MiddieMakers Activity Guide

Dash Robots

<table>
<thead>
<tr>
<th>Middie Designer: Terri Kempthorne</th>
<th>Attribute to Creator: The Digital Scoop No Time for Flashcards</th>
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<tbody>
<tr>
<td>Subjects: Technology</td>
<td>Topic or Unit of Study: Programming &amp; Robotics</td>
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<tr>
<td>Grade/Level: 2-5</td>
<td>Time Allotment: 1 week</td>
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Activity Description

Students will explore programming using iPads and a simple robots.

Activity Goals

Students will gain a better understanding of simple programming and robotic capabilities while attempting to complete provided challenges.
Challenge questions:

- How many commands does your Dash follow if you roll until you get all six numbers?
- Can you make your Dash complete at least two challenge cards?
- Can you make your Dash deliver a note to Mrs. Schmidt in the office?

**Standards**

**ISTE 3d** - Students **build knowledge** by actively **exploring** real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

**ISTE 5d** - Students **understand how automation works** and use algorithmic thinking to develop a **sequence** of steps to create and test **automated** solutions.

**ISTE 6a** - Students **choose the appropriate platforms and tools** for meeting the desired objectives of their creation or communication.

**ISTE 6c** - Students **communicate complex ideas** clearly and effectively by creating or using a variety of **digital objects** such as **visualizations**, **models** or **simulations**.

**ISTE 6d** - Students **publish or present content** that **customizes** the message and medium for their intended audiences.

**ISTE 7c** - Students contribute **constructively** to project teams, assuming **various roles** and responsibilities to work effectively toward a common goal.

**Materials & Resources**

<table>
<thead>
<tr>
<th>Materials</th>
<th>Resources</th>
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<tbody>
<tr>
<td>Each group:</td>
<td></td>
</tr>
<tr>
<td>Ipad</td>
<td></td>
</tr>
<tr>
<td>Pre-printed &amp; laminated dice cards</td>
<td><a href="http://www.thedigitalscoop.com/the_digital_scoop/2015/02/changing-dash-challenges.html">http://www.thedigitalscoop.com/the_digital_scoop/2015/02/changing-dash-challenges.html</a></td>
</tr>
<tr>
<td>Dice</td>
<td></td>
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<tr>
<td>Copies of the Dash Worksheet</td>
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<tr>
<td>Pre-printed &amp; laminated directions</td>
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<tr>
<td>Lego Bricks</td>
<td></td>
</tr>
<tr>
<td>Dash brick adaptors (2 per dash)</td>
<td></td>
</tr>
<tr>
<td>Dash Challenge Cards</td>
<td></td>
</tr>
<tr>
<td>Markers</td>
<td></td>
</tr>
<tr>
<td>Tape</td>
<td></td>
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<tr>
<td>Large paper (or cardboard)</td>
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Setup

Pre-print and laminate the challenge cards. (Additional challenge cards can be created. Some other ideas can be found here.) Pre-print and laminate the dice cards. Pre-print and laminate the direction cards. Have enough dice that each group gets one, with spares. Print and copy the Dash Worksheet for each group.

Implementation

Learning Context

Ask the students to recount their experiences with the Yeti and the Blue Bots. What do they remember? What did they like or not like about them?

Procedure

1. **Anticipatory Set:** Explain to the students some of the things that Dash can do that Blue Bot could not (make various sounds, blink, etc.)
2. Give each group a die, and a copy of the die sheet.
3. Using one Dash robot, have the groups take turns rolling their die, telling you the number they rolled, and then the commands your Dash has to follow.
4. Input the commands rolled into your Dash, and then let it run through the program on the floor where everyone can watch.
5. **Direct Instruction:** Explain how to use the Dash Program
   a. How to use the commands to program it to do a task, but the like the Yeti, and Blue Bots, it will only do exactly what it has been programmed to do.
   b. Explain some of the new commands that they have not seen before (ex. Make a sound).
6. **Guided Practice:** With the students in groups, have each group program their Dash using the die rolling method above. Have each group document what happened to their Dash each time they rolled the die.
7. **Check for Understanding:** Are there any commands your Dash did not do? What are some of the commands you typed in?
8. **Independent Practice:** Provide each group with a challenge card (they can be the same or different)
   a. Allow students to work towards completing their challenge.
   b. Allow the group to save their Lego adaptations from day to day (if needed) so they can complete the challenge(s).
   c. Encourage students to document their work in various methods.
   d. Additional challenges may be presented to groups to complete.
   e. Students can be challenged to have Dash deliver a note (or picture) to a specific location (i.e. the office).
   f. Students can be further challenged to have Dash write a word, name, or draw a picture using a marker. *Do this on the floor, using a large piece of paper.
i. Encourage students to figure out a way to make Dash hold a marker.
ii. Show them the ideas [here](#) and [here](#) (scroll to the picture on Dash with the marker).
iii. Allow students to have access to materials necessary to solve this challenge.

9. **Closing:** Have students present their Lego-modified Dash and their completed challenge. Alternately, students may demonstrate how their Dash draws/writes. Take photos for documentation.

**Differentiated Instruction & Coaching Tips**

**Visual Learners** - Encourage students to draw their ideas or map out the route to take on paper.

**Auditory Learners** - Read any directions/challenges out loud, and encourage the students to talk together to solve the problems.

**Kinesthetic Learners** - Encourage students to physically move around the room as needed to help them work out their ideas for which way Dash will need to turn in order to achieve their desired results.

**ELS Students** - Encourage students to collaborate with their teammates to work out their ideas. Provide guidance and demonstrations only as needed.

**At-risk Students** - Encourage participation with the group. Encourage each student to come up with an idea for how to solve the proposed challenge.

**Advanced Learners** - Encourage students to create their own Dash programming or challenge, and present it.