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DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for TLE

Quarter 4
Lesson
2

Lesson Exemplar for TLE Grade 8
Quarter 4: Lesson 2 (Week 2)
SY/TP 2025-2026

Development Team

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TLE/QUARTER 4 / GRADE 8

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	Demonstrate an understanding of the consumables and component parts in industrial arts services.
B. Performance Standards	The learners perform simple diagnostics and simple troubleshooting in industrial arts services.
C. Learning Competencies and Objectives	**Learning Competency** ● discuss the consumables in industrial arts services. **Learning Objectives** At the end of the lesson, the students are expected to: 1. Identify various consumables used in construction projects and their specific application. 2. Recognize essential consumables used in electronics and electrical work and their functions. 3. Identify common consumables used in automotive and small engine maintenance and repair.
D. Content	● Common construction materials (woodworking, masonry construction painting ● Common construction materials (plumbing, metal works, tile setting) ● Electrical and Electronic Materials ● Common Materials in Automotive and Small Engine Works
E. Integration	Industrial arts encompass a range of practical skills pertinent to construction, electrical work, electronics, and automotive industries. Through engaging with various competencies, learners can explore and enhance their proficiency in these fields, preparing them for real-world applications. This lesson can be integrated and related to: **SDG 7: Affordable and Clean Energy:** This lesson aims to assist learners in recognizing the consumable materials utilized in construction, electrical work, electronics, and automotive industries, promoting affordable and clean energy solutions. By understanding and selecting appropriate materials, learners can contribute to advancing sustainable practices in these sectors, fostering a more environmentally friendly approach to energy production and consumption. **SDG 12: Responsible Consumption and Production:** This lesson empowers learners to make thoughtful decisions regarding the consumption, utilization, and disposal of consumable products in the construction, electrical, electronics, and automotive/land sectors. By fostering mindfulness about their choices, learners can minimize waste and promote responsible stewardship of resources, contributing to more sustainable practices within these industries.

	SDG 13: Climate Action: Another key learning outcome of this lesson is understanding which consumable materials are used in the construction, electrical, electronics, and automotive/land sectors that can actively combat climate change and foster responsible technician practices. By identifying and prioritizing materials with low environmental impact and promoting sustainable alternatives, learners can contribute to mitigating the effects of climate change and advancing responsible technician standards within these industries.

II. LEARNING RESOURCES

Reading Materials (Online)

Ayer, H. (2023, August 21). *Your guide to common masonry materials*. Angi. https://www.angi.com/articles/what-are-most-common-masonry-materials.htm

Banks, H. (2023, July 14). The best welding techniques for different materials - Arc welding services. Arc Welding Services. https://arcweldingservices.co.uk/the-best-welding-techniques-for-different-materials/

Das, S. (2023, December 12). Electronic materials and consumables list. Electronics Tutorial | Best Electronics Tutorial Website. https://www.electronicsandyou.com/electronic-materials-and-consumables-list.html

Formisano, B. (2022, April 29). Common pipe materials used in the home. The Spruce. https://www.thespruce.com/types-of-home-piping-materials-1824879

Housing News. (2023, January 28). Plumbing Materials: The Comprehensive Guide in 2023. https://housing.com/news/commonly-used-plumbing-materials/

Mbewe, T. (2021, February 16). Electrical materials used in house wiring. https://www.linkedin.com/pulse/electrical-materials-used-house-wiring-themba-mbewe/

Pioneer, A. (2023, December 22). 10 essential car consumables to keep your vehicle running smoothly. Parts Pioneer. https://partspioneer.ca/blogs/interesting-reads/10-essential-car-consumables-to-keep-your-vehicle-running-smoothly

Rutherford, C. (2018b, June 22). 4.1 Piping & fittings. Pressbooks. https://pressbooks.oer.hawaii.edu/buildingmaint/chapter/parts-materials/

Team, D. (2023, August 19). Types of paint used in building construction for interior & exterior wall. DAILY CIVIL. https://dailycivil.com/types-of-paint-used-in-building-construction-for-interior-exterior-wall/

Usa, R. (2023, August 23). Materials needed to lay tile floor: The best tools. Rubi Blog USA. https://www.rubi.com/us/blog/materials-needed-to-lay-tile-floor/

Wood & woodworking materials. (n.d.). https://workshopcompanion.com/KnowHow/Wood/Wood_Intro/Wood_Intro.htm

Video Resources

ADTW Study. (2022, May 13). Types of welding processes | Classification of welding processes [Video]. YouTube. https://www.youtube.com/watch?v=b0EfJaYUfF8

CARinfo3d (En). (2022, October 10). *Car anatomy: The Basics / How cars work? (3D animation)* [Video]. YouTube. https://www.youtube.com/watch?v=fPjOWekzeGI
Civiconcepts - Bhushan Mahajan. (2022, February 19). Plumbing Materials name and pictures || Plumbing fittings name || Plumbing work | Plumbing fixtures [Video]. YouTube. https://www.youtube.com/watch?v=33dej_o_h6c
Lowe's Home Improvement. (2014, July 10). How to paint a room - Basic painting tips [Video]. YouTube. https://www.youtube.com/watch?v=CRXCB_3gLok
SIKANA English. (2016, December 12). *Introduction to Masonry | Masonry* [Video]. YouTube. https://www.youtube.com/watch?v=WiuhvXC0c0w

Suggested Reading Books

Basic Electronics. (2022). India: S Chand & Company Limited.
Fajardo Jr., Max (2000). *Plumbing Design and Estimate*. 5138 Trading. Quezon City.
Fajardo, Max Jr B. (2000) *Simplified Construction Estimate* 3rd ed. Manila: 5138 Publishing.
Fineza, B. C., Limon, M., & Pacle, A. (2017). TLE Life Skills for Future. The Intellegente Publishing Inc.
Larry, J. (2017). Welding: Principles and Application. 20 Channel Street Boston, USA: Cengage Learning
Mullin, R., Branch, T., Gerolimon, S., Simmons, J. P., & Trineer, C. (2018). Electrical Wiring Residential. Nelson Education Limited.
The Editors of Family Handyman (2017). *Family Handyman Do-It-Yourself Basics: Save Money, Solve Problems, Improve Your Home*. Simon and Schuster,
Tom Denton (2017). *Advanced Automotive Fault Diagnosis. Automotive Technology. Vehicle Maintenance and Repair*. Taylor & Francis Limited

III. TEACHING AND LEARNING PROCEDURE		**NOTES TO TEACHERS**
A. Activating Prior Knowledge	**DAY 1** **1. Short Review: Picture Analysis** "**Occupation Identification Challenge: Who's the Pro?**" Gather pictures of skilled workers in different industrial arts professions**.** Show them in class and let the students guess the profession and the nature of work. At the end of the game, the team with the most points wins. **2. Feedback (Optional)** • Following the activity, ask whether the participants feel they have gained clarity on the various occupations within industrial arts and the nature of their respective roles.	**Reminder:** *The writer only suggests the allotment of days. Teachers can determine the allotment depending on the type of learners they have and the complexity of the given topics and activities.* Teachers can adjust the activities according to the resources accessible in their school. In cases where

	• If the students are already clear about the various occupations within industrial arts and the nature of their respective roles, you may proceed to Consumables in construction services, electronics-electrical services, and automotive and small-engine.	consumable materials are too many in certain areas, and the teacher perceives it challenging to cover within the allotted time due to the characteristics of the learners in their class, they may focus solely on discussing the most crucial consumable materials in each sector.
B. Establishing Lesson Purpose	**1. Lesson Purpose.** Please encourage students to share their observations regarding the materials used by construction workers and automotive technicians in their workplaces. After the sharing, state the topic and the objectives. At the end of the lesson, the students will be able to: 1. Identify various consumables used in construction projects and their specific applications. 2. Recognize essential consumables used in electronics and electrical work and their functions. 3. Identify common consumables in automotive and small engine maintenance and repair. **2. Unlocking Content Vocabulary** • **Consumable-** an item used during operations requiring frequent replacement. • **Materials-** raw products utilized to construct various objects, such as buildings or structures. • **Consumable Materials**- any materials utilized only once, often experiencing wear and tear, and need replacement.	
C. Developing and Deepening Understanding	**DAY 1** **SUB-TOPIC 1: Common construction materials (Woodworking, Masonry, Construction Painting)** **1. Explicitation:**	You may decide on the number of group members, number of items, and time allotment. **Answer key:**

Let the students identify the given symbol that can be found in a floor plan.

1.  2.  3.  4.  5. 

Ensure students know the common symbols in a floor plan after the activity. Then, show the following pictures and ask the following guide questions.

Guide questions:

- What are the things to consider when constructing a wooden and concrete house?
- What painting materials are used to paint wood and concrete?

Introduce woodworking, masonry, and painting construction materials. Briefly discuss each type of material's characteristics and uses, highlighting its importance in construction works.
Construction sectors require various consumable materials to produce, perform, and finish specific tasks in a workplace.

Consumable Materials in Woodworking
The following are the common consumable materials in woodworking.

Wood	**Nails**	**Screws**	**Hinges**	**Roofing Materials**
Softwood tree, Hardwood trees, Engineered Wood				• Cogon, Bamboo, Nipa, Metal Roof (Galvanize Iron corrugated)

Wood Finishing Materials
A. Penetrating Wood Finishes- a finishing material used to penetrate the wood grain. Example (Danish Oil, Cedar oil,

B. Surface Finishes- applied on the top of the wood to create a protective layer. Example (Shellac, Lacquer, Varnish, Wax, Dye, Paint)

1. Double Swing
2. Window
3. Curved Stairs
4. Sofa
5. Cabinet

Integrate into the discussion about materials that are environmentally friendly and possible for proper disposal.

Teachers may add more consumable material in each area depending on their preference and availability of time.

You may decide how much time you will give your students for the activity.

Consumable Materials in Masonry
The following are the common consumable materials in masonry.

1. Cement -

2. Bricks and Concrete Hollow Blocks

3. Aggregate

- Coarse Aggregate and Fine Aggregate

4. **Rebar (reinforcing bar)**

Consumable Materials in Construction Painting
The following are the common consumable materials in construction painting.

Paint	Masking Tape	Brush comb	Scrub brush
Paint Brush	Sandpaper	Drop cloths	Paint Roller

2. Worked Example

- Conduct a sharing activity where students will share their experiences using those materials in class.
- Ask the students if they have experience using the following materials and allow them to share them in class.

3. Lesson Activity: **Hands-On Exploration**

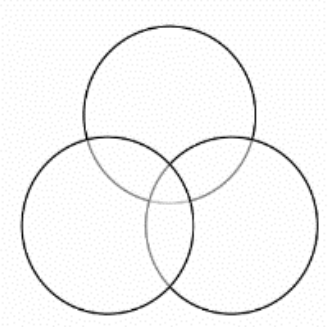
- You may divide the class into 4-5 groups depending on the class size.
- Set up three separate stations, each dedicated to one type of construction material (woodworking, masonry construction, painting).
- At each station, provide samples of consumable materials for students to examine. **(Note: sample material depends on the availability of materials in the school**)
- Encourage students to touch and feel the materials, observe their characteristics, and ask questions.
- Rotate students through each station every 5 minutes to ensure they can explore all three types of materials.
- After the exploration, let them work in their groups and let them make a summary report of their experience.
- Gather students together for a brief discussion.

- Ask group representatives to share what they learned or found interesting during the exploration.
- Summarize the key points covered and emphasize the importance of understanding different construction materials in the construction sector (woodworking, masonry, and construction painting.)

Note: You may decide the time allotment based on the remaining time.
Refer to worksheet no. 1, to be accomplished by the students.

DAY 2
SUB-TOPIC 2: Common construction materials (Plumbing, Metal Works, Tile Setting)

1. Explicitation:
Let the students compare the materials used in Woodworking, Masonry, and Construction Painting using the VENN Diagram. This can be done by group.



After ensuring they understand the previous topic, ask the following questions.
Guide Questions:
- What important components of the house supply potable water and remove waste?
- For safety and aesthetic purposes, what usually do house owner put in their window?
- What interior design of your home provides a stunning appearance for floors, walls, bathroom coverings, and more?
- What materials are used in plumbing, metal works, and tile settings?

Consumable Materials in Plumbing
The following are the common consumable materials in plumbing.

1. Pipe
- PVC PIPE -refers to Poly Vinyl Chloride (PVC) Plastic material.
- ABS (acrylonitrile butadiene styrene
- Polypropylene Random Copolymer (PPR
- Steel Pipe

2. Fittings
3. Valves
4. Fixtures
5. Sealants and Adhesives Sealant (PVC Sealant, Teflon Tape)

Consumable Materials in Metal Works
The following are the common consumable materials in metal works such as welding.

Cutting Disc	Grinding Disc	Welding Electrodes	Welding Wire	Shielding Gas

Consumable Materials in Tile Settings
The following are the common consumable materials in tile settings.

Tile	Tile Adhesive	Grout	Tile Sealant or Sealer	Tile Edging Trim

2. Worked Example

Reflective Discussion
Guide Questions

1. Give one consumable material you have encountered in plumbing, metalworking, and tile setting. Share with the class your experience.
2. What specific challenges or difficulties have you encountered when working with these materials? Please share in class how you have overcome those challenges.
3. Are there any ethical or environmental considerations associated with the production or disposal of these materials that you think are worth discussing? Please explain.
4. How do you envision these consumable materials evolving or being used differently?

3. Lesson Activity: **Material Identification Game**
Refer to worksheet no. 2, to be accomplished by the students.

- Divide the class into small teams (3-4 students per team). Group members will depend on the number of students in class.
- Explain that each team selects a material from the display area.

For fittings and valves: Visit/Click the given links:
https://www.civillead.com/types-of-pipe-fittings-in-plumbing/

https://www.freshwatersystems.com/blogs/blog/a-guide-to-plumbing-valve-type

- The team must identify and place the material under the correct category (plumbing, metal works, or tile setting) on the poster board or card.
- After identifying all materials, review each category with the class.
- You may decide on a point system for this activity.

SUB-TOPIC 3: Consumable Materials in Electrical and Electronic

1. Explicitation:
Before proceeding to the next topic, let the student review the basic symbols in electrical and electronics.

1.  **2.**  **3.**  **4.**  **5.** 

After ensuring that students are familiarized with the different symbols in electrical and electronics, you may proceed to the next topic.

Guide Questions:
- What other materials in electrical and electronics are you familiar with their symbols?
- What do you think are the electrical materials that cannot be found in electronic works?

Aside from the construction sector, the electrical and electronic sectors are other service areas.

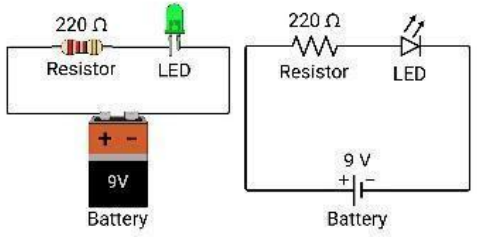
Consumable Materials in Electrical

The following are the common consumable materials used in electrical work.

Electrical Wire	Switch	Connectors
Plug	Lamp Holder	Conduit/Pipes
Clamps	Junction Box	Utility Box
Electrical Tape	Fuse	Breaker

Consumable Materials in Electronics

Answer Key
1. Buzzer
2. Switch
3. Lamp
4. Fuse
5. Diode:

	• Electronic consumable materials refer to various substances and components essential for the manufacturing, assembling, and maintaining of electronic devices. These include semiconductors, conductive materials, insulators, soldering materials, adhesives, and packaging components (Das, 2019). The following are the common consumable materials in electronic works. Click the given link resources: • Das, S. (2019, July 13). Electronic Materials and Consumables List Used in Electronics. Electronics Tutorial | Best Electronics Tutorial Website. • Das, S. (2024, May 14). *Electronic materials and consumables list used in electronics*. Electronics Tutorial | Best Electronics Tutorial Website. https://www.electronicsandyou.com/electronic-materials-and-consumables-list.html **2. Worked Example** **Hands-on Exploration** • Divide the class into small groups and distribute samples of electrical and electronic consumable materials. • Encourage students to examine each material closely, noting its physical characteristics, markings, and unique features. • Guide in handling and identifying the materials and facilitating group discussions. • Review students' responses on the handouts or worksheets to assess their understanding of the materials. • Provide feedback on students' ability to identify and describe the properties and uses of electrical and electronic consumable materials. **Guide questions!** 1. What physical characteristics do you observe in this material? 2. How should you handle this material safely? 3. Were there any concepts or properties that were unclear? Can we discuss them further? **3. Lesson Activity: Circuit Building Challenge** • Present the challenge: Each group must build a simple circuit powered by a battery pack with an LED, resistor, and capacitor. 	The teacher may use worksheet 3 of the Lesson Exemplar 1 for learners to identify the consumable materials.

	• Explain that they must connect the components on the breadboard to create a functional circuit that lights up the LED. **Note:** You can use this circuit if you lack a breadboard and other components. **Refer to worksheet no. 3, to be accomplished by the students.** *LED and Resistor in Series Connected to a 9V Battery. Electric Circuit Experiment.* (n.d.). Vecteezy. Retrieved March 10, 2024, from https://www.vecteezy.com/vector-art/25747542-led-and-resistor-in-series-connected-to-a-9v-battery-electric-circuit-experiment • Divide the students into small groups and distribute the materials to each group. • Allow students time to plan and build their circuits, providing guidance and support as needed. • Encourage experimentation and problem-solving as students work to connect the components and troubleshoot any issues. • After completing their circuits, instruct each group to test their circuit by connecting the battery pack and observing if the LED lights up. • Circulate among the groups to assess their circuits and offer assistance or suggestions. • Bring the class together for a brief discussion about the challenge. • Ask students to share their experiences, successes, and challenges encountered during the activity. • Encourage students to reflect on what they learned about circuit building and the role of electrical and electronic consumable materials in creating functional circuits. ***Note:*** *If you lack a breadboard and other components, you use this circuit. Please refer to the given worksheet.* **DAY 3** **SUB-TOPIC 4: Common Materials in Automotive and Small Engine Works** **1. Explicitation:** A vehicle, such as an automobile or motorcycle is beneficial for more convenient travel. However, it is also important to consider that it is not easy to maintain a vehicle in good condition daily. As owners and drivers, we must familiarize ourselves with its common materials.	The teacher may also categorize the consumable materials in electrical and electronic work. The teacher may introduce the pricing of electrical materials to inculcate in the learners the value of caring for/using the materials. The teacher may share this you tube to the class: *Magkano ang presyo Ng mga electrical materials ngayon? |Updated 2023.* (2023, January 7). YouTube. https://youtu.be/8ef3HMipHQg?si=t-WxEHORyl80HBAn

Guide Questions:

- Who among you here has a car or a motorcycle?
- What are the common materials you observed in a car or motorcycle that are needed to have a good ride?
- What are the uses or functions of each material?

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Consumable Materials in Automotive and Small Engine

The following are the common consumable materials in automotive and small engine works.

Lubricant/ Engine Oil	Coolant/Antifreez	Air filter	Tire-
Lubricant/ Grease-	Brake Fluid	Sparkplug.	Battery
Transmission Fluid	Fuel Filter	Gasket	Brake Pad and lining
Fuel- Diesel, Gasoline	Oil Filter	Adhesive sealant-	Brake shoe

2. Worked Example.

- Lead a discussion about each material, highlighting its purpose, function, and importance in automotive and small engine works.
- Encourage students to ask questions and share their observations or experiences with this material.

Guide Questions

1. What are consumable materials in automotive and small engine maintenance?
2. Why are consumable materials necessary for vehicle and engine performance?
3. Why is it essential to perform regular maintenance tasks on consumable materials?
4. How can regular inspection and replacement of consumable materials prolong the life of a vehicle or engine?
5. Are there any safety precautions to be aware of when handling or replacing consumable materials? Please elaborate on your answer
6. How can proper disposal of used consumable materials benefit the environment?

3. Lesson Activity: **Component Identification Game**

- Divide the class into small groups of 3-4 students.
- Distribute each group's printed images of automotive and small engine components.

The teacher may play the video to convey explicit ideas:

	• Instruct each group to study the images and identify as many components as possible. • Provide blank index cards and markers to each group. • Challenge the groups to write down the names of the components they identified on the index cards. • Encourage students to collaborate and discuss their observations to identify the components. • After the allotted time, reconvene the class and review the identified components together. • Ask each group to share their list of identified components with the class. • You decide the point system for this activity. **(Refer to worksheet no. 4, to be accomplished by the students.)**	• Car anatomy: The basics / How cars work? *(3D animation).* (2022, October 10). YouTube. https://youtu.be/fPjOWekzeGI?si=HLE7cF5DoZ4U191y • *Learn engine parts, pag-aralan Po natin..* (2021, October 20). YouTube. https://youtu.be/zF23_CQoPm0?si=wtyEsqfe4NGcj_sQ
D. Making Generalizations	**DAY 4** **1. Learners' Takeaways** 1. What did I learn? 2. What confused me? 3. What do I need to do? • Let the students share in class what they learned about the different consumable materials in each industrial art service. • Encourage learners to engage attentively with their peers' sharing and provide constructive feedback, when necessary, especially for clarification or correction • Summarize the key takeaways from the exercise and encourage learners to continue reflecting on their learning and taking proactive steps to address areas of confusion. **2. Reflection on Learning** **Reflection Paper** • Let the students recall their observations on how workers of each sector use and dispose of their consumable materials. • Let them reflect on how they can contribute to achieving SDGs 7, 12, and 13 through conscious consumption choices and advocacy efforts. • They may write it on a piece of paper. **SDG 7: Affordable and Clean Energy** **SDG 12: Responsible Consumption and Production**	

	SDG 13: Climate Action	

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		**NOTES TO TEACHERS**
A. Evaluating Learning	**1. Formative Assessment** **Multiple Choice:** The students will take the 10-item quiz about each sector's consumable materials. 1. What is used to fill gaps and make watertight seals in construction projects? a. Adhesive b. Sealant c. Aggregates d. Grout 2. What material is commonly used to permanently join two metal pieces in welding? a. Soldering Lead b. Electrode c. Adhesive d. Sealant 3. What is commonly applied to threaded plumbing connections to prevent leaks? a. Electrical tape b. Teflon tape c. Elbow d. Gasket 4. Which material is used to change the direction of the flow of water in the plumbing system? a. Fittings b. Fixtures c. Pipe d. Joint 5. What primary materials are used in carpentry works? a. Steel b. Pipes c. Wood d. Wire 6. What material commonly covers and insulates exposed electrical wires to prevent short circuits? a. Sealant b. Electrical Tape c. Adhesive d. Junction Box 7. Which material commonly bonds bricks/blocks or aggregates in masonry construction? a. Cement b. Paste c. Glue d. Grout 8. What material is commonly applied to surfaces for protection and aesthetic appeal in construction painting? a. Shellac b. Varnish c. Paint d. Grout 9. What substance is commonly used to provide lubrication and reduce friction in automotive engines? a. Lubricant b. Fuel c. Grease d. Engine Oil 10. Which material is commonly used to regulate the temperature of automotive engines? a. Grease b. Fuel c. Coolant d. Oil **2. Homework** ● Let the student choose one of the following fields: construction, metal works, electrical, or automotive.	**Answer Key** 1. Sealant 2. Electrode 3. Teflon Tape 4. Fittings 5. Wood 6. Electrical Tape 7. Cement 8. Paint 9. Engine Oil 10. Coolant **Note:** You may assign another task for formative tests as along as it aligns with the objectives.

<table>
<tr><td></td><td colspan="3">Let them identify five consumable materials commonly used in their chosen field that were not mentioned in class.
Let them gather information about each material, including pictures, its purpose, and typical applications.
They may submit in class on a long bond paper.</td><td></td></tr>
<tr><td rowspan="5">B. Teacher's Remarks</td><td>Note observations on any of the following areas:</td><td>Effective Practices</td><td>Problems Encountered</td><td rowspan="5">The teacher may take note of some observations related to the effective practices and problems encountered after utilizing the different strategies, materials used, learner engagement and other related stuff.

Teachers may also suggest ways to improve the different activities explored/ lesson exemplar.</td></tr>
<tr><td>strategies explored</td><td></td><td></td></tr>
<tr><td>materials used</td><td></td><td></td></tr>
<tr><td>learner engagement/ interaction</td><td></td><td></td></tr>
<tr><td>others</td><td></td><td></td></tr>
<tr><td>C. Teacher's Reflection</td><td colspan="3">Reflection guide or prompt can be on:
<u>principles behind the teaching</u>
What principles and beliefs informed my lesson?
Why did I teach the lesson the way I did?
<u>students</u>
What roles did my students play in my lesson?
What did my students learn? How did they learn?
<u>ways forward</u>
What could I have done differently?
What can I explore in the next lesson?</td><td>Teacher's reflection in every lesson conducted/ facilitated is essential and necessary to improve practice. You may also consider this as an input for the LAC/Collab sessions.</td></tr>
</table>