NGSS
Standard: 2-LS2 Ecosystems: Interactions, Energy, and Dynamics
https://www.nextgenscience.org/dci-arrangement/2-ls2-ecosystems-interactions-energy-and-dynamics

The chart below makes one set of connections between the instruction outlined in this article and the *NGSS*. Other valid connections are likely; however, space restrictions prevent us from listing all possibilities. The materials, lessons, and activities outlined in the article are just one step toward reaching the performance expectation(s) listed below.

Performance Expectation:

2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.*

Dimension	**Connections to Classroom Activity**
Science and Engineering Practice	
• Developing and using models	Students created and used a model to explore honey bee communication (the Waggle Dance) and its role in pollination.
• Asking and Answering questions	Students were asked a variety of questions along the way (examples provided in text); students addressed our essential question of "how do things move" using all the described activities.
• Constructing explanations and Designing solutions	Students were challenged to explain the functioning of their brush-bot using the circuitry language/terminology to which they were introduced; students were challenged to explain how bees communicate and pollinate plants.
Disciplinary Core Idea	
LS2.A Interdependent Relationships in Ecosystems • Plants depend on animals for pollination or to move their seeds around.	Students, through modeling with their bee-decorated brush-bots, explored how honey bees use a special dance to communicate with others bees about the location of a food source (flower patch) which, when visited by the bee colony members, results in pollination.

Crosscutting Concept	
Matter and energy	Students explored how energy from a battery can be transferred to a motor (load, such as our motors); students noted that bees collect and create the food which takes energy, and also results in pollination.
Cause and effect	Students explored how circuits need to be closed (cause) in order to power a load (effect); students explored how bee movements (the Waggle Dance) is a type of communication (cause) which leads to other bees finding food source and pollinating plants (effect).

Connections* to the *Common Core State Standards* (NGAC and CCSSO 2010):
**note: these standards are noted here for the assessments suggested herein including drawing/labeling pictures and writing assignments related to these activities (underlined text).*

ELA Speaking & Listening: Presentation of knowledge and ideas; Writing: Text Types and Purposes Reading informational text: key ideas and details.	**CCSS.ELA-SL.2.5** Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. *(2-LS2-2)* **CCSS.ELA-Literacy.W.2.2** Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section. **CCSS.ELA-RI.3.3** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. *(3-LS2-1)*
Mathematics Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	**CCSS.Math.Content.4.G.A.1** Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. **CCSS.Math.Content.4.G.A.2** Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.