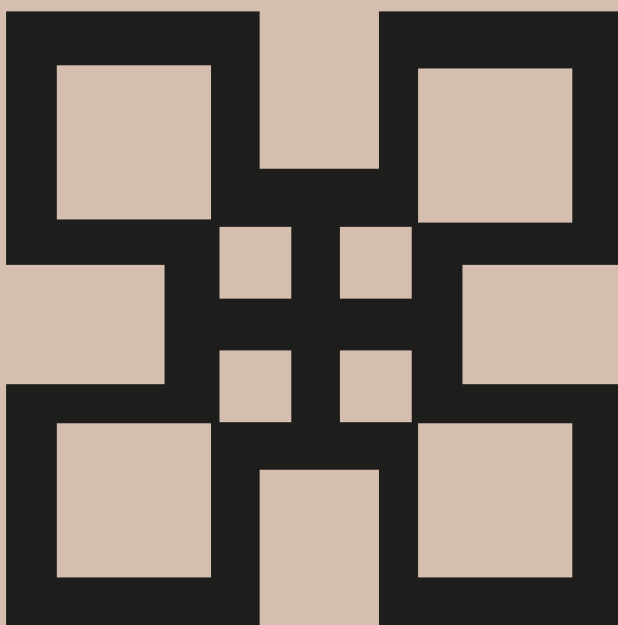


Professional Learning Community Handbook

Engineering

Year Two



Ghana Education
Service (GES)



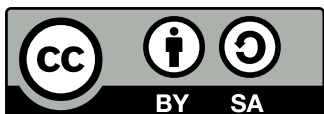
**Professional Learning
Community Handbook**

Engineering

Year Two



REPUBLIC OF GHANA



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Foreword

As Minister for Education, I am delighted to introduce this handbook on Professional Learning Communities (PLCs). The handbook provides practical guidance and resources for teachers to establish and sustain effective PLCs that will drive quality pedagogy and enhance learning outcomes.

Weekly Professional Learning Community (PLC) sessions are the backbone of this Government's commitment to continuous teacher development in every Senior High School. These PLC sessions enable teachers to come together to master the pedagogy, content and assessment needed to successfully implement Ghana's SHS curriculum.

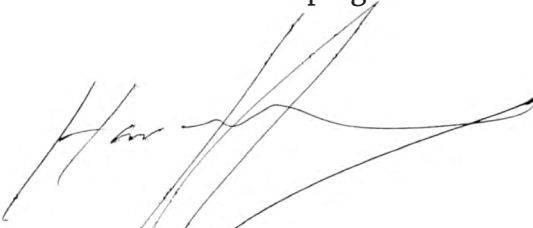
By fostering a culture of collaboration and continuous improvement through PLCs, teachers can enhance their understanding of the new SHS curriculum and effectively facilitate learning in the classroom. This will contribute to our country's resetting agenda by educating a generation of young people with the skills needed to progress to further studies, the world of work and adult life.

PLC sessions are critically important and should be treated with the utmost seriousness. Transforming our education system is a partnership between government, teachers, parents and learners. As teachers gain experience with the new curriculum and assessment regime, PLC sessions can also be tailored to discuss specific issues of concern as a group. It is important that teachers are heard and respected. We have listened to your concerns about PLCs and have factored this feedback into the new Year 2 Subject-Specific PLC Handbooks.

The Handbooks have been designed to be more flexible in structure than those for Year One. Each PLC Handbook is supported by a Subject-Specific App developed by the National Council for Curriculum and Assessment (NaCCA) linked to the revised curriculum. These Apps will help teachers to plan learning activities, assessments and differentiated learning. From our early interactions with teachers to develop and test these Apps we can see the level of excitement about their potential to save teachers time and improve their teaching and learning. These Ghanaian-owned Apps are the first of their kind at this scale anywhere in Africa, helping teachers save time and deliver lessons that truly meet the needs of every learner. I am confident that it will have a significant impact on our education system and ultimately benefit our students, teachers, and communities. All teachers are encouraged to embrace the principles and

practices outlined in this handbook and to work together to build strong, vibrant PLCs that promote enhanced learning outcomes.

I commend the authors and contributors for their tireless efforts in developing this valuable resource, which will enhance the quality of teaching and learning. Thank you to each one of you for your dedication and commitment to helping build the Ghana we want, together.



Haruna Iddrisu, MP
Minister of Education

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Links to APPs

Year One App



<https://www.playlab.ai/project/cmd94j45c06apjq0u9x0s5vq4>

Year Two App



<https://www.playlab.ai/project/cme6gk7auogjtm3oulo63hvmp>

PLC Session 0: Introduction to the Year Two Professional Learning Community Handbook and the Subject Specific App

1.0 Introduction and Purpose of the Handbook (15 minutes)

The purpose of the Year Two Professional Learning Community (PLC) Handbook is to support teachers to effectively deliver the new Senior High School (SHS) curriculum. This Handbook is accompanied by a Subject Specific App tailored to SHS curriculum. The App is designed to assist teachers with lesson planning, delivery and assessment. The Subject Specific App uses information directly from the following materials:

1. Curriculum
2. Teacher Manual
3. Learner Materials
4. Vision and Philosophy of the SHS curriculum
5. 21st century skills and competencies
6. National Teachers' Standards
7. West African Examinations Council (WAEC) Scheme of Assessment and Detailed Syllabus
8. Learning Planning Template
9. Teacher Assessment Manual and Toolkit
10. Socio Emotional Learning
11. National Values
12. Gender Equality and Social Inclusion (GESI), etc.

Learning Outcome (LO): To explore how the Subject Specific App can assist teachers with lesson planning, delivery and assessment (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g-3k and 3o).

Learning Indicator (LI) 1: Use the Subject Specific App to explore the Year Two Curriculum Materials (Teacher Manual and Learner Materials)

Learning Indicator (LI) 2: Discuss the advantages and disadvantages of using the Subject Specific App to design lessons and assessment strategies.

2.0 Exploring the Subject Specific App (65 minutes)

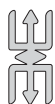
2.1 Scan the QR Code or use the link to access your Subject Specific App– <https://www.playlab.ai/project/cme6gk7au0gltm30ulo63hvmp>



2.2 Have a chat with the Subject Specific App (NTS 3j).

E.g.

- a. *Select a section and the number of lessons you have in a week to start the App*
- b. *Provide information about your class. For instance, the number of learners in your class, etc.*
- c. *Select a week you are interested in and continue chatting with your App*
- d. *Refer to your Teacher Manual and confirm the information provided by the App or otherwise*



Note

Always refer to your Teacher Manual to confirm the information the App provides.

2.3 Explore the following key areas using the App (NTS 2b, 2c, 2e and 3a–3q)

E.g.

a. Learning activities

I have a 60-minute lesson in a rural farming community in Lawra without enough tables and chairs. I can have my lesson outside the classroom if possible.

b. Assessments

Based on the recommended assessments for the week how can I assess my learners at level 2 at the end of the lesson. I want to give one question during the lesson and one at the end as homework

c. Differentiation strategies

There are two learners in wheelchairs. Another one cannot hear unless you speak very loudly. Finally, 5 learners are comfortable in the local language than in English. How can they be catered for in the lesson and assessment?

Hint



Remember to ask your App to help you add 21st Century Skills, National Values, GESI and SEL to your learning activities, assessment, etc., where applicable.

2.4 Share your experience with the larger group (NTS 3j).

- a. two things you learnt using the App and how you plan to apply them.
- b. two advantages of using the App
- c. two disadvantages of using the App without the appropriate curriculum materials (e.g. Teacher Manual, etc.)

3.0 Reflection

3.1 Reflect and share your views on the session (NTS1a, 1b).

3.2 Remember to read PLC Session 0.5 and bring along your laptop in preparation for next week's session.

PLC SESSION 0.5: Using the Subject Specific App to deliver assessments at appropriate DoK levels

1.0 Introduction (10 minutes)

- 1.1** Read and discuss the purpose, Learning Outcome (LO) and Learning Indicators (LIs) for the session

Purpose: The purpose of this session is to refresh our knowledge and understanding of assessment in the SHS curriculum. WAEC's visits to schools show that teachers are generally doing well with setting assessment tasks at DoK Levels 1 and 2 but there are issues with Levels 3 and 4. This session will look at how the subject specific App can assist teachers in developing assessments at all DoK Levels.

Learning Outcome (LO): To strengthen teachers' skills and competencies in developing assessment tasks and items to reflect all the DoK Levels (NTS 3k, 3o-3p).

Learning Indicator (LI) 1: Use the subject specific App to develop assessments linked to the learning indicators and the required DoK levels.

Learning Indicator (LI) 2: Use the subject specific App to review existing assessments to check whether they are linked to the required Learning Indicators and DoK levels.

2.0 Planning and Delivering of Assessment using the Subject Specific App (65 minutes)

- 2.1** Open your App and have a chat with it.

E.g.

- a.** *Select a section and the number of lessons you have in a week to start the App*
- b.** *Provide information about your class. For instance, the number of learners in your class, etc.*

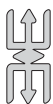
- c. *Select a week you are interested in and continue chatting with your App*
- d. *Refer to your Teacher Manual and confirm the information provided by the App or otherwise.*

2.2 Explore assessment using the App (NTS 3h, 3j, and 3o–3q)

E.g.

Select Assessment

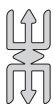
- a. *Look at the LIs for the week and select the appropriate DoK Level or Levels required for the week's lesson. For instance, 'the LI requires modelling, I would like to assess at level 3'*
- b. *Review the responses on the formats from your App, select any that meets your needs or continue chatting with your App to provide other assessment formats.*
- c. *Continue chatting with your App, for instance*
 - i. *'suggest 10 scenario based MCQs'*
 - ii. *'suggest level 3 task taking into consideration the learning activities and differentiation'*
 - iii. *Generate marking scheme for the task and add an explanation why an option is the right answer*



Note

Check that the MCQs are arranged alphabetically, vertically and the options are of similar length

- d. *Now repeat the process for different assessment strategies, for instance*
 - i. *Essay questions at level 3*
 - ii. *Case study questions at level 4*
 - iii. *3-week project task at level 4, etc.*



Note

You may select a different section or week for Activity 2.2d

2.3 Use the subject specific App to review the task or items you developed by having a chat with the App to provide justifications as to why the task is at DoK level 3 or 4 (NTS 3j, 3k, 3m, 3o and 3p–3q).

E.g.

Explain why the tasks or items are at DoK level 3.

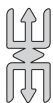


Note

You may repeat this for DoK levels 1, 2 or 4.

3.0 Using your subject specific App to explore one of the key assessment modes

- 3.1** Identify and select an assessment mode you found challenging in the last academic year and explore with your subject specific App how to use this assessment strategy effectively in your lesson delivery (NTS 3k).



Note

- i. Chatting once may not be enough for the App to provide all that you may need for the tasks.*
- ii. Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your assessment task, rubrics/mark scheme and how to score them appropriately*

- 3.2** Share your experience with the larger group (NTS 3j).
- a.** two things you learnt using the App in developing assessments
 - b.** how you plan to apply the experiences
 - c.** any challenges you faced in using the App to develop assessments and how you addressed them

4.0 Reflection (15 minutes)

- 4.1** Reflect and share your views on the session (NTS 1a, 1b)

- 4.2** Remember to

- a.** read PLC Session 1, Teacher Manual and related Learner Material (NTS 3a).
- b.** bring along your laptop, Teacher Manual and PLC Handbook on Week 1 in preparation for the next session (NTS 3a).

PLC Session 1: Systematic Investigation and its Relevance in Engineering Professional Practice

1.0 Introduction (10 minutes)

- 1.1** Read and discuss the purpose, Learning Outcome (LO) and Learning Indicators (LIs) for the session.

Purpose: The purpose of this session is to populate a learning planner for Week 1 on the systematic investigation and its relevance in engineering professional practice, with the needed areas and use the subject-specific App to review the completed learning plan.

Learning Outcome (LO): To populate the learning planner on the systematic investigation and its relevance in engineering professional practice with essential questions, key notes on differentiation, learning activities and key assessments and to use the subject-specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g-3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner on Week 1 using the subject specific App.

Learning Indicator (LI) 2: Enact an activity based on your learning plan.

2.0 Planning and Reviewing of Learning Plan (50 minutes)

- 2.1** Refer to your Teacher Manual and have a chat with your subject-specific App to develop your learning plan for Week 1 on the systematic investigation and its relevance in engineering professional practice (NTS 3a-3q).

E.g.

i. Learning activities

Design 4 learning activities that use systematic investigation to help learners identify and solve local community challenges through engineering practice, etc.

ii. Assessment tasks

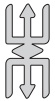
Develop assessment tasks that guide learners in understanding the importance of systematic investigation, etc.

iii. Differentiation

Design differentiation strategies to support shy learners to actively participate in class discussions among extrovert learners throughout the Week 1 lesson, etc.

iv. Essential questions

Develop thought-provoking questions that engage learners and help them grasp the real-life value of systematic investigation as well as guide the teacher to effectively engage learners to achieve the learning indicator(s) for Week 1, etc.



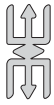
Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks.
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans. Click the link or scan the QR code to download the template.
<https://curriculumresources.edu.gh/wp-content/uploads/2025/09/Year-Two-Lesson-Planner-Template-20.docx>
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.



3.0 Enactment (20 minutes)

- 3.1** Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c-3j).
- 3.2** Reflect on the activity enacted to improve lesson delivery (NTS 1a).
- 3.3** Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

- 4.1** Reflect and share your views on the session (NTS 1a, 1b).
- 4.2** Identify a critical friend to observe your lesson in relation to PLC Session 1 to provide feedback on your lesson (NTS 1f, 1g).
- 4.3** Remember to:
 - a.** read PLC Session 2, Teacher Manual and related Learner Material (NTS 3a).
 - b.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
 - c.** identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 2: Preparing for Student Transcript Portal Assessment – Group Project

1.0 Introduction (10 minutes)

- 1.1 Share one thing on assessment in PLC Session 1 that you
 - a. applied in your lesson delivery
 - b. found challenging and how you addressed it.
- 1.2 Share one challenge you encountered while populating your learning plan for Week 2 before the session that you would like to discuss during this PLC session.
- 1.3 Read and discuss the Purpose, Learning Outcome (LO) and Learning Indicators (LIs) for the session.

Purpose: The purpose of this session is to use the subject-specific App to

- 1. review the completed learning plan for Week 2
- 2. prepare assessment tasks and rubrics for the group project.

Learning Outcome (LO): To review the learning plan for Week 2 and address any challenges in planning and developing assessment tasks for the processes of systematic investigation (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g–3k and 3o).

Learning Indicator (LI) 1: Review the learning plan and address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Discuss, develop and review assessment tasks with rubrics for the group project.

2.0 Reviewing the Learning Plan (20 minutes)

- 2.1 Upload your completed learning plan into the subject-specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Learning activities

Evaluate the Week 2 learning plan to verify the alignment of learning activities with assessment tasks and recommend better activities that improve support for slow learners through, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. essential questions
- b. differentiation
- c. assessment tasks, etc.

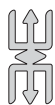
3.0 Prepare to Assign, Assess and Record for the Student Transcript Portal (50 minutes)

- 3.1** Refer to your Teacher Manual for the key assessment to be recorded in the Student Transcript Portal and have a chat with the subject-specific App to review or develop your assessment tasks and mark schemes/rubrics (NTS 2a–2c, 2e–2h and 3j–3q).

E.g.

Group Project

Develop a group project assessment task and rubric using the structure and guidelines in Week 2 of the TM, etc.



Note

One chat may not be enough for the App to provide all that you may need for the tasks

- 3.2** Have a chat with your App to verify the suggested assessment tasks and discuss the suitability of the responses from activity 3.1. Use the suggestions to refine the assessment tasks (NTS 1a, 2b, 2c and 3e–3q). In doing this activity, consider:

E.g.

i. Task

Check the project work assessment tasks provided and confirm whether they cover adequate content and help learners develop collaboration and 21st-century skills, etc.

ii. Mark scheme and score distribution

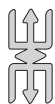
Revise the rubrics and score distribution to include clear criteria, balanced weightings, and enhancements for a fair and accurate assessment, etc

iii. Resources needed for assessment administration

Identify the resources required to effectively administer this assessment task in a rural setting without ICT tools, etc.

iv. How to provide feedback

Propose how to give learners constructive feedback on their project work to support improvement and skill development during and after the project, etc.



Note

Use the responses to complete your plan

4.0 Reflection (10 minutes)

4.1 Reflect and share your views on the session (NTS 1a, 1b).

4.2 Identify a colleague to observe your lesson in relation to PLC Session 2 to provide feedback on your lesson (NTS 1f, 1g).

4.3 Remember to:

- a.** Mark, record and upload your learners' assessment scores in the Student Transcript Portal (NTS 3j, 3n).
- b.** read PLC Session 3, Teacher Manual and related Learner Material (NTS 3a).
- c.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
- d.** identify areas you found challenging in your teaching and administration of the assessment for discussion during the next session.

PLC Session 3: Preparing for Student Transcript Portal Assessment – Portfolio

1.0 Introduction (10 minutes)

- 1.1 Share one thing on assessment in PLC Session 2 that you
 - a. applied in your lesson delivery
 - b. found challenging and how you addressed it.
- 1.2 Share one challenge you encountered while populating your learning plan for Week 3 before the session that you would like to discuss during this PLC session.
- 1.3 Read and discuss the Purpose, Learning Outcome (LO) and Learning Indicators (LIs) for the session.

Purpose: The purpose of this session is to use the subject-specific App to

- 1. review the completed learning plan for Week 3
- 2. prepare assessment tasks and rubrics for the portfolio building.

Learning Outcome (LO): To review the learning plan for Week 3 and address any challenges in planning and developing assessment tasks for the risk assessment and its relevance. (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g–3k and 3o).

Learning Indicator (LI) 1: Review the learning plan and address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Discuss, develop and review assessment tasks with rubrics for the portfolio

2.0 Reviewing the Learning Plan (20 minutes)

- 2.1** Upload your completed learning plan into the subject-specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Assessment tasks

Evaluate the Week 3 learning plan for consistency between assessment tasks and learning activities, and suggest targeted enhancements to better support diverse learning needs, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. essential questions
- b. learning activities
- c. differentiation, etc.

3.0 Prepare to Assign, Assess and Record for the Student Transcript Portal (50 minutes)

- 3.1** Refer to your Teacher Manual for the key assessment to be recorded in the Student Transcript Portal and have a chat with the subject-specific App to review or develop your assessment tasks and mark schemes/rubrics (NTS 2a–2c, 2e–2h and 3j–3q).

E.g.

Portfolio building

Using the structure and guidelines outlined in Week 3 of the Teacher's Manual (TM), review the assessment task and rubric for portfolio building, etc.



Note

One chat may not be enough for the App to provide all that you may need for the tasks

- 3.2** Have a chat with your App to verify the suggested assessment tasks and discuss the suitability of the responses from activity 3.1. Use the suggestions to refine the assessment tasks (NTS 1a, 2b, 2c and 3e–3q). In doing this activity, consider:

E.g.

i. Task

Examine the tasks for the portfolio to ascertain how effective they will support learners in developing document organization skills, maintaining consistency, and building a structured and coherent portfolio, etc.

ii. Mark scheme and score distribution

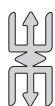
Review the rubric and scoring criteria to ensure they promote very good presentation, fairness, organisational skills, and accurate assessment of diverse learners' performance etc.

iii. Resources needed for assessment administration

Suggest appropriate resources to assist learners who struggle with maintaining neat and organised documents in keeping their portfolios appropriately, etc.

iv. How to provide feedback

Recommend effective feedback approaches that support and motivate learners who find it challenging to maintain neat document organisation, etc.



Note

Use the responses to complete your plan

4.0 Reflection (10 minutes)

- 3.1** Reflect and share your views on the session (NTS 1a, 1b).
- 3.2** Identify a colleague to observe your lesson in relation to PLC Session 3 to provide feedback on your lesson (NTS 1f, 1g).
- 3.3** Remember to:
- a.** Mark, record and upload your learners' assessment scores in the Student Transcript Portal (NTS 3j, 3n).
 - b.** read PLC Session 4, Teacher Manual and related Learner Material (NTS 3a).

- c.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
- d.** identify areas you found challenging in your teaching and administration of the assessment for discussion during the next session.

PLC Session 4: Procedure for risk Assessment and Control Measures for Various Hazards

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 3
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 4?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 4 on the procedure for risk assessment and control measures for various hazards using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g–3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

- 2.1** Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 4 on the procedure for risk assessment and control measures for various hazards (NTS 1a, 2b, 2c, 2e–2h and 3a–3q).

E.g.

i. Essential questions

Create 3 essential questions that target engaging learners who are easily distracted in understanding concepts on risk assessment and selecting suitable hazard control measures, etc.

ii. Differentiation

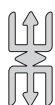
Design differentiation strategies to support slow learners in a lesson on risk assessment steps and apply correct hazard control measures, etc.

iii. Learning activities

Develop scaffolding learning activities that support diverse learners in understanding the risk assessment process and appropriate control measures for various hazards, etc.

iv. Assessment tasks

Develop 2 formative assessment tasks that support struggling learners in successfully responding to higher-level questions, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT



Move to Activity 3.0

2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e-3q).

E.g.

Learning activities

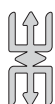
Review the learning activities in the attached learning plan on procedure for risk assessment and control measures for various hazards with the Teacher Manual and suggest areas for improvement to suit slow learners, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. essential questions
- b. differentiation
- c. assessment tasks, etc.



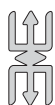
Note

- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. Transfer the information from your SS App into your learning planner template to complete your plans
- iii. Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

- 1.2** Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).
- 1.3** Share your experience with the group.

2.0 Enactment (25 minutes)

- 2.1** Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c–3j).
- 2.2** Reflect on the activity enacted to improve lesson delivery (NTS 1a).
- 2.3** Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

3.0 Reflection (10 minutes)

- 3.1** Reflect and share your views on the session (NTS 1a, 1b).
- 3.2** Identify a colleague to observe your lesson in relation to PLC Session 4 to provide feedback on your lesson (NTS 1f, 1g).
- 3.3** Remember to:
 - a.** read PLC Session 5, Teacher Manual and related Learner Material (NTS 3a).
 - b.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
 - c.** identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 5: Risk Assessment Matrix

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 4
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 5?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



*You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan*

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 5 on the risk assessment matrix using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g-3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

- 2.1 Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 5 on the risk assessment matrix (NTS 1a, 2b, 2c, 2e-2h and 3a-3q).

E.g.

i. Essential questions

Design 3 essential questions tailored to support slow learners, guiding them through a lesson on risk assessment matrix, etc.

ii. Differentiation

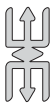
Create 3 targeted differentiation strategies to help auditory learners to grasp the concept of risk assessment matrix, etc.

iii. Learning activities

Develop 4 learning activities that support hands-on learners in understanding risk assessment matrix, etc.

iv. Assessment tasks

Generate 3 assessment tasks that support a Dok level 1 learner to be able to answer Dok level 3 questions on risk assessment matrix, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT



Move to Activity 3.0

2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Essential questions

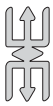
Review the essential questions on risk assessment matrix in the attached learning plan with reference to the Teacher Manual, and suggest improvements to enhance learners' critical thinking, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. learning activities
- b. differentiation
- c. assessment tasks, etc.



Note

- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. **Transfer the information from your SS App into your learning planner template to complete your plans**
- iii. Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

- 2.2** Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).

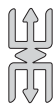
- 2.3** Share your experience with the group.

3.0 Enactment (25 minutes)

- 3.1** Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c–3j).

- 3.2** Reflect on the activity enacted to improve lesson delivery (NTS 1a).

3.3 Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

4.1 Reflect and share your views on the session (NTS 1a, 1b).

4.2 Identify a colleague to observe your lesson in relation to PLC Session 5 to provide feedback on your lesson (NTS 1f, 1g).

4.3 Remember to:

- a.** read PLC Session 6, Teacher Manual and related Learner Material (NTS 3a).
- b.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
- c.** identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 6: Preparing for Mid-Semester Examination

1.0 Introduction (10 minutes)

- 1.1 Share one thing on assessment in PLC Session 5 that you
 - a. applied in your lesson delivery
 - b. found challenging and how you addressed it.
- 1.2 Share one challenge you encountered while populating your learning plan for Week 6 before the session that you would like to discuss during this PLC session.
- 1.3 Read and discuss the Purpose, Learning Outcome (LO) and Learning Indicators (LIs) for the session.

Purpose: The purpose of this session is to use the subject-specific App to

1. review the completed learning plan for Week 6
2. prepare assessment tasks and rubrics for mid-semester examination

Learning Outcome (LO): To review the learning plan for Week 6 and address any challenges in planning and developing assessment tasks for the mid-semester examination (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g-3k and 3o).

Learning Indicator (LI) 1: Review the learning plan and address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Discuss, develop and review assessment tasks with rubrics for the mid-semester examination.

2.0 Reviewing the Learning Plan (20 minutes)

- 2.1 Upload your learning plan into the subject-specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e-3q).

E.g.

Essential questions

Examine the Week 6 learning plan to evaluate how well the essential questions reflect 21st-century skills and align with differentiation strategies, and suggest improvements for clarity and relevance., etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. learning activities
- b. differentiation
- c. assessment tasks, etc.

3.0 Prepare for Mid-Semester Examination (50 minutes)

- 3.1** Refer to your Teacher Manual for the format of the mid-semester examination and use the subject-specific App to review or develop your assessment tasks, mark schemes/rubrics, etc. (NTS 2a-2c, 2e-2h and 3j-3q).

E.g.

Using the structure and guidelines on the conduct of Week 6 mid-semester examination provided in the Teacher Manual, develop mid-semester examination questions for Week 6, ensuring a balance across Depth of Knowledge (DoK) Levels 1, 2, and 3. The assessment which will be done in 1 hour covering learning indicators in Weeks 1 to 5, should include:

1. 15 multiple-choice questions
2. 3 essay-type questions



Note

In preparing for mid-semester examination, one chat may not be enough for the App to provide all you need (DoK levels, structure, distribution across DoK levels, etc.)

- 3.2** Have a chat with your App to review the suggested assessment tasks and discuss the suitability of the responses from activity 3.1. Use the review to refine the responses to complete the set questions (NTS 1a, 2b, 2c and 3e-3q). In doing this activity, consider:

E.g.

i. Whether the assessment tasks generated follow 30%, 40%, 30% DoK distribution

Check the assessment tasks provided and confirm whether they align to the percentage distribution for the DoK levels as in the Table of Specification – DoK level 1: 30%, level 2: 40%, level 3: 30%

ii. Mark scheme and score distribution

Check the marking scheme for correct answers and appropriate mark allocation to each item in the essay questions.

iii. Resources needed for assessment administration

Suggest appropriate resources needed to administer the assessment to 15 short-sighted learners.

iv. How to provide feedback

Suggest ways to communicate feedback to the 15 short-sighted learners and the class.

4.0 Reflection (10 minutes)

4.1 Reflect and share your views on the session (NTS 1a, 1b).

4.2 Identify a colleague to observe your lesson in relation to PLC Session 6 to provide feedback on your lesson (NTS 1f, 1g).

4.3 Remember to:

- a.** mark, record and upload your learners' assessment scores in the Student Transcript Portal (NTS 3j, 3n).
- b.** read PLC Session 7, Teacher Manual and related Learner Material (NTS 3a).
- c.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
- d.** identify areas you found challenging in your planning and administering of the assessment for discussion during the next session.

PLC Session 7: Characteristics of an Ethical and Professional Workplace

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 6
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 7?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



*You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan*

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 7 on the characteristics of an ethical and professional workplace using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g–3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

- 2.1** Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 7 on the characteristics of an ethical and professional workplace (NTS 1a, 2b, 2c, 2e–2h and 3a–3q).

E.g.

i. Essential questions

Create 2 essential questions that guides learners identify the characteristics of an ethical and professional workplace, and recognise unacceptable engineering habits, etc.

ii. Differentiation

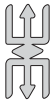
Design 2 differentiation strategies that take into account, SEL, to help weak learners understand and demonstrate the characteristics of an ethical and professional workplace, etc.

iii. Learning activities

Develop 4 step by step learning activities that enhance learners' understanding on the key characteristics of an ethical and professional workplace, etc.

iv. Assessment tasks

Develop practical assessment tasks tailored towards learners with kinesthetic learning style to help them apply the principles of ethical and professional workplace behaviour, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT



Move to Activity 3.0

2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Differentiation

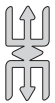
Find attached learning plan for Week 7. Check whether the differentiation strategies in the learning plan align with the key characteristics of an ethical and professional workplace, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. learning activities
- b. essential questions
- c. assessment tasks, etc.



Note

- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. Transfer the information from your SS App into your learning planner template to complete your plans
- iii. Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

2.2 Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).

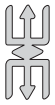
2.3 Share your experience with the group.

3.0 Enactment (25 minutes)

3.1 Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c–3j).

3.2 Reflect on the activity enacted to improve lesson delivery (NTS 1a).

3.3 Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

4.1 Reflect and share your views on the session (NTS 1a, 1b).

4.2 Identify a colleague to observe your lesson in relation to PLC Session 7 to provide feedback on your lesson (NTS 1f, 1g).

4.3 Remember to:

- a.** read PLC Session 8, Teacher Manual and related Learner Material (NTS 3a).
- b.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
- c.** identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 8: Attributes of an Engineer

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 7
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 8?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



*You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan*

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 8 on the attributes of an engineer using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g–3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

- 2.1 Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 8 on the attributes of an engineer (NTS 1a, 2b, 2c, 2e–2h and 3a–3q).

E.g.

i. Essential questions

Generate essential questions that encourage learners to think critically about the key attributes that define a successful engineer and support the teacher to direct the instruction period effectively, etc.

ii. Differentiation

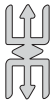
Create 2 targeted strategies to help learners with diverse learning needs to grasp the key attributes required of an engineer, etc.

iii. Learning activities

Design 3 supportive learning activities that help shy learners engage and contribute to lesson on the attributes of an engineer, etc.

iv. Assessment tasks

Create 3 formative assessment tasks that help learners gain a deeper understanding of the importance of an engineer's attributes, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT



Move to Activity 3.0

2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Assessment

Evaluate whether the assessment tasks in the attached learning plan effectively support struggling learners in answering DoK level 3 questions on the attributes of an engineer, and suggest ways to improve them, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. learning activities
- b. essential questions
- c. differentiation, etc.



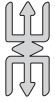
Note

- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. Transfer the information from your SS App into your learning planner template to complete your plans
- iii. Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

- 2.2** Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).
- 2.3** Share your experience with the group.

3.0 Enactment (25 minutes)

- 3.1** Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c–3j).
- 3.2** Reflect on the activity enacted to improve lesson delivery (NTS 1a).
- 3.3** Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

- 4.1** Reflect and share your views on the session (NTS 1a, 1b).
- 4.2** Identify a colleague to observe your lesson in relation to PLC Session 8 to provide feedback on your lesson (NTS 1f, 1g).
- 4.3** Remember to:
 - a.** read PLC Session 9, Teacher Manual and related Learner Material (NTS 3a).
 - b.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
 - c.** identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 9: Unprofessional behaviour

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 8
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 9?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 9 on the unprofessional behaviour using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g–3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

- 2.1** Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 9 on the unprofessional behaviour (NTS 1a, 2b, 2c, 2e–2h and 3a–3q).

E.g.

i. Essential questions

Provide 3 essential questions, two of which target guiding learners understanding and one guiding the teacher's smooth instructions on the consequences of unprofessional behaviour, etc.

ii. Differentiation

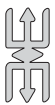
Develop differentiation strategies to help outspoken learners understand the difference between being expressive and being unprofessional in a school environment, etc.

iii. Learning activities

Design supportive learning activities that help shy learners engage and contribute to discussions on the attributes of an engineer, etc.

iv. Assessment tasks

Design assessment tasks that support learning by weak learners, enabling them to approach difficult questions from simple to complex with confidence and reduced anxiety, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT



Move to Activity 3.0

2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e-3q).

E.g.

Learning activities

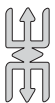
Assess whether the learning activities in the uploaded learning plan can help outspoken learners communicate appropriately without appearing unprofessional. Recommend improvements where needed in the activities, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. assessment
- b. essential questions
- c. differentiation, etc.



Note

- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. Transfer the information from your SS App into your learning planner template to complete your plans
- iii. Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

2.2 Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).

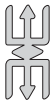
2.3 Share your experience with the group.

3.0 Enactment (25 minutes)

3.1 Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c–3j).

3.2 Reflect on the activity enacted to improve lesson delivery (NTS 1a).

3.3 Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

4.1 Reflect and share your views on the session (NTS 1a, 1b).

4.2 Identify a colleague to observe your lesson in relation to PLC Session 9 to provide feedback on your lesson (NTS 1f, 1g).

4.3 Remember to:

- a.** read PLC Session 10, Teacher Manual and related Learner Material (NTS 3a).
- b.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
- c.** identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 10: Functions of the Basic Components of Analogue Electronic Circuits

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 9
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 10?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 10 on the functions of the basic components of analogue electronic circuits using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g–3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

- 2.1** Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 10 on the functions of the basic components of analogue electronic circuits (NTS 1a, 2b, 2c, 2e–2h and 3a–3q).

E.g.

i. Essential questions

Provide 3 essential questions that help learners understand the functions of basic electronic components, even without conducting experiments, etc.

ii. Differentiation

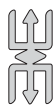
Develop 2 differentiation strategies to support diverse learners in explaining the functions of electronic components, etc.

iii. Learning activities

Recommend 4 experiential learning activities that support all learners in identifying various electronic components and explaining their functions taking into consideration 21st century skills, etc.

iv. Assessment tasks

Create an assessment task that allows learners to explore and recognise electronic components not introduced during the lesson, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT



Move to Activity 3.0

2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Differentiation

Evaluate whether the differentiation strategies in the learning plan effectively support proficient learners, GESI-responsive and integrate different learning styles. Recommend improvements where necessary, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. assessment
- b. essential questions
- c. learning activities, etc.



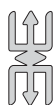
Note

- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. Transfer the information from your SS App into your learning planner template to complete your plans
- iii. Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

- 2.2** Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).
- 2.3** Share your experience with the group.

3.0 Enactment (25 minutes)

- 3.1** Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c–3j).
- 3.2** Reflect on the activity enacted to improve lesson delivery (NTS 1a).
- 3.3** Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

- 4.1** Reflect and share your views on the session (NTS 1a, 1b).
- 4.2** Identify a colleague to observe your lesson in relation to PLC Session 10 to provide feedback on your lesson (NTS 1f, 1g).
- 4.3** Remember to:
 - a.** read PLC Session 11, Teacher Manual and related Learner Material (NTS 3a).
 - b.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
 - c.** identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 11: The use of CAD Tools for the Design and Analysis of Electronic Circuits

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 10
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 11?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 11 on the use of CAD tools for the design and analysis of electronic circuits using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g–3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

- 2.1** Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 11 on the use of CAD tools for the design and analysis of electronic circuits (NTS 1a, 2b, 2c, 2e–2h and 3a–3q).

E.g.

i. Essential questions

Develop 3 essential questions that guide beginners in engineering to understand how to use CAD tools for electronic circuit design, etc.

ii. Differentiation

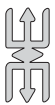
Suggest 2 strategies to support diverse learners on how to use CAD tools, etc.

iii. Learning activities

Create 5 hands-on learning activities that align with the Teacher Manual to enable learners to practice using CAD tools to design electronic circuits with ease, etc.

iv. Assessment tasks

Create formative assessment tasks that support and motivate struggling learners to improve their skills in using CAD tools for design purposes, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT



Move to Activity 3.0

2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Essential questions

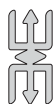
With reference to the Teacher Manual, review the essential questions in the uploaded learning plan to determine if they support learners who are unfamiliar with using CAD tools for circuit design, and suggest questions to better support their understanding, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. assessment
- b. differentiation
- c. learning activities, etc.



Note

- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. Transfer the information from your SS App into your learning planner template to complete your plans
- iii. Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

2.2 Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).

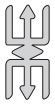
2.3 Share your experience with the group.

3.0 Enactment (25 minutes)

3.1 Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c–3j).

3.2 Reflect on the activity enacted to improve lesson delivery (NTS 1a).

3.3 Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

4.1 Reflect and share your views on the session (NTS 1a, 1b).

4.2 Identify a colleague to observe your lesson in relation to PLC Session 11 to provide feedback on your lesson (NTS 1f, 1g).

4.3 Remember to:

- a.** read PLC Session 12, Teacher Manual and related Learner Material (NTS 3a).
- b.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
- c.** identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 12: Preparing for End of Semester Examination

1.0 Introduction (10 minutes)

- 1.1 Share one thing on assessment in PLC Session 11 that you
 - a. applied in your lesson delivery
 - b. found challenging and how you addressed it.
- 1.2 Share one challenge you encountered while populating your learning plan for Week 12 before the session that you would like to discuss during this PLC session.
- 1.3 Read and discuss the Purpose, Learning Outcome (LO) and Learning Indicators (LIs) for the session.

Purpose: The purpose of this session is to use the subject-specific App to

1. review the completed learning plan for Week 12
2. prepare assessment tasks and rubrics for end of semester examination

Learning Outcome (LO): To review the learning plan for Week 12 and address any challenges in planning and developing assessment tasks for the end of semester examination (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g-3k and 3o).

Learning Indicator (LI) 1: Review the learning plan and address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Discuss, develop and review assessment tasks with rubrics for the end of semester examination.

2.0 Reviewing the Learning Plan (20 minutes)

- 2.1 Upload your learning plan into the subject-specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e-3q).

E.g.

Assessment task

Review the Week 12 learning plan to evaluate how well the assessment tasks align with the essential questions and consider GESI. Suggest improvements to make the tasks more inclusive and practical, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. essential questions
- b. differentiation
- c. learning activities, etc.

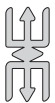
3.0 Prepare for End of Semester Examination (50 minutes)

- 3.1** Refer to your Teacher Manual for the format of the end of semester examination and use the subject-specific App to review or develop your assessment tasks, mark schemes/rubrics, etc. (NTS 2a–2c, 2e–2h and 3j–3q).

E.g.

Refer to the Teacher Manual for the approved structure and guidelines for setting the end-of-semester examination in Week 12. Ensure the questions can be done within 2 hours and are distributed across the DoK Levels 1, 2, and 3. Based on this framework, develop in line with the learning indicators in Weeks 1 to 11:

- a. 30 multiple-choice questions
- b. 5 essay-type questions
- c. A comprehensive marking scheme for the entire examination



Note

In preparing for end of semester examination, one chat may not be enough for the App to provide all you need (DoK levels, structure, distribution across DoK levels, etc.)

- 3.2** Have a chat with your App to review the suggested assessment tasks and discuss the suitability of the responses from activity 3.1. Use the review to refine the responses and complete the set questions (NTS 1a, 2b, 2c and 3e–3q). In doing this activity, consider:

E.g.

- i. Whether the assessment tasks generated follow 30%, 40%, 30% DoK distribution**

Review and revise the tasks as needed to meet the required DoK distribution specified in the Table of Specification, i.e., Level 1: 30%, Level 2: 40%, Level 3: 30%.

- ii. Mark scheme and score distribution**

Review the mark scheme to ensure the accuracy of answers and the appropriate mark allocation for each item reflect the complexity of the demands of the question.

- iii. Resources needed for assessment administration**

Suggest additional resources that may be needed to administer this assessment task in the absence of a printer.

- iv. How to provide feedback**

Recommend two effective feedback strategies tailored to supporting 15 average learners, 2 learners with slow writing skills, and the whole class taking into consideration SEN.

4.0 Reflection (10 minutes)

- 4.1** Reflect and share your views on the session (NTS 1a, 1b).

- 4.2** Identify a colleague to observe your lesson in relation to PLC Session 12 to provide feedback on your lesson (NTS 1f, 1g).

- 4.3** Remember to:

- a.** mark, record and upload your learners' assessment scores in the Student Transcript Portal (NTS 3j, 3n).
- b.** read PLC Session 13, Teacher Manual and related Learner Material (NTS 3a).
- c.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
- d.** identify areas you found challenging in your planning and administering of the assessment for discussion during the next session.

PLC Session 13: Preparing for Student Transcript Portal Assessment – individual Project

1.0 Introduction (10 minutes)

- 1.1 Share one thing on assessment in PLC Session 12 that you
 - a. applied in your lesson delivery
 - b. found challenging and how you addressed it.
- 1.2 Share one challenge you encountered while populating your learning plan for Week 13 before the session that you would like to discuss during this PLC session.
- 1.3 Read and discuss the Purpose, Learning Outcome (LO) and Learning Indicators (LIs) for the session.

Purpose: The purpose of this session is to use the subject-specific App to

- 1. review the completed learning plan for Week 13
- 2. prepare assessment tasks and rubrics for the individual project work

Learning Outcome (LO): To review the learning plan for Week 13 and address any challenges in planning and developing assessment tasks for the operation and maintenance of simple photovoltaic and solar thermal systems. (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g-3k and 3o).

Learning Indicator (LI) 1: Review the learning plan and address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Discuss, develop and review assessment tasks with rubrics for the individual project work

2.0 Reviewing the Learning Plan (20 minutes)

- 2.1** Upload your completed learning plan into the subject-specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Differentiation

Review the attached Week 13 learning plan to ensure there is alignment between the differentiation strategies and the learning activities. Suggest specific improvements to enhance their clarity, relevance, and effectiveness in meeting the needs of shy learners, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. essential questions
- b. learning activities
- c. assessment tasks, etc.

3.0 Prepare to Assign, Assess and Record for the Student Transcript Portal (50 minutes)

- 3.1** Refer to your Teacher Manual for the key assessment to be recorded in the Student Transcript Portal and have a chat with the subject-specific App to review or develop your assessment tasks and mark schemes/rubrics (NTS 2a–2c, 2e–2h and 3j–3q).

E.g.

Individual Project

Using the structure and guidelines outlined in Week 13 of the Teacher's Manual (TM), create an assessment task and rubric for an individual project, etc.



Note

One chat may not be enough for the App to provide all that you may need for the tasks

- 3.2** Have a chat with your App to verify the suggested assessment tasks and discuss the suitability of the responses from activity 3.1. Use the suggestions to refine the assessment tasks (NTS 1a, 2b, 2c and 3e–3q). In doing this activity, consider:

E.g.

i. Task

Examine the assessment tasks for the individual project to assess how well they support learners in developing practical, hands-on experience and critical thinking abilities, etc.

ii. Mark scheme and score distribution

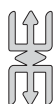
Adjust the rubric and scoring criteria to promote fairness, inclusivity, and accurate evaluation of diverse learners' performance, etc.

iii. Resources needed for assessment administration

Recommend suitable resources to help auditory learners maintain concentration and engage productively in their tasks, etc.

iv. How to provide feedback

Recommend strategies for delivering supportive feedback to low-performing learners in a way that fosters motivation and growth while preserving their confidence, etc.



Note

Use the responses to complete your plan

4.0 Reflection (10 minutes)

- 4.1** Reflect and share your views on the session (NTS 1a, 1b).
- 4.2** Identify a colleague to observe your lesson in relation to PLC Session 13 to provide feedback on your lesson (NTS 1f, 1g).
- 4.3** Remember to:
- mark, record and upload your learners' assessment scores in the Student Transcript Portal (NTS 3j, 3n).
 - read PLC Session 14, Teacher Manual and related Learner Material (NTS 3a).
 - bring along your Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
 - identify areas you found challenging in your teaching and administration of the assessment for discussion during the next session.

PLC Session 14: Design and Install Simple Photovoltaic and Solar Thermal Systems

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 13
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 14?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 14 on design and install simple photovoltaic and solar thermal systems using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g–3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

- 2.1** Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 14 on design and install simple photovoltaic and solar thermal systems (NTS 1a, 2b, 2c, 2e–2h and 3a–3q).

E.g.

i. Essential questions

Provide 3 essential questions in line with the TM that guide beginners in engineering to form a clear mental picture of how photovoltaic and solar thermal systems are designed and installed, etc.

ii. Differentiation

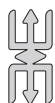
Develop focused–group strategies that support beginners in engineering to participate fully in a lesson on designing simple photovoltaic and solar thermal systems, etc.

iii. Learning activities

Develop experiential learning activities that engage learners to practically design of photovoltaic and solar thermal systems, etc.

iv. Assessment tasks

Recommend formative tasks that assess learners' ability to combine design thinking with installation techniques for photovoltaic and solar thermal systems, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT



Move to Activity 3.0

2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Assessment

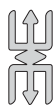
Revise the assessment tasks in the uploaded learning plan to better highlight the significance of photovoltaic and solar thermal systems in promoting environmental sustainability, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. essential questions
- b. differentiation
- c. learning activities, etc.



Note

- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. Transfer the information from your SS App into your learning planner template to complete your plans
- iii. Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

2.2 Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).

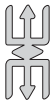
2.3 Share your experience with the group.

3.0 Enactment (25 minutes)

3.1 Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c–3j).

3.2 Reflect on the activity enacted to improve lesson delivery (NTS 1a).

3.3 Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

4.1 Reflect and share your views on the session (NTS 1a, 1b).

4.2 Identify a colleague to observe your lesson in relation to PLC Session 14 to provide feedback on your lesson (NTS 1f, 1g).

4.3 Remember to:

- a.** read PLC Session 15, Teacher Manual and related Learner Material (NTS 3a).
- b.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
- c.** identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 15: Energy Management Plan and Basic Energy Audit Plan

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 14
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 15?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 15 on the energy management plan and basic energy audit plan using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g-3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

- 2.1** Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 15 on the energy management plan and basic energy audit plan (NTS 1a, 2b, 2c, 2e–2h and 3a–3q).

E.g.

i. Essential questions

Suggest 3 essential questions that help learners distinguish between developing energy management plans and identifying sources of energy wastage, etc.

ii. Differentiation

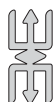
Design differentiation strategies tailored to helping struggling learners to comprehend concepts on energy management plans and their significance, etc.

iii. Learning activities

Develop learning activities tailored towards developing analysis and application of concepts on difference between the processes of performing walk-through energy audits and identifying sources of energy wastage. Take into consideration, national values and SEN, etc.

iv. Assessment tasks

Design assessment tasks that help struggling learners grasp the key elements of a basic energy audit plan in a clear and manageable way, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT



Move to Activity 3.0

2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Essential questions

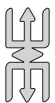
Review the essential questions in the learning plan to determine if they effectively guide learners in distinguishing between developing an energy management plan and performing a walk-through energy audit of a facility, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. assessment
- b. differentiation
- c. learning activities, etc.



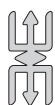
Note

- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. Transfer the information from your SS App into your learning planner template to complete your plans
- iii. Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

- 2.2** Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).
- 2.3** Share your experience with the group.

3.0 Enactment (25 minutes)

- 3.1** Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c–3j).
- 3.2** Reflect on the activity enacted to improve lesson delivery (NTS 1a).
- 3.3** Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

- 4.1** Reflect and share your views on the session (NTS 1a, 1b).
- 4.2** Identify a colleague to observe your lesson in relation to PLC Session 15 to provide feedback on your lesson (NTS 1f, 1g).
- 4.3** Remember to:
 - a.** read PLC Session 16, Teacher Manual and related Learner Material (NTS 3a).
 - b.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
 - c.** identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 16: Energy saving methods for electrical and thermal systems

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 15
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 16?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 16 on the energy saving methods for electrical and thermal systems using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g-3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

- 2.1** Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 16 on the energy saving methods for electrical and thermal systems (NTS 1a, 2b, 2c, 2e–2h and 3a–3q).

E.g.

i. Essential questions

Refer to the TM and Suggest 3 essential questions to help learners identify and apply appropriate energy-saving strategies for electrical and thermal equipment, etc.

ii. Differentiation

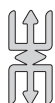
Develop differentiation strategies to help all learners irrespective of learning needs and style to understand and apply energy-saving tips for electrical and thermal equipment in their everyday lives, etc.

iii. Learning activities

Create inclusive activities that help learners work together to explore and understand effective energy-saving tips for thermal equipment taking into consideration GESI and national values, etc.

iv. Assessment tasks

Create 2 assessment tasks that support learners identify energy-saving tips for electrical and thermal equipment and explain their benefits, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT



Move to Activity 3.0

2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Learning activities

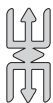
Evaluate whether the learning activities in the attached learning plan effectively help shy learners confidently participate in a lesson to identify energy-saving tips for electrical and thermal equipment, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. essential questions
- b. differentiation
- c. assessment, etc.



Note

- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. Transfer the information from your SS App into your learning planner template to complete your plans
- iii. Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

2.2 Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).

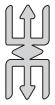
2.3 Share your experience with the group.

3.0 Enactment (25 minutes)

3.1 Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c–3j).

3.2 Reflect on the activity enacted to improve lesson delivery (NTS 1a).

3.3 Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

4.1 Reflect and share your views on the session (NTS 1a, 1b).

4.2 Identify a colleague to observe your lesson in relation to PLC Session 16 to provide feedback on your lesson (NTS 1f, 1g).

4.3 Remember to:

- a.** read PLC Session 17, Teacher Manual and related Learner Material (NTS 3a).
- b.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
- c.** identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 17: Solutions and suitable solution(s) based on a set of constraints

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 16
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 17?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 17 on the solutions and suitable solution(s) based on a set of constraints using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g–3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

2.1 Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 17 on the solutions and suitable solution(s) based on a set of constraints (NTS 1a, 2b, 2c, 2e–2h and 3a–3q).

E.g.

i. Essential questions

Create 2 essential questions to guide learners develop the knowledge and skill of identifying local problems and choose the best solution from several options, etc.

ii. Differentiation

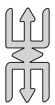
Develop inclusive strategies to help struggling and slow learners analyse solutions and justify the best choice, etc.

iii. Learning activities

With reference to the TM, create learner-centered activities that support all learners evaluate different solutions to a problem and explain why they chose the best one, etc.

iv. Assessment tasks

Design assessment tasks that help struggling learners practice how to analyse multiple solutions and justify the best choice, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT



Move to Activity 3.0

2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Differentiation

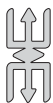
I have uploaded the learning plan for Week 17, evaluate whether the stated differentiation strategies meet diverse needs and learning styles of learners and suggest improvements where necessary, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. essential questions
- b. learning activities
- c. assessment, etc.



Note

- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. Transfer the information from your SS App into your learning planner template to complete your plans
- iii. Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

2.2 Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).

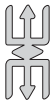
2.3 Share your experience with the group.

3.0 Enactment (25 minutes)

3.1 Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c–3j).

3.2 Reflect on the activity enacted to improve lesson delivery (NTS 1a).

3.3 Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

4.1 Reflect and share your views on the session (NTS 1a, 1b).

4.2 Identify a colleague to observe your lesson in relation to PLC Session 17 to provide feedback on your lesson (NTS 1f, 1g).

4.3 Remember to:

- a.** read PLC Session 18, Teacher Manual and related Learner Material (NTS 3a).
- b.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
- c.** identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 18: Preparing for Mid-Semester Examination

1.0 Introduction (10 minutes)

- 1.1 Share one thing on assessment in PLC Session 17 that you
 - a. applied in your lesson delivery
 - b. found challenging and how you addressed it.
- 1.2 Share one challenge you encountered while populating your learning plan for Week 18 before the session that you would like to discuss during this PLC session.
- 1.3 Read and discuss the Purpose, Learning Outcome (LO) and Learning Indicators (LIs) for the session.

Purpose: The purpose of this session is to use the subject-specific App to

1. review the completed learning plan for Week 18
2. prepare assessment tasks and rubrics for mid-semester examination

Learning Outcome (LO): To review the learning plan for Week 18 and address any challenges in planning and developing assessment tasks for the mid-semester examination (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g-3k and 3o).

Indicator (LI) 1: Review the learning plan and address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Discuss, develop and review assessment tasks with rubrics for the mid-semester examination.

2.0 Reviewing the Learning Plan (20 minutes)

- 2.1 Upload your learning plan into the subject-specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e-3q).

E.g.

Differentiation

Examine the Week 18 learning plan and evaluate the effectiveness of differentiation strategies in addressing diverse learning needs. Suggest ways to enhance learner engagement, inclusivity, and skill development. Take into consideration for integration of 21st-century skills, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. essential questions
- b. learning activities
- c. assessment tasks, etc.

3.0 Prepare for Mid-Semester Examination (50 minutes)

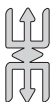
- 3.1** Refer to your Teacher Manual for the format of the mid-semester examination and use the subject-specific App to review or develop your assessment tasks, mark schemes/rubrics, etc. (NTS 2a–2c, 2e–2h and 3j–3q).

E.g.

Using the structure and guidelines for setting the end-of-semester examination for Week 18 in the Teacher Manual, ensuring coverage across Depth of Knowledge levels 1, 2, and 3, develop:

1. 15 multiple-choice questions
2. 3 essay-type questions, including one compulsory
3. A detailed marking scheme for all questions.

The examination is to cover indicators in Weeks 13 to 17 for a 1 hour duration.



Note

In preparing for mid-semester examination, one chat may not be enough for the App to provide all you need (DoK levels, structure, distribution across DoK levels, etc.)

- 3.2** Have a chat with your App to review the suggested assessment tasks and discuss the suitability of the responses from activity 3.1. Use the review to refine the responses and complete the set questions (NTS 1a, 2b, 2c and 3e–3q). In doing this activity, consider:

E.g.

- i. Whether the assessment tasks generated follow 30%, 40%, 30% DoK distribution**

Revise the assessment tasks developed to ensure they are at the expected DoK distribution levels as in the Table of Specification–DoK level 1: 30%, level 2: 40%, level 3: 30%

- ii. Mark scheme and score distribution**

Verify whether the mark allocation in the marking scheme is appropriate for each item assessed.

- iii. Resources needed for assessment administration**

List 5 common material resources that can be used in a rural community to administer this assessment effectively while ensuring all learners are supported and not disadvantaged.

- iv. How to provide feedback**

Recommend two types of feedback suitable for learners who performed below expectations in the mid-semester examination and two for those who performed above expectation.

4.0 Reflection (10 minutes)

- 4.4** Reflect and share your views on the session (NTS 1a, 1b).

- 4.5** Identify a colleague to observe your lesson in relation to PLC Session 18 to provide feedback on your lesson (NTS 1f, 1g).

- 4.6** Remember to:

- a.** mark, record and upload your learners' assessment scores in the Student Transcript Portal (NTS 3j, 3n).
- b.** read PLC Session 19, Teacher Manual and related Learner Material (NTS 3a).
- c.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
- d.** identify areas you found challenging in your planning and administering of the assessment for discussion during the next session.

PLC Session 19: The Use of CAD Tools for the Design of Enacts

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 18
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 19?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



*You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan*

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 19 on the use of CAD tools for the design of models using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g-3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

- 2.1** Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 19 on the use of CAD tools for the design of models (NTS 1a, 2b, 2c, 2e–2h and 3a–3q).

E.g.

i. Essential questions

Create 2 essential questions to guide beginners of engineering understand and use CAD tools to design simple models, etc.

ii. Differentiation

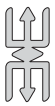
Propose strategies that support learners with varying skill levels and learning styles to effectively use CAD tools to create models, etc.

iii. Learning activities

With reference to the TM, suggest 4 learning activities that engage learners practically in exploring how to use CAD tools to design and create models of their own choice, etc.

iv. Assessment tasks

Based on the content of Week 19 in the Teacher Manual, create 3 formative assessment tasks that promote critical thinking and problem-solving when using CAD tools to design models, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT



Move to Activity 3.0

2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Assessment

I have attached learning plan for Week 19. Evaluate the integration of assessment tasks in the learning plan can help lower-level thinkers develop higher-order thinking, and suggest improvements if needed, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. essential questions
- b. learning activities
- c. differentiation, etc.



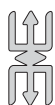
Note

- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. Transfer the information from your SS App into your learning planner template to complete your plans
- iii. Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

- 2.2** Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).
- 2.3** Share your experience with the group.

3.0 Enactment (25 minutes)

- 3.1** Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c–3j).
- 3.2** Reflect on the activity enacted to improve lesson delivery (NTS 1a).
- 3.3** Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

- 4.1** Reflect and share your views on the session (NTS 1a, 1b).
- 4.2** Identify a colleague to observe your lesson in relation to PLC Session 19 to provide feedback on your lesson (NTS 1f, 1g).
- 4.3** Remember to:
 - a.** read PLC Session 20, Teacher Manual and related Learner Material (NTS 3a).
 - b.** bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
 - c.** identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 20: Implement CAD Enacts using 3D Printing Systems

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 19
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 20?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



*You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan*

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 20 on implementing CAD models using 3D printing systems using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g-3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

2.1 Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 20 on implementing CAD models using 3D printing systems (NTS 1a, 2b, 2c, 2e-2h and 3a-3q).

E.g.

i. Essential questions

Create 3 essential questions that guide learners to understand and analyse how to set up and use a 3D printer for producing CAD models, etc.

ii. Differentiation

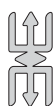
Provide differentiation strategies that support and challenge all learners to use a 3D printer for CAD model production taking into consideration GESI, etc.

iii. Learning activities

Recommend experiential learning activities that guide learners with limited technical skills through the basic use of CAD tools and the step-by-step setup, configuration, and operation of a 3D printer to produce simple prototype models, etc.

iv. Assessment tasks

Design practical assessment tasks that require learners to demonstrate hands-on skills in setting up, configuring, and using a 3D printer to produce CAD prototype models, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT



Move to Activity 3.0

2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Essential questions

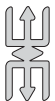
Review the essential questions in the uploaded learning plan to determine if they effectively guide learners who have no prior exposure to a 3D printer to understand how to set up, configure, and use it to produce CAD prototype models. Recommend alternative suitable essential questions, where necessary, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. assessment
- b. learning activities
- c. differentiation, etc.



Note

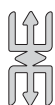
- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. Transfer the information from your SS App into your learning planner template to complete your plans

- iii. *Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.*

- 2.2 Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).
- 2.3 Share your experience with the group.

3.0 Enactment (25 minutes)

- 3.1 Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c–3j).
- 3.2 Reflect on the activity enacted to improve lesson delivery (NTS 1a).
- 3.3 Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

- 4.1 Reflect and share your views on the session (NTS 1a, 1b).
- 4.2 Identify a colleague to observe your lesson in relation to PLC Session 20 to provide feedback on your lesson (NTS 1f, 1g).
- 4.3 Remember to:
 - a. read PLC Session 21, Teacher Manual and related Learner Material (NTS 3a).
 - b. bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
 - c. identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 21: Basic Electronic Components for Simple Automation Task

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 20
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 21?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 21 on the basic electronic components for simple automation task using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g–3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

2.1 Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 21 on the basic electronic components for simple automation task (NTS 1a, 2b, 2c, 2e–2h and 3a–3q).

E.g.

i. Essential questions

Propose 3 essential questions that can guide all learners to explore and support teacher's effective delivery of lesson on how to design and build automation systems using simple electronic components, etc.

ii. Differentiation

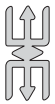
Develop differentiation strategies that help average learners in the mist of high attainers to confidently and successfully design and build automation systems using basic electronic components, etc.

iii. Learning activities

Suggest 4 experiential learning activities that incorporate talk for learning activities and teamwork to help auditory learners design and build basic automation systems, etc.

iv. Assessment tasks

Create assessment tasks that are structured to scaffold in helping DoK level 2 learners apply their basic skills to solve complex level 3 problems in designing and building simple automation systems, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT



Move to Activity 3.0

2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Learner activities

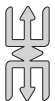
Review the learning activities in the attached Week 21 learning plan are appropriate to effectively support slow learners in designing and building basic automation systems using simple electronic circuits. Recommend alternative activities that better support low pace and varied learning needs, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. assessment
- b. essential questions
- c. differentiation, etc.



Note

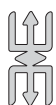
- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. Transfer the information from your SS App into your learning planner template to complete your plans

- iii. *Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.*

- 2.2 Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).
- 2.3 Share your experience with the group.

3.0 Enactment (25 minutes)

- 3.1 Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c–3j).
- 3.2 Reflect on the activity enacted to improve lesson delivery (NTS 1a).
- 3.3 Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

- 4.1 Reflect and share your views on the session (NTS 1a, 1b).
- 4.2 Identify a colleague to observe your lesson in relation to PLC Session 21 to provide feedback on your lesson (NTS 1f, 1g).
- 4.3 Remember to:
 - a. read PLC Session 22, Teacher Manual and related Learner Material (NTS 3a).
 - b. bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
 - c. identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 22: The use of IDE of Arduino to Write Simple Programmes

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 21
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 22?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 22 on the use of IDE of Arduino to write simple programmes using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g-3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

2.1 Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 22 on the use of IDE of Arduino to write simple programmes (NTS 1a, 2b, 2c, 2e-2h and 3a-3q).

E.g.

i. Essential questions

Generate 2 essential questions that focus on guiding learners understand how to declare variables and constants, and 1 essential question to guide the teacher to appropriately direct the learning process with GESI and 21st century skills in mind, etc.

ii. Differentiation

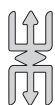
Develop 3 strategies that integrate SEL and national values to support slow learners as well as fast learners in using control structures and loops, and in writing functions in C, etc.

iii. Learning activities

Refer to the Teacher Manual and the Learner Material and recommend 5 learning activities structured under introduction, main lesson and closure to support all learners, especially, weak learners to confidently test and debug programs using the Arduino IDE, etc.

iv. Assessment tasks

Develop 3 formative assessment tasks that guide learners who are only good at solving DoK level 1 questions to progress toward solving level 2 questions on writing simple programmes using IDE of Arduino, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT

Move to Activity 3.0



2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e–3q).

E.g.

Assessment

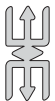
Review the assessment tasks in the uploaded learning plan to determine whether they effectively support weak learners in addressing higher-order questions and challenge high attainers to apply and synthesis information on the use of IDE of Arduino to write simple programmes. Make revisions where necessary to enhance accessibility and challenge, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. differentiation
- b. learning activities
- c. essential questions, etc.



Note

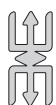
- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. Transfer the information from your SS App into your learning planner template to complete your plans

- iii. *Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.*

- 2.2 Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).
- 2.3 Share your experience with the group.

3.0 Enactment (25 minutes)

- 3.1 Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c–3j).
- 3.2 Reflect on the activity enacted to improve lesson delivery (NTS 1a).
- 3.3 Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

- 4.1 Reflect and share your views on the session (NTS 1a, 1b).
- 4.2 Identify a colleague to observe your lesson in relation to PLC Session 22 to provide feedback on your lesson (NTS 1f, 1g).
- 4.3 Remember to:
 - a. read PLC Session 23, Teacher Manual and related Learner Material (NTS 3a).
 - b. bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
 - c. identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 23: The design of Simple Arduino-Based Embedded Systems

1.0 Introduction (5 minutes)

- 1.1 Share one thing you applied in your classroom based on PLC Session 22
 - a. the challenges you faced
 - b. how you addressed them
- 1.2 Have you developed your learning plan for Week 23?
 - a. If you answered **yes**, conduct your PLC Session from Activity 2.0B
 - b. If you answered **no**, conduct your PLC Session from Activity 2.0A

HINT



*You cannot conduct PLC on Activity 2.0B if you **have not** prepared your learning plan*

2.0A Planning and Reviewing of Learning Plan (50 minutes)

Purpose: The purpose for this session is to populate the learning planner for Week 23 on the design of simple Arduino-based embedded systems using the subject specific App.

Learning Outcome (LO): To populate the learning planner with the essential questions, differentiation, learning activities and key assessments and use the subject specific App to review your populated learning plan (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g-3k and 3o).

Learning Indicator (LI) 1: Populate the learning planner using the subject specific App

Learning Indicator (LI) 2: Enact an activity from your reviewed learning plan.

2.1 Refer to your Teacher Manual and have a chat with your subject specific App to develop your learning plan for Week 23 on the design of simple Arduino–based embedded systems (NTS 1a, 2b, 2c, 2e–2h and 3a–3q).

E.g.

i. Essential questions

Create 3 essential questions that guide the teacher and learners to successfully design simple Arduino–based embedded systems, etc.

ii. Differentiation

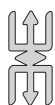
Design differentiation strategies that support slow learners in designing simple Arduino–based embedded systems in Week 23 by adjusting the pace, using guidance in hands–on activities, and matching their learning styles, etc.

iii. Learning activities

Design 4 learning activities which are sequentially structured to engage learners (especially, auditory learners) in creating simple Arduino–based embedded systems through verbal instructions, guided discussions, and collaborative explanation of code and circuit functions, etc.

iv. Assessment tasks

With reference to the Teacher Manual, develop 3 formative assessment tasks for Week 23 lesson that allow learners to showcase their ability to design simple Arduino–based embedded systems through practical demonstrations, diagrams, and basic code explanations, etc.



Note

- i.** Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii.** Transfer the information from your SS App into your learning planner template to complete your plans.
- iii.** Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.

HINT



Move to Activity 3.0

2.0B Reviewing the Learning Plan and Addressing Challenges in Planning, Delivering and Assessing Lessons (50 minutes)

Purpose: To support teachers address challenges they may have during lesson preparation and delivery.

Learning Outcome (LO): To address specific concerns of teachers in planning, teaching and assessment.

Learning Indicator (LI) 1: Address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Enact an activity in preparation to teach the lesson.

- 2.1** Upload your completed learning plan into the subject specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e-3q).

E.g.

Differentiation

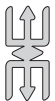
Review the attached learning plan to see whether the differentiation strategies can effectively support all learners, irrespective of learning needs and style, in demonstrating their ability to design simple Arduino-based embedded systems through practical activities. Revise the strategies if needed to ensure inclusivity and success for all learners, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. assessment
- b. learning activities
- c. essential questions, etc.



Note

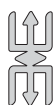
- i. Chatting once may not be enough for the App to provide all that you may need for the tasks
- ii. Transfer the information from your SS App into your learning planner template to complete your plans

- iii. *Chat with your App to learn how to integrate National Values, GESI, SEL and 21st century skills in your learning activities, assessment tasks and rubrics/mark scheme.*

- 2.2 Identify a challenging area or issue and chat with your subject specific App for steps on how to address it for effective lesson delivery (NTS 3j).
- 2.3 Share your experience with the group.

3.0 Enactment (25 minutes)

- 3.1 Enact a teaching activity in your plan (NTS 1b, 1f, 1g, 2c, 2e, 2f and 3c-3j).
- 3.2 Reflect on the activity enacted to improve lesson delivery (NTS 1a).
- 3.3 Ask for feedback on the activity enacted (NTS 1a, 1e, 2c and 3o).



Note

You may record the enacted activity.

4.0 Reflection (10 minutes)

- 4.1 Reflect and share your views on the session (NTS 1a, 1b).
- 4.2 Identify a colleague to observe your lesson in relation to PLC Session 23 to provide feedback on your lesson (NTS 1f, 1g).
- 4.3 Remember to:
 - a. read PLC Session 24, Teacher Manual and related Learner Material (NTS 3a).
 - b. bring along your laptop, Teacher Manual and PLC Handbook in preparation for the next session (NTS 3a).
 - c. identify areas you found challenging in your teaching for discussion during the next session.

PLC Session 24: Preparing for End of Semester Examination

1.0 Introduction (10 minutes)

- 1.1 Share one thing on assessment in PLC Session 23 that you
 - a. applied in your lesson delivery
 - b. found challenging and how you addressed it.
- 1.2 Share one challenge you encountered while populating your learning plan for Week 24 before the session that you would like to discuss during this PLC session.
- 1.3 Read and discuss the Purpose, Learning Outcome (LO) and Learning Indicators (LIs) for the session.

Purpose: The purpose of this session is to use the subject-specific App to

1. review the completed learning plan for Week 24
2. prepare assessment tasks and rubrics for end of semester examination

Learning Outcome (LO): To review the learning plan for Week 24 and address any challenges in planning and developing assessment tasks for the end of semester examination (NTS 2b, 2c, 2e, 2f, 3a, 3d, 3e, 3g-3k and 3o).

Learning Indicator (LI) 1: Review the learning plan and address challenges in the preparation and delivery of a lesson.

Learning Indicator (LI) 2: Discuss, develop and review assessment tasks with rubrics for the end of semester examination.

2.0 Reviewing the Learning Plan (20 minutes)

- 2.1 Upload your learning plan into the subject-specific App. Have a chat with your App to verify the following and discuss their suitability to reflect the diverse needs of learners in your class (NTS 1a, 2b, 2c and 3e-3q).

E.g.

Assessment task

Examine the uploaded Week 24 learning plan for gaps in the proposed assessment and check if they align with the essential questions and activities to achieve the learning indicators for the week, etc.

Hint



Continue chatting with your App to verify the following and use the responses to complete your plan

- a. essential questions
- b. differentiation
- c. learning activities, etc.

3.0 Prepare for End of Semester Examination (50 minutes)

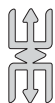
- 3.1** Refer to your Teacher Manual for the format of the end of semester examination and use the subject-specific App to review or develop your assessment tasks, mark schemes/rubrics, etc. (NTS 2a-2c, 2e-2h and 3j-3q).

E.g.

The end of semester examination for Week 24 is for 2 hours and the tasks to be developed aligning with the learning indicators in Weeks 13 to 23.

Follow the approved structure and guidelines for the Week 24 end of semester examination, ensuring a balanced representation across Depth of Knowledge (DoK) Levels 1, 2, and 3. Based on this format, provide:

- 1.** A set of 30 multiple-choice questions
- 2.** Four essay-type questions, including one compulsory question
- 3.** A detailed marking scheme for all questions.



Note

In preparing for end of semester examination, one chat may not be enough for the App to provide all you need (DoK levels, structure, distribution across DoK levels, etc.)

- 3.2** Have a chat with your App to review the suggested assessment tasks and discuss the suitability of the responses from activity 3.1. Use the review to refine the responses and complete the set questions (NTS 1a, 2b, 2c and 3e–3q). In doing this activity, consider:

E.g.

- i. Whether the assessment tasks generated follow 30%, 40%, 30% DoK distribution**

Evaluate the provided assessment tasks and make necessary revisions to ensure the tasks precisely reflect and are in alignment with the DoK distribution outlined in the Table of Specification as level 1: 30%, level 2: 40%, and level 3: 30%.

- ii. Mark scheme and score distribution**

Examine the mark scheme to confirm that correct answers are accurately identified and that marks are appropriately allocated to reflect the complexities of the demands for each item.

- iii. Resources needed for assessment administration**

Identify extra resources needed to fairly and comfortably administer the assessment to two learners without furniture.

- iv. How to provide feedback**

Suggest two effective feedback strategies specifically designed to support learners with slow writing skills learners with other learning needs.

4.0 Reflection (10 minutes)

- 3.1 Reflect and share your views on the session (NTS 1a, 1b).
 3.2 Identify a colleague to observe your lesson in relation to PLC Session 24 to provide feedback on your lesson (NTS 1f, 1g).
 3.3 Remember to mark, record, and upload your learners' assessment scores in the Student Transcript Portal (NTS 3j, 3n).

Appendix 1: Subject Specific App Teaching & Learning Apps – Issue Reporting Guide

How to Report Issues or Get Support

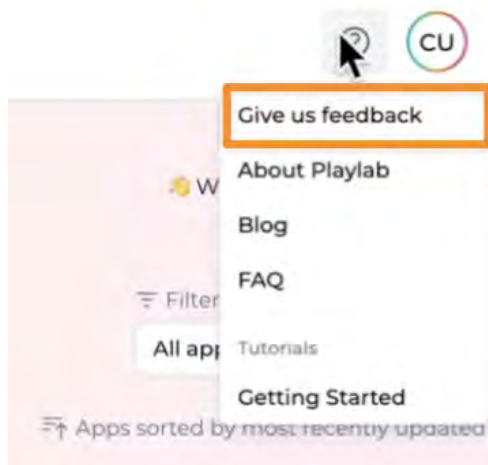
You have three ways to report issues with the subject-specific apps:

1. Email Support

- For general issues: Send email to: support@playlab.ai
- Include:
- Your school name and region
- Subject app you're using
- Description of the issue
- Screenshots or screen recordings (if possible)
- Best for: School administrators reporting multiple app issues
- Response time: Within 24 hours
- If Urgent please include [URGENT] Message Text in your subject line.

2. Submit Feedback in Playlab

- In the app, Click the “Give us Feedback” link in the menu and share feedback.



- Access the Feedback Form here
- Complete the form and upload any supporting documentation. (The more detailed your submission is, the more helpful support will be)



User Feedback Form

We want to hear your feedback and learn more about how we can improve Playlab for you. *Please complete this form to submit your feedback to the Playlab team.*

Full Name*

Your answer

Email*

Your answer

What is your role?*

Your answer

Please share your feedback

What challenge are you facing? What feature would you like to see?

Your answer

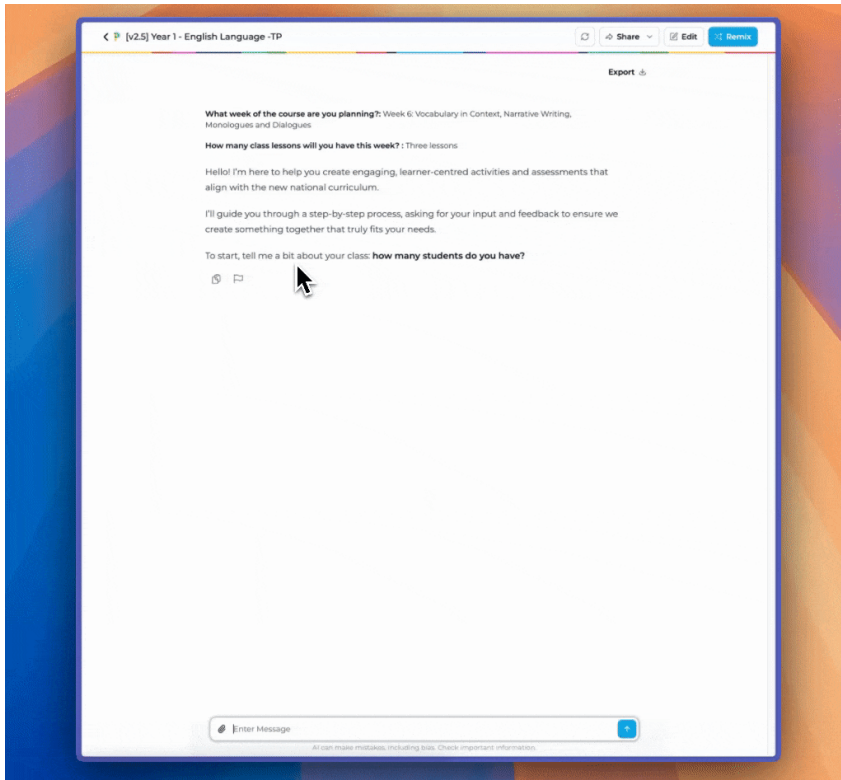
Please share any screenshots or videos that help visualize your feedback.

 **Upload** Size limit: 100 MB. File limit: 10.

Submit

Never submit sensitive personal information, like passwords, through Notion Forms.
[Report abuse](#)

- Best for: Individual teachers reporting specific issues
 - Response time: Within 24–48 hours
3. In-Chat Flagging
- Look for the flag button within your chat conversation



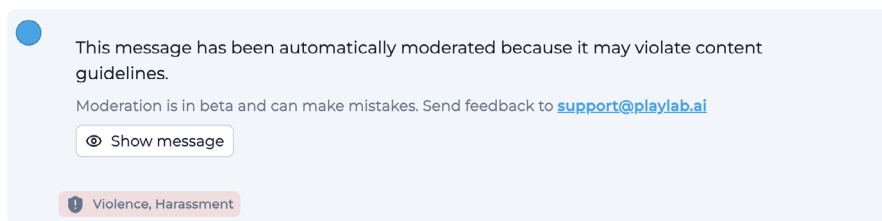
- Click to report biased, inaccurate, or inappropriate messages.
- Best for: Immediate issues with app responses
- There is also in app moderation for both user messages and AI generated responses. You can read more about it here.

What Happens After You Report?

1. The message will be flagged in your user activity. You will see indicators of messages that have been moderated or flagged.

KIPP NYC Restorative Plan Designer	8/21/2025
	 7  1
KIPP NYC Restorative Plan Designer	8/21/2025
	 5
KIPP NYC Restorative Plan Designer	8/15/2025
	 7  1

2. You can review the messages in activity. By default the message is hidden unless you click “show message”.



Thank you for sharing the details of the incident. Here's the step-by-step analysis and proposed restorative plan based on the provided situation:

3. If something is consistently being flagged, you may want to address it in your implementation, make revisions to the app, or contact [support@playlab.ai](\"mailto:support@playlab.ai\") for more guidance.

Tips for Effective Reporting:

- Be specific about what you were trying to do
- Note which subject app you're using
- Include your school and region information
- Describe what happened versus what you expected

Additional Support Resources

1 App Basics:

- Starting a conversation
 - Scan your QR code to use your app.
- If you encounter a problem, follow the directions for Escalating an issue.

Video Tutorials

- a Lesson Planning Walkthrough: Step-by-step guide using a real subject app with sample conversations
 - Lesson Plan Development
 - Watch a sample conversation here.
 - As you're using the apps, you can provide specifics on how you might want to differentiate for class needs
 - Assessment Development
 - Watch a sample conversation here.

- As you're using the apps, you can adjust the DOK levels as you create assessments at different complexity levels
- b For any additional questions please refer to the learn.playlab.ai page.

Key Reminders

- 1 Apps are supplemental tools to support your PLC Handbook and Teacher Manual—not replace them
- 2 Always refer to official curriculum documents as your primary resource
- 3 Use your professional judgment to adapt app suggestions for your classroom context

Appendix 2: Learning Planner Template

Name of Subject:							
Learning Planner Template Year Two							
Number of Learners in Class		Week		Duration		Form	
Strand							
Sub-Strand							
Content Standard							
Learning Outcome(s)							
Learning Indicator(s)							
Essential Question(s)							
Pedagogical Strategies							
Teaching & Learning Resources							
Key Notes on Differentiation Identify the different learner needs in your class and make notes on how to cater for them during the lesson							
Lesson (complete per number of lessons for the week)							
Refer to the Teacher Manual and Learner Material to complete this section							
Introduction Main Lesson Closure							

Key Assessment	
1.	Formative Assessment Mode: Task: Mark Scheme:
2.	Key Assessment for Student Transcript Portal Assessment Mode: Task: Rubric/Mark Scheme:
Reflection & Remarks	

Appendix 3: Teacher Lesson Observation Form

Teacher Lesson Observation Form

Name of School

Subject being observed

Class

Year 1

Year 2

Year 3

Sex of the teacher

Male

Female

1. Is the purpose of the lesson clearly stated in the lesson plan and focused on learners achieving the lesson learning outcomes?

Yes

In Part

No

NA

- b1. Please provide an explanation to your answer in Q1 above

2. Are the unique needs of female learners, male learners, and learners with special education needs adequately catered for in the lesson plan? For example, the choice of teaching methods and learning activities reflects/does not reflect the learning needs of all learners.

For example, the choice of teaching methods, and learning activities.

Yes

In Part

No

NA

2b. Please provide an explanation to your answer in Q2 above

3. Does the teacher manage behavior well, maintaining a positive and non-threatening learning environment throughout the lesson?

Yes In Part No NA

3b. Please provide an explanation to your answer in Q3 above

4. Are appropriate teaching and learning materials and other resources (including ICT, books, desks) available, accessible and being used to support learning of all females, males and learners with special education needs?

Yes In Part No NA

4b. Please provide an explanation to your answer in Q4 above

5. Are learners engaged on tasks that challenge them in line with the content standards?

Does the teacher take into consideration the uniqueness of learners?

Yes In Part No NA

5b. Please provide an explanation to your answer in Q5 above

6. Is there evidence that students are learning?

Yes In Part No NA

6b. Please provide an explanation to your answer in Q6 above

7. Is teaching differentiated to cater for the varied needs of all learners (i.e., male learners, female learners, learners with special education needs) and those with poor literacy and/ or numeracy proficiency?

Yes In Part No NA

7b. Please provide an explanation to your answer in Q7 above

8. Does the teacher use real life examples which are familiar to learners to explain concepts?

Yes In Part No NA

8b. Please provide an explanation to your answer in Q8 above

9. Does the teacher point out or question traditional gender roles when they come up during the lessons as appropriate?

Yes In Part No NA

9b. Please provide an explanation to your answer in Q9 above

10. Does the lesson include appropriate interactive and creative approaches e.g., group work, role play, storytelling to support learners achieving the learning outcomes?

If yes, give examples of the issues and skills that have been so integrated.

Yes In Part No NA

10b. Please provide an explanation to your answer in Q10 above

11. Have cross-cutting issues and /or 21st century skills been integrated into the lesson to support learners in achieving the learning outcomes e.g., problem-solving, critical thinking, communication? If yes, give examples of the issues and skills that have been so integrated.

Yes In Part No NA

11b. If yes, give examples of the issues and skills that have been so integrated.

12. Does the teacher incorporate ICT into their practice to support learning?

Yes In Part No NA

12b. Please provide an explanation to your answer in Q12 above

13. Does the teacher encourage all female male and male learners (including those who may be shy or afraid to speak) to ask questions, answer questions, participate in group work, etc. during the lesson?

Yes In Part No NA

13b. Please provide an explanation to your answer in Q13 above

14. Is assessment evident in the lesson? If yes, does it include assessment as, for or of learning and go beyond recall?

If yes, did it include assessment of, for or as learning and go beyond recall?

Yes In Part No NA

14b. Please provide an explanation to your answer in Q14 above

15. Do learners make use of feedback from teacher and peers?

Yes In Part No NA

15b. Please provide an explanation to your answer in Q15 above

16. Does the teacher sum up the lesson and evaluate the lesson against the learning outcomes with the learners?

Yes In Part No NA

16b. Please provide an explanation to your answer in Q16 above

17. Does the teachers' planning of lessons taught before the one observed show how they plan for learning over time, considering individual and group needs?

Yes In Part No NA

17b. Please provide an explanation to your answer in Q17 above

18. Does the teacher pay attention to the composition of females and males during group work and assigns females leadership roles.

Yes In Part No NA

18b. Please provide an explanation to your answer in Q18 above

19. Does the teacher provide constructive verbal feedback to both females and males and learners with special education needs?

Yes

In Part

No

NA

19b. Please provide an explanation to your answer in Q19 above

20. Does the teacher provide constructive written feedback to both females and males and learners with special education needs in their exercise book?

Yes

In Part

No

NA

20b. Please provide an explanation to your answer in Q20 above

21. Key strengths
in the lesson

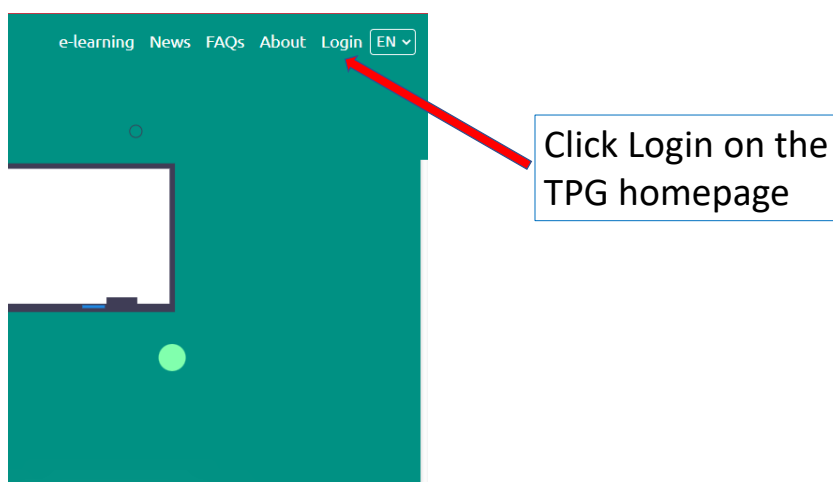
22. Areas for
development

23. Next steps for
teacher

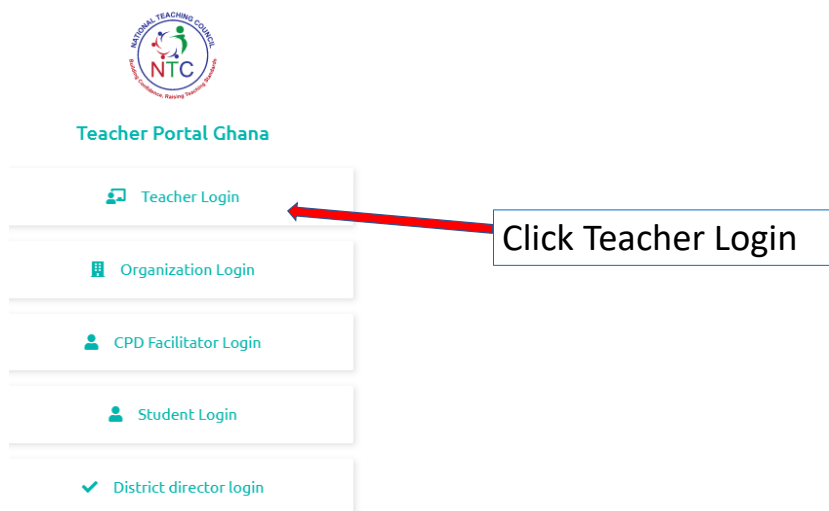
Additional Notes (on teacher's actions, the flow of activities, etc.)

Appendix 4: How to check CPD Points and Training Records on Teacher Portal Ghana

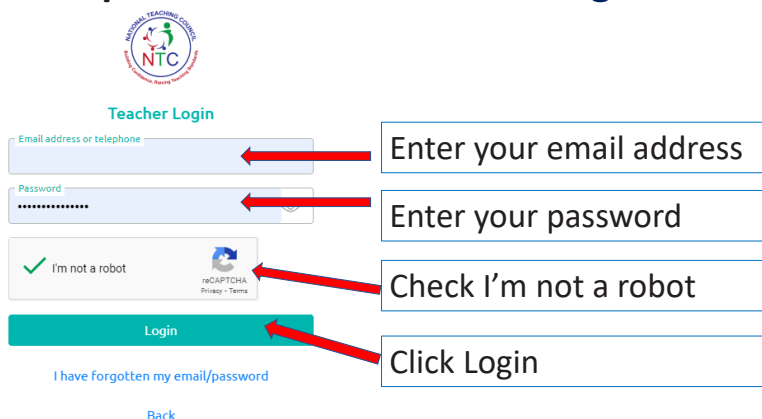
1. Visit tpg.ntc.gov.gh and click Login



2. On the Login page, click Teacher Login



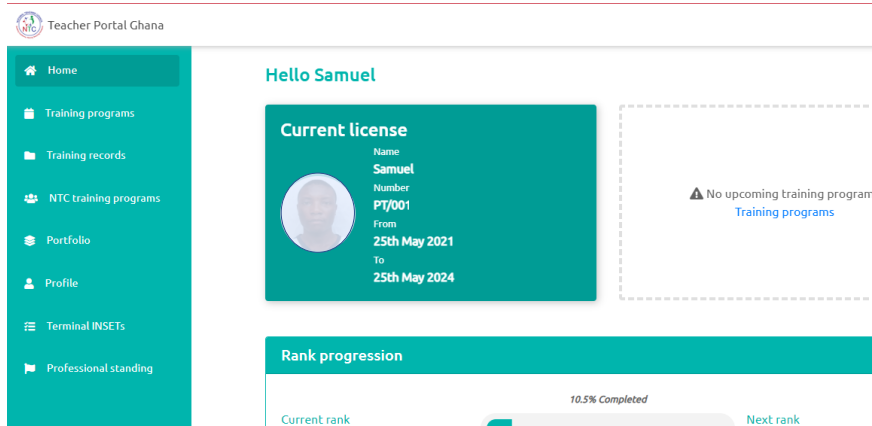
3. On the **Teacher Login** page enter your email address and password and then click **Login**



The image shows the Teacher Login page with the following elements and annotations:

- Teacher Login** (Page Title)
- Email address or telephone** (Input field) → **Enter your email address**
- Password** (Input field) → **Enter your password**
- I'm not a robot** (CAPTCHA) → **Check I'm not a robot**
- Login** (Button) → **Click Login**
- [I have forgotten my email/password](#)
- [Back](#)

4. After a successful login you will get access to your **TPG account** (Check image below)



The image shows the Teacher Portal Ghana dashboard for a user named Samuel. The dashboard includes the following sections:

- Header:** Teacher Portal Ghana
- Left Sidebar:** Home, Training programs, Training records, NTC training programs, Portfolio, Profile, Terminal INSETs, Professional standing
- Main Content:**
 - Hello Samuel**
 - Current license:**
 - Name: Samuel
 - Number: PT/001
 - From: 25th May 2021
 - To: 25th May 2024
 - Rank progression:**
 - Current rank
 - 10.5% Completed
 - Next rank
 - No upcoming training program:** [Training programs](#)

5. To check CPD points, scroll down to **Rank progression**. You will see the CPD points progress bar and actual points accrued (Check image below)



6. To view training records, from the side menu tap on **Training records** (Check image below)

The image shows the Teacher Portal Ghana interface. On the left is a teal side menu with options: Home, Training programs, Training records, NTC training programs, Portfolio, Profile, Terminal INSETs, and Professional standing. A red arrow points from a text box below to the 'Training records' option. The main content area is titled 'Training records' and shows 'Records for training programs registered and/or attended'. It lists three programs: 'Sensitization on Education Policies' (Marked as absent), 'Differentiated Learning' (Processed, Credits: 1.32), and 'Advanced Mobile Learning with Multimedia (AMLJM)' (Processed, Credits: 0.5788). A red bracket on the right groups these programs under a text box.

Teacher Portal Ghana

Home

Training programs

Training records

NTC training programs

Portfolio

Profile

Terminal INSETs

Professional standing

Click to view training records

Training records

Records for training programs registered and/or attended

Total points: 1.8988

Program	Status	Credits
Sensitization on Education Policies	Marked as absent	
Differentiated Learning	Processed	1.32
Advanced Mobile Learning with Multimedia (AMLJM)	Processed	0.5788

List of training programs

THANK YOU

