

Discover how LEGO® Education WeDo 2.0 is making science come to life!

Engaging and motivating students to explore and problem-solve the world around them

About the Teacher:

Name: Breigh Rhodes

- **Role:** Second-grade teacher
- **Years of service:** 9
- **School:** Rollins Place Elementary
Zachary, LA
- **Number of students in school:** 800
- **Title I School**
- **LEGO Education solutions currently being used:**
WeDo and WeDo 2.0, StoryStarter Core Set
with three expansion packs, Simple Machines,
LEGO MINDSTORMS® NXT and EV3, Simple and
Motorized Mechanisms



Consider the following sentence: The northern leopard frog is covered in greenish-brown spots, it can grow up to three to five inches in length, and the entire population of this species has been on the decline since the early 1970s.

If you were in a language arts class and were given the sentence above to review, your teacher could ask, "What part of speech is the word greenish-brown?" By knowing the definition of each part of speech, you could answer that it is an adjective because it describes another word. Now, envision you are in a math class and your teacher inquires, "If a plains leopard frog grows five to 10 centimeters in length, what is the difference in size between the two frogs?" Luckily, you know that in order to compare centimeters to inches, you must convert the measurements to the same unit before you can figure the difference in length. Finally, place yourself in your science class where your teacher asks you to explain, "Why has this frog population been in decline over the last 45 years?"

Now what? Without a list of definitions that can help identify the answer to this question and no measurable figures to help you solve it, all you can do is explore what is known, problem-solve what is not understood, and provide a reasonable solution.

The WeDo 2.0 Curriculum Pack is designed on this very principle and challenges students to explore real-world problems and design solutions to help solve them. Breigh Rhodes, a second-grade science teacher from Louisiana and curriculum specialist for WeDo 2.0, explains, "Science is an intellectual enterprise that is built upon our curiosity as humans to learn more about our world and how it works. Science is about asking questions and gathering evidence to answer those questions. WeDo 2.0 beautifully captures the real essence of science, valuing inquiry and student-centered projects in a way I think LEGO® Education hasn't done before. It enables me to give students an environment to explore their ideas and then get out of their way."

Using the curriculum pack in combination with the WeDo 2.0 Core Set and icon-based programming software, students work through a series of 17 science-based projects. The exploration begins with a Getting Started project, which teaches students the basic functions of the bricks and software and continues through a series of eight guided projects and eight open projects, enabling students to experience both step-by-step instructions and self-exploration to solve the tasks at hand.



Each project and theme within the curriculum was built on the latest standards in order to deliver the most relevant content for the elementary classroom. “Teachers using WeDo 2.0 in the science classroom will find that the themes presented tie in to topics that they teach whether they are following Next Generation Science Standards (NGSS) or not and can easily see how they can build these projects into existing curriculum,” Breigh shares. “I can involve students in fun yet substantive projects that allow them to take the active role, and I can rest assured that they are exploring concepts and material directly related to the standards and practices that I need to cover.”

To efficiently teach scientific exploration and mimic the scientific method, each of the projects found in the pack has been divided into three phases, Explore, Create, and Share. According to Breigh, “Students are engaged right from the very start with the Explore phase, through active exploration as they grapple with ideas and questions and consider how they can apply what they already know to address a new problem or question. With the Create phase, students model and design physical representations of their solutions using LEGO bricks, and they also create and test programs to bring their models to life. The Create phase is when students get to experience authentically the iterative nature of conducting science and engineering investigations. With the Share phase, students are challenged to communicate their findings to a broader audience both verbally and in writing. Students learn the importance of using data to support their claims and discover how crucial effective communication is in making meaning.”

Whether a teacher is a novice or experienced WeDo user, the curriculum was designed to be easy to use and flexible so that every user benefits. “There is plenty of support and structure built right into the projects, so I think even a beginning teacher or a teacher new to using WeDo would feel confident and capable in implementing them. At the same time, there’s an openness and flexibility there so that projects, if needed, can be modified or restructured if a

teacher so chooses,” explains Breigh.

Just as there are different types of teachers, all students learn at different rates and in different ways, the curriculum offers multiple suggestions on how to extend or explore more and assess what is being understood. “The curriculum pack materials were very thoughtfully designed with today’s teachers and students in mind. Teachers need high-quality resources for bringing the science content and standards to life for a diverse group of learners. The WeDo 2.0 Curriculum Pack helps me down to the little details, with clear and tangible ideas for connecting to specific content, differentiating my instruction, and assessing students’ understanding within a given project,” shares Breigh.

Science class offers one of the best opportunities to provide students with hands-on learning experiences. By using LEGO bricks in the science classroom, students are also able to seamlessly incorporate engineering into their skills learned. “In the history of education, no kid has fallen in love with a textbook. We’re all born natural scientists, curious and yearning to make sense of our world. Science teaching and learning should be just as active and hands on. LEGO bricks are such a valuable tool for teaching science because they’re durable, safe, and easy for elementary learners to use, and the possibilities really are endless as far as what students can create,” explains Breigh. “The projects are thoughtfully crafted to guide students on a learning journey in which they connect to prior knowledge and build on that understanding through hands-on investigations with building and programming. WeDo 2.0 gives teachers a tool to facilitate learning experiences tied to a wide array of content and a variety of critical science and engineering practices.”

By creating an environment that encourages students to explore, experiment, and collaborate, we are enabling students to take ownership of their learning, building those 21st-century skills that will help them in everything they do. “All children deserve a science education that promotes inquiry and awakens the joy of discovery. A high-quality science education that engages students in scientific practices like ‘planning and carrying out investigations’ or ‘using evidence to support an argument’ gives them tools and thinking skills that they will be able to use for life.”

