PATEF-UPDATE Mid-year National Convention 2017
"Approaches in Teaching and Assessment for the 21st Century Learning"

Demo-Lec with focus on Assessment (Primary Level)...

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Chosen competency:

demonstrate how sound, heat, light, and electricity can be transformed.

Unpacking the Curriculum

Grade 3	Grade 4	Grade 5	Grade 6
CONTENT: Energy: Light, sound, heat and electricity CONTENT STANDARD: The learners demonstrate understanding of… sources and uses light, sound, heat and electricity. PERFORMANCE STANDARD: The learners should be able to…apply the knowledge of the sources and uses of light, sound, heat, and electricity.	CONTENT: Light, heat and sound CONTENT STANDARD: The learners demonstrate understanding of… how light, heat and sound travel using various objects. PERFORMANCE STANDARD: The learners should be able to…demonstrate conceptual understanding of properties/characteristics of light, heat and sound.	CONTENT: Light, sound, heat and electricity. CONTENT STANDARD: The learners demonstrate understanding of… 1) how different objects interact with light and sound, heat and electricity; 2) the effects of heat and electricity, light and sound on people and objects. PERFORMANCE STANDARD: The learners should be able to… (none)	CONTENT: Energy: Energy transformation in simple machines. CONTENT STANDARD: The learners demonstrate understanding of… how energy is transferred in simple machines. PERFORMANCE STANDARD: The learners should be able to create a marketing strategy for a new product on electrical or light efficiency.

Unpacking the Curriculum

Grade 3	Grade 4	Grade 5	Grade 6
X	X	X	The learners should be able to..demonstrate how sound, heat, light and electricity can be transformed (S6FE-IIId-f-2) (PT).

Unpacking the Curriculum

NOUNS (WHAT?)	VERBS (HOW?)
Marketing strategy Electrical Energy Simple Machines Sound, Heat, Light, Electricity	Create Demonstrate

Unpacking the Curriculum

Unpacked Competencies

The learners should be able to:

1. identify six types of energy (additional) (K);
2. enumerate two uses each of the six energy types (additional) (K);

Unpacking the Curriculum

Unpacked Competencies

The learners should be able to:

3	enumerate the six different types of simple machines (additional) (K);
4	explain energy present in simple machines (additional) (U);

Unpacking the Curriculum

Unpacked Competencies

The learners should be able to:

5	demonstrate how sound, heat, light and electricity can be transformed (S6FE-IIId-f-2) (PT);
6	manipulate simple machines to describe their characteristics and uses (S6FE-IIIg-i-3) (PT);

Unpacking the Curriculum

Unpacked Competencies

The learners should be able to:

7	demonstrate the practical and safe uses of simple machines(S6FE-IIIc-j-4) (PT); and
8	design and produce a flyer that can promote a new product on a new electrical or lighting efficiency (additional)(PT).

Content Progression

Progression of Content

G6 Light, heat(thermal), mechanical, sound, chemical and electrical are different forms of energy that can be transformed from one to another in different ways. The energy that Is released can be used to operate simple machines that have practical uses.

G5 Materials interact with the properties of light, heat, sound and electricity in different and specific ways.

G4 Light, sound and heat have properties and characteristics that must be properly used in order to avoid harmful effects.

G3 There are different sources and uses of light, sound, heat and electricity that can be found in the environment.

Success Criteria

Grade level specific

Grade 6
1) I can identify the six different types of energy. 2) I can enumerate two uses each of the six types of energy. 3) I can enumerate the six different types of simple machines. 4) I can explain the transformation of energy in simple machines. 5) I can show how sound, heat, light and electricity can be transformed. 6) I can manipulate simple machines and describe their characteristics and uses. 7) I can demonstrate practical and safe uses of simple machines. 8) I can produce a flyer to promote a new product by applying concepts learned about energy.

Formative Assessment

Formative Assessment through pre- and post-test

Grade 6

Multiple Choice

1) Which among the following correctly enumerates the different types of energy?
a. sound, heat, light, mechanical, chemical and electricity
b. heat, radio, TV, electricity, chemical, and oven
c. electricity, light, water, radio, and washing machine
d. sound, light, heat, water, cable, and air con

2) Which is an INCORRECT pair of energy form and their uses?
a. heat – cooking food
b. light – seeing things at night
c. sound – hearing the audio of movies
d. electricity – producing food

3) Which correctly enumerates the different types of simple machines?
a. lever, pulley, inclined plane, screw, wheel and axle, wedge
b) lever, pulley, board, screw, wheels, knife
c) seesaw, pulley, illustration board, screw, door knob, knife
d) lever, pulley, board, door knob, knife, seesaw

4) Which pair of simple machine and energy is INCORRECT?
a. inclined plane – heat
b. lever – electricity
c. screw – sound
d. wedge – heat

5) Which among the following can best show all four forms of energy present – heat, sound, light and electricity?
a. television b. radio c. washing machine d. electric fan

Formative Assessment

Alternative Formative Assessment

Grade 6
Online Assessment Determine the different simple machines by hunting the words on the following word hunt activity online: http://www.learninggamesforkids.com/simple-machines-games/label-it.html **Probing Questions** 1. Can energy be created? 2. Can energy be transformed? **Situational Analysis** **Determine the simple machine that needs to be used in the following situations:** **1. You will be elevating a heavy luggage on a truck.** **2. You need to cut an apple into bite sizes.** **3. You want to put two pieces of plywood together for a science project.** **4. You want to raise a flag up a pole.**

Summative Assessment

Sample Items

Grade 6

1) Which among the following correctly enumerates the four different types of energy?
a. sound, heat, light and electricity
b. heat, radio, TV, and electricity
c. electricity, light, water, and radio
d. sound, light, heat, and water

2) Which is an INCORRECT pair of energy form and their uses?
a. heat – cooking food
b. light – seeing things at night
c. sound – hearing the audio of movies
d. electricity – producing food

3) Which correctly enumerates the different types of simple machines?
a. lever, pulley, inclined plane, screw, wheel and axle, wedge
b) lever, pulley, board, screw, wheels, knife
c) seesaw, pulley, illustration board, screw, door knob, knife
d) lever, pulley, board, door knob, knife, seesaw

4) Which pair of simple machine and energy is INCORRECT?
a. inclined plane – heat
b. lever – electricity
c. screw – sound
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5) Which among the following can best show all four forms of energy present – heat, sound, light and electricity?
a. television b. radio c. washing machine d. electric fan

Summative Assessment

Sample Items

Grade 6
6. Identify an electrical appliance and identify the type of energy present when operating it. 7. Perform an activity that explores the characteristics and uses of simple machines. 8. Given a simple machine, explain their characteristics and demonstrate their practical uses.

Sample 5E Lesson

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Engage Activity

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Engagement Activity

Problem Question:

What makes machines work?

Engagement Activity

Situational Analysis

Present different situations to students and ask them what makes them work?

Inquiry-based Learning Lesson sample

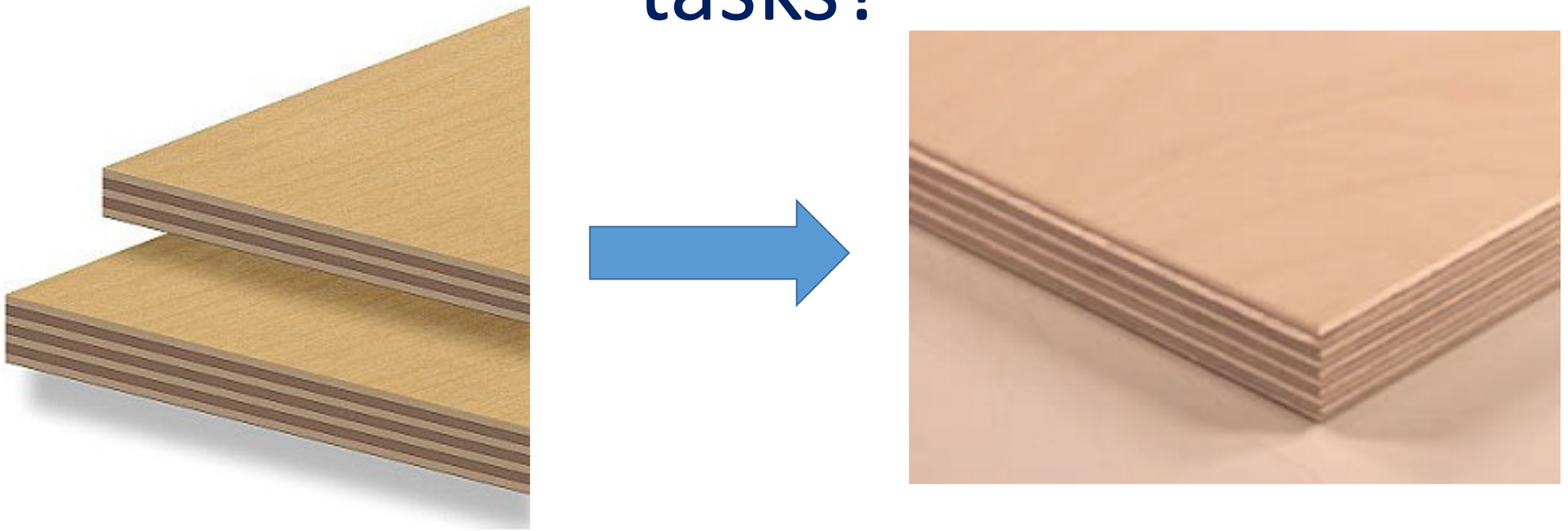
What is needed to do the following tasks?

Elevating heavy luggages to a truck

What is needed to do the following tasks?

Cutting an apple into bite sizes

What is needed to do the following tasks?



Putting plywoods together

What is needed to do the following tasks?

Raising a flag up a pole

Explore Activity

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Explore Activity

Situational Analysis

Ask the students to do several activities involving simple machines. (See simple machines activity)

Explain Activity

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Explain Activity

Group Presentation

Ask representative students to present the results of their activity.

Elaborate Activity

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Elaborate Activity

Energy Transformation

Introduce the students to energy transformation in machines. (See Energy transformation presentation)

Evaluate Activity

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Evaluate Activity

Performance task

Require the students to create a flyer about a new electrical appliance compared to existing ones and some "tipid tips" that can be followed.
They will be evaluated using a rubric.

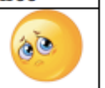
Evaluate Activity

Performance task

You are a marketing agent tasked by your boss to boost the sales of a particular brand of a new electrical lighting source: CFL vs LED. After learning about the different forms of energy and how heat could be an unwanted product in most electrical devices, use these ideas to complete the following task. Your task is to prepare a flyer that will show the comparison between LED and CFL and highlight the strengths of your chosen type. Include how energy is transformed in the identified products for endorsement. Your boss will examine your flyer and evaluate it based on a certain set of criteria.

Evaluate Activity

Success Evaluation

Level of Confidence			Statements
			
			1) I can identify the six different types of energy.
			2) I can enumerate two uses each of the six types of energy.
			3) I can enumerate the six different types of simple machines.
			4) I can explain the transformation of energy in simple machines.
			5) I can show how sound, heat, light and electricity can be transformed.
			6) I can manipulate simple machines and describe their characteristics and uses.
			7) I can explain the energy transformation in electrical appliances;
			8) I can demonstrate practical and safe uses of simple machines.
			9) I can produce a flyer to promote a new product by applying concepts learned about energy.