**Discover, Design, Build - Science, Technology, Engineering, Art, and Math**

**Communicating & Collaborating: Build an Object**

Description:

Teams of 2

3 class periods

Students will need to describe to their teammate how to build an object using written text and diagrams, reflect on their strategies, and make revisions to their communication strategies.

* think creatively and apply the design process to solve problems.
* collaborate with peers and mentors.
* design, construct, test, and revise prototypes.
* critique the work of others productively.
* respond to feedback and challenges to make improvements.
* communicate ideas visually and verbally.

Procedure:

1. Day 1. Each team member will be given an object. The other member of the team cannot see the object.
2. Each team member then has 20 minutes to create instructions for the other team member to build an identical object. Instructions can be written or drawn or both.
3. The team members then exchange instructions and have 20 minutes to follow the instructions to construct the object.
4. The team members compare their objects and make observations about what worked and what did not work.
5. Day 2. Each team presents their results to the rest of the class. (3 minutes to present, followed by 3 minutes of observations by the class)
6. Day 3. Repeat instructions 1-3.
7. Each team compares their results and identifies strategies that improved their result.

Materials:

each team: 4 objects - assembled and, 4 sets component parts, 2 pencils, 8 sheets graph paper, reflection sheet 1, evaluation sheet revised

Rubric:

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| Topic | 0 - not attempted | 2 - poor | 3 - needs some work | 4 - good | 5 - outstanding |
| Collaboration | minimal or no effort made | students did not function as a team | one student may have dominated the team or students worked independently of each other | students appeared to operate as a team - both members contributing | students encourage each other to achieve in ways that they would not have alone |
| present & critique | minimal or no effort made | both the critique and the presentation were unclear or lacking coherence | either the critique or the presentation was unclear or lacking coherence | both students presented to the group clearly and offered productive critiques of others | presentation was excellent **and** critiques were inciteful |
| respond to feedback | minimal or no effort made | students did not use feedback and did not improve their project | students may have improved their project but did not use feedback | students used feedback to improve their project | students used feedback to identify their own strengths and weaknesses and used this reflection to improve |
| communication | minimal or no effort made | in the second trial, one or both replicas had little similarity to the original  | in the second trial, one or both replicas had significant errors | in the second trial, one or both replicas had minor errors | in the second trial, both members of the team created a perfect replica of the object |

TOTAL POINTS \_\_\_\_\_\_