new
guidance on what to	occurring in their new	schools when posted.
do including	schools when posted.	seneois when posted.
-	-	
organisation of Post	Note: They were asked in	
Internship Seminar.	the previous PD to find out	
	from student teachers the	
	challenges they faced for	
	discussion in this PD	
	session.	
For each session	1.7. Ask tutors to	1.7. Identify and discuss
remember this is the	identify and discuss key	key GESI, ICT and cross-
final semester before	GESI, ICT and cross-	cutting issues you know
-		<b>o</b> ,
Students begin	cutting issues they know	that are very relevant
teaching provide	that are very relevant but	but were not discussed
prompts to help	were not discussed in any	in any of the PD sessions.
support this	of the PD sessions.	
transition for		
planning and give	1.7.1. Ask tutors to explain	1.7.1. Explain how you
regard for GESI, CCI,	how they will assist the	will assist the student
ICT etc.	student teachers to	teachers to integrate the
		_
<u> </u>	integrate the key GESI,	key GESI, ICT and Cross-

	ICT and Cross-Cutting issues in their teaching	Cutting issues in their teaching when posted.	
	when posted.		
<ul> <li>2 Concept</li> <li>Development (New</li> <li>learning likely to</li> <li>arise in lesson/s):</li> <li>➢ Identification and</li> <li>discussion of new</li> </ul>	<ul> <li>2.1. Ask tutors to identify and discuss the major concepts in lesson 7-11.</li> <li>2.2. Ask tutors to use Think-Pair-Share to</li> </ul>	<ul> <li>2.1 Identify and discuss the major concepts in lesson 7-11.</li> <li>2.2 Use Think-Pair-Share to outline possible</li> </ul>	15 mins
learning, potential barriers to learning for student teachers or students, new	outline possible challenging areas in teaching and assessing of lesson 7-11.	challenging areas in teaching and assessing of lesson 7- 11.	
concepts or pedagogy being introduced in the lesson, which need to be explored with the	<b>Note:</b> use differentiated instruction to cater for the needs of all children in the JHS classrooms, including those with special educational needs (SEN)		
SL/HoD NB The guidance for SL/HoD should set out what they need to do to introduce	and creating a safe, secure, happy and stimulating learning environment (NTS 3c 3f, pg. 14).		
and explain the issues/s with tutors, they should take feedback to gauge understanding and support tutor	2.3 Ask tutors to identify the most appropriate teaching strategies that can be employed to best deliver the new concepts in both CoE	2.3 Identify the most appropriate teaching strategies that can be employed to best deliver the new concepts in both CoE	
engagement.	and basic school classroom to achieve the LOs and the LIs of the lesson apart from the once that was used in the previous lesson 7-	and basic school classroom to achieve the LOs and the LIs of the lesson apart from the once that was used in the previous	
	11. Note: Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes.	lesson 7-11.	
3.Planning for teaching, learning and assessment	3.1 Ask tutors to read and discuss of the teaching and learning activities from the	3.1 Read and discuss of the teaching and learning activities from	40 mins
activities for the	course manual for lesson 7-	the course manual for	

les	son/s	11.	lesson 7- 11.	
$\geqslant$	Reading and			
~	discussion of the teaching and learning activities Noting, addressing, and explaining areas where tutors may require	3.2 Ask tutors to list and explaining areas where tutors may still require clarification for the lesson 7-11 and also making <i>explicit links</i> to the Basic School Curriculum.	3.2. List and explaining areas where tutors may still require clarification for the lesson 7-11 and also making explicit links to the Basic School Curriculum.	
	clarification			
	Noting opportunities for making <i>explicit</i> <i>links</i> to the Basic School Curriculum	E.g 1. Misconception to some concepts not adequately dealt with.		
~	Noting opportunities for integrating: GESI responsiveness and ICT and 21 <sup>st</sup> C skills	<ol> <li>Lessons not appropriately understood by student - teachers.</li> <li>Pedagogical issues not appropriately</li> </ol>		
	Reading, discussion, and identification of continuous assessment	understood by student teachers. 3.3 Ask tutors to discuss how GESI issues related	3.3 Discuss how GESI issues related to the	
	opportunities in the lesson. Each lesson should include at least two opportunities to use continuous	to the teaching and learning activities of the lesson 7- 11 would be addressed in the case of unresolved.	teaching and learning activities of the lesson 7- 11 would be addressed in the case of unresolved.	
1	assessment to support student teacher learning, subject specific examples should be provided for SL/HoD	<ul> <li>3.4 Ask tutor to read, identify and discuss continuous assessment opportunities in lesson</li> <li>7-11 that can be added to what was already in the manual.</li> </ul>	3.4 Read, identify and discuss continuous assessment opportunities in lesson 7-11 that can be added to what was already in the	
<b>A</b>	Resources: links to the existing PD Themes, for example, action research, questioning and to other external		manual.	

	reference material: literature, on web, Utube, physical resources, power point; how they should be used. Consideration needs to be given to local availability Tutors should be expected to have a plan for the next lesson for student teachers <b>Evaluation and</b> view of session: Tutors should Identifying critical friends to observe lessons and report at next session Identifying and addressing any outstanding	4.1. Discuss with tutors anything relating to Lesson 7-12 that needs further clarification.	4.1. Discuss anything relating to Lesson 7- 12 that needs further clarification.	15 mins
>	Identifying and addressing any			

## Appendix 1. Course Assessment Components, detail in the Revised NTEAP Toolkit (Sept. 21)

	(Sept. 21)			
COMPONENT	SUBJECT PROJECT	SUBJECT PORTFOLIO		
	1 per course per semester,	1 per course per semester, individual or		
	individual or collaborative	collaborative student teacher work.		
	student teacher work.			
WHAT IS IT?	The Subject project is an	The Subject Portfolio is the deliberate		
	assignment designed to	collection of student teachers' work that		
	enable student teachers to	has been selected and organized for a		
	demonstrate achieving one	particular subject to show student		
	or more of the CLOs,	teacher's learning and progress to		
	progress towards achieving	achieving the CLOs.		
	identified NTS,			
	development of knowledge			
	and understanding of: the			
	Basic School Curriculum,			
	GESI responsiveness, using			
	ICT and 21stC skills			
CONSTITUENT	Introduction: a clear	Either 3 items of work produced during		
S	statement of aim and	the semester or 2 items of work and		
	purpose	a mid-semester assessment		
	Methodology: what the	The items of work to be selected by		
	student teacher has done	student teachers, with tutor support,		
	and why to achieve the aim	during the semester as best examples of		
	and purpose of the project	their progress. For each item they select,		
	Substantive or main	Student teacher's need to reflect on:		
	section:	progress against identified NTS; achieving		
	Presentation of any	CLOs; increased knowledge and		
	artifacts, experiments,	understanding of the Basic School		
	TLMs created for the	Curriculum, GESI responsiveness,		
	project; presentation,	integration of ICT and how they could have		
	analysis, and interpretation	approached developing the item		
	of what has been done,	differently to achieve a better outcome		
	learned, or found out in	The mid-semester assessment : case study,		
	relation to focus of the	reflective note, quiz etc.		
	project.			
	<b>Conclusion:</b> Statement of			
	the key outcomes of the			
	project; reflection on what			
	the student teacher has			
	learnt			
WEIGHT	Overall weighting of	Overall weighting of project = 30%		
	project = 30%	Weighting of individual parts of portfolio		
	Weighting of individual	out of 100		
	parts of project out of 100	· Each item of work - 30		
	• Introduction – 10	• Mid semester assessment - 30 - <i>if</i>		
		-		
	<ul> <li>Methodology – 20</li> </ul>	applicable		

	<ul> <li>Substantive section</li> <li>40</li> <li>Conclusion – 30</li> </ul>	<ul> <li>Presentation and organisation of portfolio - 10</li> </ul>
EXAM	<b>End of semester Exam, weight 40%. To assess:</b> achievement of one or more of the CLOs, progress towards achieving identified NTS, development of knowledge and understanding of the Basic School Curriculum, ability to use GESI responsive approaches and to integrate ICT and 21 <sup>st</sup> C skills in teaching and learning	

## Examples of course assessment components Subject portfolio examples of items of work

Literacy:

- o Reading log of children's literature
- o Review of different types of writing and how to teach them
- o Book summaries/reports
- o Report on different purposes for and types of reading or writing
- o Vocabulary achievement
- o Schemes of work

Mathematics:

- o Samples of problem solving with written explanations of how the problems were solved and how this can be taught
- o Charts and graphs with written explanations of how and why they were created and how this can be taught
- o Computer analyses conducted as well as use of software to teach mathematics and how effective they are
- o Use indigenous knowledge in mathematics teaching.
- o Schemes of work

#### Science

- o Lab reports,
- o Research reports
- o Charts, graphs created
- o Designs, TLMs, posters, worksheets
- o Integrating indigenous knowledge into science teaching
- o Schemes of work

## Subject project examples

*Pedagogic Studies.* What are the qualities you need to develop to be a good teacher? Reflect on your personal experiences, values, and background, the NTS and the expectations of, and vision for, the B.Ed.

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