

WeDo

Use the following information when requesting grants for manipulatives used to teach science, technology, engineering and math for Grades 2-5.



Need Statement

The issue in my elementary classroom is **(select an area of issue below)**.

Issue 1: students have low interest and engagement levels.

Issue 2: students are struggling with problem-solving skills.

Issue 3: students are not engaged in learning math and science.

Issue 4: students have extremely diverse abilities.

Issue 5: too few opportunities for creative or project-based learning.

Issue 6: a lack of good opportunities for students to communicate in the language of mathematics and science, both orally and in writing.

Issue 7: students need to learn how work effectively in teams.

Project Description

My solution is to engage students in a cross-curricular, hands-on learning environment using LEGO Education WeDo®.

WeDo is based on constructivism. This educational theory states that children learn best when they experience things firsthand and within a meaningful context.

The curriculum, which is aligned to national standards, engages students to become more independent learners. The 21st-century skills they will develop include problem solving, comprehension, communication, creativity, and critical thinking.

Additionally, WeDo Software introduces students to basic programming skills that allow them to create movement in robots and program sensors to take in information.

Together, WeDo and WeDo Software establish a learning environment that addresses the challenges associated with **(area of issue)**.

(Add statements as needed to show how you will address the area of issue utilizing the curriculum.)

The use of LEGO bricks helps students overcome difficulties and persevere when a first attempt does not work. Students stay motivated to continue to try and learn rather than give up.

Through this curriculum, **(number)** students will learn how to program, design, and create working models that represent machines or machine components used in real life.



education

- Build models around themes that push brainstorming.
- Analyze cause and effect.
- Make observations during testing.
- Display and communicate data.
- Create working models with effective programming.

These experiences expand a student's knowledge of simple machines and how to make robots move and interact to solve problems. Additionally, these experiences will help students hone speaking and listening skills as they present their ideas and listen to the ideas of others.

The curriculum's **(number)** hours of classroom instruction include open-ended problem-solving activities that engage students.

Students will demonstrate an increased ability to comprehend and solve basic problems by applying their science, technology, engineering, and mathematics skills to address challenges they encounter. Additionally, these experiences will help students develop a better attitude toward solving problems and increase their confidence.

Skills assessment will take place through student presentations, ongoing observation, and written work.

(Add information on current scores in mathematics, science, and so forth. or other issues as it pertains to this grant to reemphasize need and the increases you hope to achieve.)

(Add information on the standards and types of lessons you will utilize in this program to achieve the growth indicated in the paragraph above. Be specific about the way you will implement the program so readers will understand exactly how the program will help students succeed in math.)

Curriculum Information

(Select relevant description options. Be sure to include information on the area of issue. Add additional statements to show how you will address area of issue using WeDo.)

Option 1: WeDo Construction Set

This easy-to-use set introduces young students to robotics as they explore working motors and sensors and program their models. It includes a series of cross-curricular, theme-based activities designed to help develop STEM skills as well as language, literacy, and social studies.

- 158 elements
- Full-color building instruction booklets and element overview
- Storage bin

Option 2: WeDo Software v1.2 & Activity Pack

The icon-based, drag-and-drop Software v1.2, powered by LabVIEW™, complements the WeDo Construction Set to provide students with an intuitive programming environment.

- Program, design, and create a working model.
- Acquire information.
- Use feedback to adjust a programming system output.
- Work with simple machines such as gears, levers, pulleys, and transmission of motion.



- Includes a programming block and support for the Power Functions Light (sold separately).

The activity pack includes 12 activities divided into four themes – Amazing Mechanisms, Wild Animals, Play Soccer, and Adventure Stories – for up to 24 hours of instruction and project-based learning.

The CD-ROM includes teacher's notes, student worksheets, and a glossary.

Option 3: WeDo Resource Set

Designed to serve as a parts supplement for the WeDo Construction Set, this set takes STEM concept learning with WeDo to the next level, extending the possibilities for creative problem-solving challenges, literacy lessons, and math connections for elementary students.

- 325 elements
- Combine with the Construction Set to build a tower crane, an intelligent house, a Ferris wheel, and a car.

Option 4: WeDo STEM Expansion Activity Pack

Introduce more advanced STEM activities to existing WeDo sets.

- Physical science
- Mathematical thinking
- Engineering
- Technology
- Applications of science
- Designed for Grades 3 and up

The activity pack features:

- 6 main activities
- 4 problem-solving activities

A CD-ROM includes teacher notes, lesson-planning guidelines, assessment tools, classroom-management tips, and element surveys to help educators easily integrate lessons into the classroom.

The activity pack requires the following WeDo solutions:

- 1 LEGO Education WeDo Construction Set
- 1 LEGO Education WeDo Software and Activity Pack

1 LEGO Education WeDo Resource Set

Option 5: WeDo Adventure Stories Extension Activity Pack

LEGO Education WeDo Extension Activity Packs complement the WeDo Activity Pack to create more engaging learning experiences in science, literacy, math, and social studies. Using the LEGO Education WeDo hardware and software in combination with these activities, educators can easily create rich, cross-curricular lessons to inspire critical thinking, problem solving, and creativity.

- Activities cover Airplane Rescue, Giant Escape, and Sailboat Storm theme models
- 36 hours of classroom time across 12 activities

Each theme model includes:

- Mathematics, literacy, science, and social studies activities
- Standards covering visual arts, dramatic arts, music, physical education, and technology
- Learning grid to map activities to key standards and learning objectives

Each activity includes:

- Lesson-At-A-Glance overview
- Teacher's guide with a detailed lesson plan
- Worksheet(s)
- Rubric for evaluation
- Programming and building guidance
- Tracking sheets for organization and program planning

Option 6: WeDo Amazing Mechanisms Extension Activity Pack

LEGO Education WeDo Extension Activity Packs complement the WeDo Activity Pack to create more engaging learning experiences in science, literacy, math, and social studies. Using the LEGO Education WeDo hardware and software in combination with these activities, educators can easily create rich, cross-curricular lessons to inspire critical thinking, problem solving, and creativity.

- Activities cover Dancing Birds, Smart Spinner, and Drumming Monkey theme models
- 36 hours of classroom time across 12 activities

Each theme model includes:

- Mathematics, literacy, science, and social studies activities
- Standards covering visual arts, dramatic arts, music, physical education, and technology
- Learning grid to map activities to key standards and learning objectives

Each activity includes:

- Lesson-At-A-Glance overview
- Teacher's Guide with a detailed lesson plan
- Worksheet(s)
- Rubric for evaluation
- Programming and building guidance
- Tracking sheets for organization and program planning

Option 7: WeDo Play Soccer Extension Activity Pack

LEGO Education WeDo Extension Activity Packs complement the WeDo Activity Pack to create more engaging learning experiences in science, literacy, math, and social studies. Using the LEGO Education WeDo hardware and software in combination with these activities, educators can easily create rich, cross-curricular lessons to inspire critical thinking, problem solving, and creativity.

- Activities cover Goal Kicker, Goal Keeper, and Cheerful Fans theme models
- 36 hours of classroom time across 12 activities

Each theme model includes:

- Mathematics, literacy, science, and social studies activities
- Standards covering visual arts, dramatic arts, music, physical education, and technology
- Learning grid to map activities to key standards and learning objectives

Each activity includes:

- Lesson-At-A-Glance overview
- Teacher's guide with a detailed lesson plan
- Worksheet(s)
- Rubric for evaluation
- Programming and building guidance
- Tracking sheets for organization and program planning

Option 8: WeDo Wild Animals Extension Activity Pack

LEGO Education WeDo Extension Activity Packs complement the WeDo Activity Pack to create more engaging learning experiences in science, literacy, math, and social studies. Using the LEGO Education WeDo hardware and software in combination with these activities, educators can easily create rich, cross-curricular lessons to inspire critical thinking, problem solving, and creativity.

- Activities cover Hungry Alligator, Flying Bird, and Roaring Lion theme models
- 36 hours of classroom time across 12 activities

Each theme model includes:

- Mathematics, literacy, science, and social studies activities
- Standards covering visual arts, dramatic arts, music, physical education, and technology
- Learning grid to map activities to key standards and learning objectives

Each activity includes:

- Lesson-At-A-Glance overview
- Teacher's guide with a detailed lesson plan
- Worksheet(s)
- Rubric for evaluation
- Programming and building guidance
- Tracking sheets for organization and program planning

Professional Development

This workshop consists of hands-on activities, communication, reflection, and application that are tailored to meet the needs of the participants.

The workshop lets participants experience being both a student and a teacher as they learn how to apply the concepts behind simple and complex machines within science and math curricula and practice differentiated instruction.

Participating in the workshop leads to a greater understanding of how LEGO creates an environment where all students can share their ideas and knowledge. It also provides the tools necessary to engage students throughout the year by connecting the possibilities of STEM and WeDo sets and lessons with the required curriculum.

Learning theory

- Apply the 4Cs in the classroom.
- Awaken students' interests in given subjects.

Hands on

- Build machines and see how they can teach specific concepts to gain confidence in the classroom.
- Learn how to program using drag-and-drop icons.
- Use motors and sensors to understand inputs and outputs.
- Discover how to integrate WeDo into multiple subject areas.
- Learn how to begin and how to take a simple concept and make it complex through a series of intermediate steps.

Tools for planning

- Explore ways to apply the WeDo sets and lessons to curricula.
- Share ideas with other participants and leverage best practices to get the most from professional development.

Materials management

- Organize and label the materials and do periodic inventory.
- Keep the sets organized and ready for student use.

