Lego Milo Packet

By

__________________________

Group #___
Working with the Lego WeDo 2.0 kits is an engaging hands-on STEAM activity! The kits themselves are highly motivating and captivating. I created this packet to accompany the Lego WeDo 2.0 kits, I found my students needed more structure, guidance to actively participate while constructing these incredible creations!

This packet is to help you get started with the kits. You could organize this activity in several ways. I have combined the 4 Milo activities into one packet. You can do one activity a day, but please note that each activity builds on the prior activity so DON'T take Milo apart. Some possible suggestions are to have students work in small groups all on the same task or in centers. The packet includes 1 building background page, 1 task card and a reflecting page for each of the four activities. If you want, you can have students reflect after completing all four activities or after each one. I included a reflection page after each activity if you choose to complete that way. At the end of the project, we discussed the importance of teamwork. We closed the activity with students sharing how their teams moved the plant in the final activity. After each individual activity groups were able to share their newly learned knowledge accompanied by their documentations.
Milo the Science Rover

Students will:

• Explore different ways scientists and engineers reach remote places.

• Create and program Milo the Science Rover.

• Document how Milo can help you discover a special plant specimen.
Building Background

1. What are 4 different ways you can move from one place to another?

____________________  ______________________
____________________  ______________________

2. List 3 tools scientists use to help them make new discoveries and problem solve.

• ______________________
• ______________________
• ______________________

3. How do you think engineers and scientists explore remote places that are hard to get to?

___________________________________________________
___________________________________________________

4. Draw a device that can help scientists explore a distant place.

5. What is a rover and how is it controlled?

___________________________________________________

   Scientists use _______________ in water.
   Scientists fly _______________ into volcanoes.
Milo the Science Rover Task #1

1. Build your rover model.

2. Using the documentation camera, take a picture.

3. Code Milo to move forward at a speed of 8.

4. Take a video using the documentation camera.

5. Code Milo to move backwards at a speed of 4.

6. Take a video using the documentation camera.

7. Explore the coding options, and add a sound to Milo

8. What sound did you add?
Reflecting

Circle a number to show how you feel.  5 = very true, 1 = not true

1. I had many ideas about how to solve many problems. 1  2  3  4  5

2. I worked cooperatively with my team. 1  2  3  4  5
   • We all contributed. 1  2  3  4  5
   • We listened to each other’s ideas. 1  2  3  4  5
   • We treated each other fairly. 1  2  3  4  5

3. Our design was successful 1  2  3  4  5

4. My biggest contribution was ____________________________________________

5. The most challenging part of this activity was
   ________________________________________________________________
   ________________________________________________________________

6. Two things I learned from this activity was:
   1 _______________________________________________________________
   2 _______________________________________________________________

7. I really enjoyed
   _______________________________________________________________
   _______________________________________________________________
Milo’s Motion Sensor
Students will:

• Create and program Milo’s object-detector arm using the Motion Sensor Input.

• Document how Milo has found the special plant specimen.
Building Background

1. Think of 2 instruments that could be added to the rover to help protect it?
   - ______________________________________
   - ______________________________________

2. Put an X for no or a ✓ for yes next to the actions to show if the sensor could help the rover.
   - ---- Detect weather changes
   - ---- Help prevent crashes
   - ---- Sharpen pencils

3. Do you think that if a rover has a sensor then less human control is needed? Explain why or why not?
   ______________________________________
   because __________________________________
   ______________________________________

4. When you add a sensor to Milo what should it do when it detects an object?
   ______________________________________
   ______________________________________
Milo’s Motion Sensor Task Card

1. Follow the directions to build the motion detector arm so Milo can move and stop at the plant.

2. Take a video of Milo reaching the plant.

3. Now, change the sound and record your own sound.

4. Build a new object that Milo will detect and your new sound will be heard.

5. Take a video of Milo.
Milo's Tilt Sensor

Students will:

- Create a program Milo's messaging arm using the Tilt Sensor.

- Document Milo's communication with the base.
Building Background

1. When you are away from home, what are some ways you can communicate with your family? (try to list at least 3 ways)
   1. ______________________________
   2. ______________________________
   3. ______________________________

2. Why would communication between Milo the Rover and base be important?
   ______________________________
   ______________________________
   ______________________________

3. How do you think a rover in space would communicate with their base?
   ______________________________
   ______________________________
   ______________________________
Milo’s Tilt Sensor
Task Card #1

1. Follow the instructions to add a tilt sensor to Milo.

2. What happens when the sensor is tilted up? __________________________
   __________________________

3. Use the documentation tool to show this happening.

4. What happens when the sensor is tilted down? __________________________
   __________________________

5. Use the documentation tool to show this happening.

6. What do you think is the biggest benefit of adding this tilt sensor? __________
   __________________________________________
   __________________________________________
Reflecting

Circle a number to show how you feel.  5 = very true, 1 = not true

1. I had many ideas about how to solve many problems.  1  2  3  4  5

2. I worked cooperatively with my team.  1  2  3  4  5
   - We all contributed.  1  2  3  4  5
   - We listened to each other’s ideas.  1  2  3  4  5
   - We treated each other fairly.  1  2  3  4  5

3. Our design was successful  1  2  3  4  5

4. My biggest contribution was ____________________________________________

5. The most challenging part of this activity was
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

6. Two things I learned from this activity was:
   1. _________________________________________________________
   2. _________________________________________________________

7. I really enjoyed
   __________________________________________________________
   __________________________________________________________
Milo Rover
Collaborating

Students will:
- Create and program a device to move the plant sample.
- Document and present how Milo’s mission went overall.
Milo Rover Collaboration

1. The name of this task is called Milo Rover Collaboration. What does the word collaboration mean? Put a ✔ next to the correct definition.
   - to work only by yourself to get full credit
   - the action of working with someone to produce or create something
   - to fight with someone about how to produce or create something

2. Why is it important to collaborate with others to solve a problem?

3. Give an example of good communication between teams.

Milo Rover Collaboration Task Card #1

Task: Use Milo to move the plant.

1. Now that Milo is able to detect the plant, what happens once you try to move it?
   ____________________________________________________________
   ____________________________________________________________

2. How can you collaborate with another team to problem solve?
   ____________________________________________________________
   ____________________________________________________________

3. Meet with another team to collaborate and discuss possible solutions. Write down two possible solutions your group thought of.
   ● ________________________________________________________
   ● ________________________________________________________

4. Now, physically connect your two rovers together.

5. Draw a picture of your new rover.

6. Working together, code your new rover to move the plant from point A to point B. Add sounds.

7. Use the documentation tool to record your rover moving the plant.
Reflecting

Circle a number to show how you feel.  5= very true, 1= not true

1. I had many ideas about how to solve many problems. 1 2 3 4 5

2. I worked cooperatively with my team. 1 2 3 4 5
   • We all contributed. 1 2 3 4 5
   • We listened to each other’s ideas. 1 2 3 4 5
   • We treated each other fairly. 1 2 3 4 5

3. Our design was successful 1 2 3 4 5

4. My biggest contribution was ____________________________

5. The most challenging part of this activity was 
   __________________________________________________________
   __________________________________________________________

6. Two things I learned from this activity was:
   1____________________________________________
   2___________________________________________

7. I really enjoyed _______________________________________
   __________________________________________________________
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