Collaborative Design & Discussion

Unit #: APSDO-00093441 **Team:** Angela Antonelli (Author), Rebecca Kerrigan, Lauren Bogoian		**Grade(s):** 4 **Subject(s):** Informational Digital Literacy **Course(s):** GR. 4 - INFORMATIONAL DIGITAL LITERACY

Unit Focus

In this unit, students will learn to collaborate and use a design process to solve problems. Students will apply their learning through a variety of Makerspace projects and coding endeavors. Instructional materials include a range of Makerspace materials and coding platforms.

Stage 1: Desired Results

Established Goals

Standards

- ISTE Standards (2016)
  - *ISTE Standards for Students*
    - Innovative Designer - Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions. *(4)*
      - Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems *(4.a)*
      - Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks. *(4.b)*
      - Students develop, test and refine prototypes as part of a cyclical design process. *(4.c)*
      - Students exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems. *(4.d)*
- AASL Standards Framework for Learning
  - *Shared Foundations and Key Commitments: All Grades*
    - INQUIRE
      - Create: Generating products that illustrate learning. *(IDL.INQ.05)*
      - Share: Providing constructive feedback. *(IDL.INQ.07)*
      - Share: Acting on feedback to improve. *(IDL.INQ.08)*
    - INCLUDE
      - Create: Interacting with learners who reflect a range of perspectives. *(IDL.INC.04)*
      - Share: Contributing to discussions in which multiple viewpoints on a topic are expressed. *(IDL.INC.08)*
    - COLLABORATE

Transfer

What kinds of long-term, independent accomplishments are desired? Students will be able to independently use their learning to...

T1 (T106) Develop and refine a solution to a student-generated question or challenging problem using a design process.

T2 (T103) Collaborate with others toward common goal(s) where everyone has a voice in both design and ownership of the work.

T3 (T4) Demonstrate fluency and precision in industry standard processes.

Meaning

Understanding(s)	Essential Question(s)

- Grow: Actively contributing to group discussions. *(IDL.COL.08)*
- EXPLORE
  - Create: Problem solving through cycles of design, implementation, and reflection. *(IDL.EXP.04)*
  - Grow: Iteratively responding to challenges. *(IDL.EXP.09)*
- ENGAGE
  - Think: Responsibly applying information, technology, and media to learning. *(IDL.ENG.01)*

What specifically do you want students to understand? What inferences should they make? Students will understand that...

U1 (U100) Deep learning requires an integration of quality resources with innovative spaces to stimulate creativity, intellectual curiosity, and lifelong learning.

U2 (U300) When presented with a challenge, the Design Process is an effective, iterative sequence that values information gained from both successes and failures to develop an innovative solution.

U3 (U700) Working to find creative solutions to a complex problem is an iterative process that requires perseverance and flexible thinking.

U4 (U400) Effective collaborators recognize and leverage others' individual knowledge and skills to achieve a goal.

What thought-provoking questions will foster inquiry, meaning making, and transfer? Students will keep considering...

Q1 (Q700) What problem are we trying to solve? (K-1) What information do I need in order to help me find a viable solution? How does better understanding the problem help us imagine viable solutions? (2-12)

Q2 (Q402) What is our goal? How are we working together to reach it?

Q3 (Q301) Input: What are the constraints and available resources?

Q4 (Q701) How do we design and test a solution? How can we use feedback to make a better design?

Q5 (Q401) What's my responsibility in the collaboration and how can everyone's ideas and feedback help us achieve our goals?

Acquisition

Knowledge

What facts and basic concepts should students know and be able to recall? Students will know...

K1 That the design process is cyclical and requires perseverance

K2 That improvements are a necessary component of design

K3 That collaboration can be a beneficial element in successful designs

Skill(s)

What discrete skills and processes should students be able to use? Students will be skilled at...

S1 Providing and receiving constructive feedback to improve design

S2 Persevering at problem-solving using a given set of tools