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| **LESSON PLAN**  |  |  |
| **The Windy Farm by Doug MacLeod and Craig Smith**A poor family live on a windy hill. They have many challenges because of the wind. Mum is very inventive and improvises a power generating wind farm.Students will be inspired by this story to learn about where their electricity comes from and how it is made. They will make a pinwheel (windmill) that they will experiment with to explore how wind power is used to create electricity |
| **Subject** | Wind power – renewable energy source | **Date** |  |
| **Class** | Upper PrimaryLower Secondary | **No of Periods**  | *1* |
| **Strand** | ScienceArtLiteracy | **Sub Strand** | ListeningReadingWritingSpeaking |
| **Indicators** | Students will participate in discussions and give opinionsStudents will use new vocabulary |
| **Success Criteria** | Students will construct an origami windmill (pinwheel)Students will engage in discussionsStudents will be able to identify different sources of energy generation |
| **Prior Knowledge**– How will you link the lesson to students’ prior knowledge? Students will have some knowledge of where electicity comes from and what it is made of |
| **Introduction “I DO”** – Teacher instruction Teacher will:Slide 2 – inform the students of what they will be doing during the lessonSlide 3 – Explain the new vocabulary to the students. Ask students to look closely at the words ‘renewable’ and ‘nonrenewable’. Discuss the prefixes ‘re’ (again) and ‘non’ (not). Ask students to come up with other examples of words that use these prefixes eg recycle, nontoxicSlide 4 – Pose the question ‘how does wind power work’? and ask students to explain their theory to the classSlide 5 - Explain that this diagram describes how science and technology work together to make electricity from wind power. If any students have seen a wind generating tower ask them to describe it to the class eg its size, where it is located, materials that it is made from, noise that it makes and any other information that they can shareSlide 6 – Explain that the images are of a generator and a transformer. Ask students if any of them know about, or have seen, these mechanisms.Slide 7 – Ask students to predict what the story may be about. Play youtube narration of story for students to viewSlide 8 – With a partner, students are to discuss some of the challenges that the family had and some of the solutions that the family came up with. Ask some students to share their ideas with the classSlide 9 – With a partner students are to discuss the questions posed on the slide. Ask some students to share their thinking with the classSlide 10 – With a partner students are to identify and list the energy sources that are evident on the images. Students will also indicate whether the energy sources are renewable or nonrenewable. Ask students to add any other forms of energy that they know about. Challenge students by asking ‘how is this renewable?’ ‘How is this nonrenewable?’ ‘which image/s represents where the energy for our village comes from?’Slide 11 – 2 types of instructions are provided on this slide. One is a youtube demonstration and the other is a pictorial tutorial. Students will need a square piece of paper, a popsicle stick (or similar) and a thumb tack (or simiar). They could make the square using a piece of recycled paper.Slide 12 - Take students outside to provide them with an opportunity to try their pinwheel (windmill). Ask students to experiment with different ways to get the wheel to spin. After they had experimented for a time ask them to stand still and find where the wind is coming from to spin their wheel. |
| **Activities “YOU DO”** – Challenging meaningful independent tasksStudents will:Slide 2 – develop an understanding of what they will be doing for the lessonSlide 3 – discuss the meaning of the prefixes ‘non’ and ‘re’. They will provide some other examples of words using these prefixes. They will discuss the meaning of the wordsSlide 4 – explain their theory of how wind power worksSlide 5 - discuss the process of electricity generation from wind to their homes. Any students who have seen wind turbines could describe them to the class by explaining eg. Sizes, where it is located, materials that it is made of, noises that it makes and any other information that they can shareSlide 6 – explain where they have seen examples of the images on the slide and explain what they are used forSlide 7 – predict what the story will be about. They will view the youtube narrationSlide 8 - discuss with a partner the challenges that the family encountered and the solutions that the family came up with. They will share some of their thoughts with the classSlide 9 – discuss with a partner the questions posed on the slide. Some students will share their thoughts with the classSlide 10 – work with a partner to identify and list the energy sources that are evident in the images. They will also indicate whether the energy sources are renewable or nonrenewable. Students will add any other forms of energy that they know about. Students will respond to questions ‘how is this renewable?’ ‘How is this nonrenewable?’ ‘which image/s represents where the energy for our village comes from?’Slide 11 – construct an origami pinwheel (windmill). Students will need a square piece of paper, a popsicle stick (or similar) and a thumb tack (or similar). Students will make the square using a piece of recycled paper.Slide 12 - go outside to have an opportunity to try their pinwheel (windmill). Students will experiment with different ways to get the wheel to spin. After they had experimented for a time they will stand still and find where the wind is coming from to spin their wheel. |
| **Assessment for learning:** How will you check students’ understanding during the lesson?Teachers will:Note how students engage in discussion eg do they offer opinions/suggestions, do they contribute to the discusson?Engage with student while they are having discussions with partnersEncourage students to think beyond the obviousEncourage students to use new vocabularyObserve students following instructions to construct a pinwheel (windmill) |
| **Teacher Reflection ޓީޗަރުގެ ބަޔާން** What worked well? What would you like to change next time?  |

**Follow up/extension ideas**

**Class**

Invite a member of the government who is responsible for energy, to come and talk with the class about energy supply

Research how they can make a generator to power a small light and construct and use the generator

Participate in Earth Day

Devise a plan for minimising the use of electricity in the classroom and at home eg turning of lights when rooms are not in use

**Whole school**

Participate in Earth Day

Develop strategies for using less electricity eg turning of lights when rooms are not in use

Develop a long term plan for the installation of alternative renewable energy sources for energy for the school eg solar, wind