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|  **Subject/Grade** | **Grade 4** | **Teacher** | Miss Beazer |
| **Unit** | **Wheels and Levers** | **Time** | 2:05-2:55 |
| **Lesson** | **Levers** | **Date**  | April 13, 2015 |

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| LEARNING OBJECTIVES |
| SLE 6: Demonstrate ways to use a lever that:· applies a small force to create a large force· applies a small movement to create a largemovementSLE 7: Predict how changes in the size of a lever or the position of the fulcrum will affect the forces and movements involved.SLE 8: Construct models of levers; and explain how levers are involved in such devices as: teeter-totters, scissors, pliers, pry bars, tongs, nutcrackers, fishing rods, wheelbarrows. |
| **ASSESSMENTS** |
| **Observations:** | Summative |
| ***Key Questions:*** | *How do Wheels, Levers and gears work to make our jobs easier?**Does levers make work easier?* |
| **Products/Performances:** | Applying and Analyzing  |
| **LEARNING RESOURCES CONSULTED** | **MATERIALS AND EQUIPMENT** |
| * <http://education.alberta.ca/media/456082/sockto3.pdf>
* Edmonton public science
 |  **Plank****Fulcrum****Measuring tape** |
| **PROCEDURE** |
| **Introduction** | **Time&****Material** |
| ***Attention Grabber*** | **Question:**  | 2:05 |
| ***Assessment of Prior Knowledge*** |  This will act as a type of KWL chart and should build off the last lesson of desk materials and allow them to broaden their brainstorming.  | - |
| ***Expectations for Learning and Behaviour*** |  I expect them to learn basic functions of a wheel and understand the benefits they give us to answer they CIQ. *How do Wheels, Levers and gears work to make our jobs easier?*  To support the CIQ with factory questions:  | - |
| ***Advance Organizer/Agenda*** | Write on board steps of the day-Planners away and ready to begin-Question-demonstration-Do-Discuss-Review | - |
| ***Transition to Body*** | Take out all the library books and binders in your desk.Use your pinky to lift the stack of books. How hard was it?Now place a pencil beside the books and another pencil under the books. Use this pencil lever to lift the books. Which way was easier, finger or pencil? Why?**A lever is an arm which tilts around the fulcrum (a pivot) to provide useful motion. Levers make work easier because they amplify force, or change the direction of the force or magnify the distance an object is moved. A lever is a simple machine that makes work easier. It can aid in moving, lifting, etc.****A lever is made of three parts. These are effort (force), load (resistance) and fulcrum.****There are three types of levers. They are:****· First Class Levers: e.g. crowbar, anything used to pry something open (screwdriver),****seesaw, elbow****· Second Class Levers: e.g. pliers, nutcrackers, pop bottle opener, wheelbarrow, opening a door, tongs, scissors, wire cutters, dolly (moves heavy furniture etc.)****· Third Class Levers e.g. fishing rod, batting a baseball, swinging a golf club, using a hockey stick** | 2:10 |
| **Body** | **Time** |
| ***Learning Activity #1*** |  Does the placement of the fulcrum affect the number of students it takes to lift the teacher?Using a long 2 by 4 outside, have students try to lift the teacher. Have the fulcrum in three different places. Close to the students, in the middle close to the teacher. Measure the height the teacher is lifted.Fill out the worksheet.In the discussion, introduce the following terms: lever, balance, fulcrum, load, effort, mechanical, advantage, and distance moved.Point out that in this type of lever the fulcrum is between the load and the effort. It gives a mechanical advantage because the force needed to lift the load is smaller than the load.When the force arm is longer than the load arm you get mechanical advantage. This makes it easier to lift a load.When the load arm is longer than the force arm you get greater distance through which the load will move. This will be at the expense of mechanical advantage; i.e. a greater force will be needed to do this. | 2:20 |
| *Assessments/ Differentiation:* | See the importance of placing the fulcrum relates to ease of work.  |  |
| ***Learning Activity #2*** |  | 2:40 |
| *Assessments/ Differentiation* |  |  |
| ***Learning Activity #3*** |  |  |
| *Assessments/ Differentiation* |  |  |
| **Closure** | **Time** |
| ***Assessment of Learning:*** |  |  |
| ***Feedback From Students:*** |  |  |
| ***Feedback To Students*** |  |  |
| ***Transition To Next Lesson*** |  |  |
| **Reflections** |
| ***What went well? What changes would you make in your planning? What have you learned to improve upon future instruction?*** |  |