**The Frugal Teacher STEAM Design Challenge (100pts) - Due February 28**

After completing two of the four LittleBits STEAM Invention Challenges (The Launcher, Doodle Wizard, Backpack Alarm, or Circuit Car), candidates will work in teams to develop an invention design challenge for children without the use of the LittleBits STEAM kit; instead using simple readily available and reusable materials. The deliverables for this assignment include an exemplary teaching model (individual developed) and a written activity (collaboratively developed) that includes the following sections:

Title: Use a catchy title the will attract the attention of students and provide a hint at the task in front of the students.

Grade Range: Use content knowledge concepts from big ideas to determine the appropriate grade level of the design brief.

Standards for Technological Literacy: Identify STLs and benchmarks that are appropriate for the design challenge. Bonus: identify addition standards from science, mathematics, art, English language arts, social studies, or additional content areas would be appropriate for the design challenge.

Big Ideas: Identify the major concepts that will be delivered through the design brief.

Essential Question: What open-ended question or questions will the student be able to answer after completing the design challenge?

Scenario: Write an engaging scenario that will capture the attention and possibly intrigue the students. Fictional scenarios are entirely appropriate. A good scenario will place the students into the story or challenge.

Challenge: In specific terms, identify exactly what the student teams are required to do to fully answer the challenge in the design brief – start with –

* Design, make, or create a ……….

Tools, Materials, and Resources:

Tools: Wire cutters/strippers, CO2 laser, 3D printer, specifically identify all additional tools

Materials: 2 - small motors, 10” wire, 1 – AA battery, 1 – battery holder, paper, pencils, markers, recycled materials, set of 4 – wheels and 2 – axels, recycled materials (be specific), specifically identify all additional materials

Resources: Specifically identify additional resources

Deliverables: Identify what (exactly) the students need to deliver to the teacher upon completion of the design challenge (i.e., what product, notes, journal, etc.).

Parameters or constraints: Identify the boundaries for the students (maximum size, materials allowed, how fast/slow, etc.). Think about all of the ways that student creativity might take their solution beyond your boundaries.

* The prototype must have a purpose or mission identified in this section.

Evaluation: List, in specific terms, how the students will be evaluated – rubrics, checklists, etc.