Title:Learn Science and Engineering through projects with Lego WeDO 2.0
Topic: Learn science and engineering through projects
NASA integrated assets: My professional development integrates NASA assets by
Proposed Audience: Teaching staff in the Dixon School District.
Teachers Served: The teachers I will serve with my Professional Development activities are the PreSchool teacher, the 2nd/3rd grade teacher, the 3rd/4th grade teacher, the 5th grade teacher. The 6th/7th grade teacher, the 8th grade teacher, the counselor, the special education teacher, our 3 paraprofessionals and our Principal.
What STEM concepts or learning goals will you and your materials address which can potentially replace other classroom activities: The Lego Curriculum pack is built on the Next Generation Science Standards making it easy for me to present to my colleagues as a fun and student friendly way to engage our students in learning. The WeDo 2.0 software makes science come to life supporting elementary teachers in developing students' practices within Science, Technology and Engineering (STEM) solving problems through investigation, modeling, designing and computational thinking – through building and coding. This type of learning allows students to create content, not just consume it as well as giving opportunities for students to engage in creative group presentations.
Next Generation Science Standards
Physical Sciences
3-PS2-1: Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
3-PS2-2: Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.
4-PS3-1: Use evidence to construct an explanation relating the speed of an object to the energy of that object.
3-LS1-1: Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction and death.
3-LS3-1: Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variations of these traits exist in a group of similar organisms.
3-LS3-2: Use evidence to support the explanation that traits can be influenced by the environment.

3-5-ETS-1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
Common Core State Standards for English Language Arts
CCSS.ELA-Literacy.W.3.7: Conduct short research projects that build knowledge about a topic.
CCSS.ELA-Literacy.W.3.8: Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
CCSS.ELA-Literacy.SL.3.1.a: Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.
CCSS.ELA-Literacy.SL.3.1.d: Explain your own ideas and comprehension in light of the discussion.

CCSS.ELA-Literacy.SL.2.1: Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.
CCSS.ELA-Literacy.RI.3.3: Describe the relationship among 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.
Professional Development location: My professional development session will be held in my school on a regularly scheduled Pupil-Instruction Related day in the school's computer lab.
Session time: My professional development session will be 1 hour long.
When: March 2, 2020.
Access to computers: Teachers will have access to computers, IPADS and Lego Education WeDo 2.0 Core Sets.

Pre-Survey Questions:

1. Have you ever implemented engineering activities into your curriculum?
a. Yes
b. No
c. Unsure
2. Do you feel that they were successful?
a. Yes
b. No
c. Unsure
3. Have you used Lego ® Education 2.0 Core set before?
a. Yes
b. No
c. Unsure
d. If yes, what did you feel was the biggest obstacle?
5. Do you currently have access to any engineering activity resources?
a. Yes
b. No
c. Unsure
6. If yes, how frequently do you use them?
a. Never
b. At least once/week
c. At least once/month
d. At least once/trimester
e. At least once/year

Post-Survey Questions:

1.Do you understand how the Lego Education WeDo 2.0 Core Set strengthens students' understanding of the eight science and engineering practices, including developing and using models, planning and carrying out investigations, analyzing and interpreting data, using mathematics and computational thinking, constructing explanations and designing solutions, engaging in argument from evidence, and obtaining, evaluating and communicating information?
a. Yes
b. No
c. Unsure
2. Will you use the LEGO Education WeDo 2.0 curriculum in your classroom?

a. Yes
b. No
c. Unsure
3. Are you interested in using any other engineering curriculum in your classroom?
a. Yes
b. No
c. Unsure
4. What do you foresee as the biggest obstacle implementing engineering design into your current curriculum?
5.Would you like to implement more STEM based lessons/projects during our school's Visions time?
a. Never
b. At least once/month
c. At least once/trimester
d. At least once/yea**r**

Outcomes/Expectations for educators: Because the LEGO Education WeDo 2.0 curriculum pack is built on Next Generation Science Standards and facilitates a clear, easy to follow journey through engineering, earth, physical, life and space sciences, I hope to inspire my coworkers to implement more NGSS instructional content into their current curriculums.

Follow Up: We have all staff meetings once a week throughout the year. I plan to use a few minutes in the 1st meeting of each month of these meetings to check in with my colleagues to see if they have used the Lego WeDo Curriculum or any other engineering design activities in their classrooms. If so, how did it go? Will they implement another or a first one soon? Did they find that it enhanced or supplemented their curriculum well? Do they want to use their lesson during our Visions time? Since we all work in the same building, they can also contact me whenever they have a question about the process and/or implementation. I will make sure they know this at the professional development.

Data Collection Methods: I will create a survey using Google forms to analyze the PD's success.