Lesson Plan

P4 Science – Energy (Light – Shadow)

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| **(A) Objectives of Lessons** | What we see around us is determined by the interaction of light with objects and materials. | | |
| 1. The specific teaching area(s) I would like to work on: |  | | |
| 1. My instructional objectives for the lesson are: | * Recognised that a shadow is formed when light is completely or partially blocked by an object. | | |
| 1. The Big Idea, EUs and EQs for this unit are:   (If applicable)  EUs: Essential Understanding  EQs: Essential Questions | * What happens when light cannot pass through an object? * What will we see when light shines on an object? | | |
| 1. In this lesson, what are the specific attitudes, skills, habits of mind, school values, NE messages you would like to develop in the students? | * Students to be active contributors and to take ownership of their own learning. * To explore, enquire and apply their learning s in their everyday lives. | | |
| 1. Which aspect of the PETALS Principles are you adopting in this lesson? Please elaborate.   (See Annex for the PETALS  Principles) | 1. Experiences of learning:    1. Hands-on activities to make connections as to how shadows are formed and how different properties of shadows are created in their daily lives.    2. Working in teams to allow for every pupil to learn from and with each other 2. Use of Pedagogies:  * Collaborative learning – Pupils learning and sharing their learning with one another in groups. * Inquiry-based learning – Pupils making observations, asking questions on what they observed and to discuss with one another so as to derive at a common understanding. | | |
| **>**  **(B) Background Information** |  | | |
| 1. What have you and the pupils covered in the past several lessons?   How is this lesson linked to the previous lesson? | Previous lessons on Light   * There are different sources of light (Natural and Man-made). * An object can be seen when it reflects light or when it is a source of light. * Light travels in a straight line   Today’s lesson   * Building on pupils’ understanding that light travels in a straight line, shadows are formed when the path of light is blocked by an opaque or translucent object. * The amount of light passing through an object (in translucent objects) affects the properties of the shadows formed. * Properties of shadows change depending on positions of light sources & objects. | | |
| 1. Are there pre-requisite skills or knowledge needed by pupils for your lesson? | Pupils have knowledge of the following:   * Light allows us to see things around us. * An object can either be a source or a reflector of light. * Light travels in a straight line. * Objects that does not allow light to pass through is opaque. * Objects that allows some light to pass through is translucent. * Objects that allows all light to pass through is transparent. | | |
| iii) What are the unique characteristics of the pupils in the class that will influence your instructional strategy? | Pupils are low achievers in English and Science. They possess limited spoken/ written vocabulary and encounter difficulties in expressing themselves clearly. Through collaborative learning in groups, pupils are given more opportunities to express themselves in a non-threatening environment. As learning becomes a communal activity they are free to use their own “lingo” to help each other learn. | | |
| **(C) Lesson Outline**  (Show how you have considered the PETALS Principles in your design and delivery of the lesson.) | **Time** | **Activity/Instructional Materials** | |
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| **(C) Lesson Outline**  (Show how you have considered the PETALS Principles in your design and delivery of the lesson.) | **Time**  **5mins** | **Activity/Instructional Materials**  **Introduction / Tuning In (Activating Prior Knowledge)**   * What is light? * Can we see when there is no light? * What are the different sources of light? (Man-made and Natural) * Why can we see objects if they are not a source of light? * How does light travel? * Opaque/Translucent and Transparent objects and their properties | |
|  | **10 mins** | **Activity / Instructional Materials**  **Activity 1**  **Classifying / Categorising**  Pupils to classify materials used to make puppets into:   * Transparent * Translucent * Opaque   **Key Learning Points**   * Transparent objects allow all light to pass through * Translucent objects allow some light to pass through * Opaque object allows no light to pass through | |
|  | **15 mins** | | **Activity 2**  **Creating shadows**  Materials needed:   * Flashlights * Puppets (made by pupils themselves) * Cardboard screens * Plastic screen stands   Pupils are to create shadows using:  Flashlight as source of light  Puppets to block paths of light to create shadows  Cardboard to act as a screen where shadows will be projected  **Assessment of learning via Activity 3 (pg 8): Play with Shadows.**  **Key Learning Points**   * Shadows are created when light is blocked by an object. * Opaque object blocks out light completely casting a dark shadow on the screen. * Translucent object blocks out some light casting a faint shadow (lighter shadow as compared to the opaque object) * Translucent object does not block out (or block out little light) therefore no (or very little) shadows are formed.   **Application of Concepts in Real Life**   * Pupils get to under why shadows are seen in their daily lives. |
|  | **15 mins** | | **Activity 3**  **Changing the properties of shadows**  Pupils are to observe the changes to the shadows as the objects move nearer or further from the light source.  **Assessment of learning via Activity 3 (pg 9): Play with Shadows.**  **Key Learning Points**   * Shadow of object became bigger on the screen as object (opaque or translucent) is nearer to the source of light. * Shadow of object became smaller on the screen as object (opaque or translucent) is farther away from the source of light. |
|  | **15 mins** | | **Lesson Conclusion**  **Summary of learning**  Review all key learning points of the various activities with pupils using graphic organisers.  Venn Diagram   * Transparent objects allow all light to pass through * Translucent objects allow some light to pass through * Opaque object allows no light to pass through * Shadows are created when light is blocked by an object. * Opaque object blocks out light completely casting a dark shadow on the screen. * Translucent object blocks out some light casting a faint shadow (lighter shadow as compared to the opaque object) * Translucent object does not block out (or block out little light) therefore no (or very little) shadows are formed. * Shadow of object became bigger on the screen as object (opaque or translucent) is nearer to the source of light. * Shadow of object became smaller on the screen as object (opaque or translucent) is farther away from the source of light. |
| **(D) Evaluation of Pupils’ Understanding**  (i) How do I know that the pupils have learnt? | **Oral /Written Formative Assessment**   * **Assessing understanding through oral checks for understanding** * **Assessing through quality of completed work (Worksheet: Activity 3: Play with Shadows (Pg 8-9)** | | |

