We are creating a cross-disciplinary collection of teaching activities that use the best practice approaches fostered in the "Living Lab": adoption of City Tech's General Education Student Learning Outcomes, George Kuh's High Impact Educational Practices, place-based learning, open digital pedagogy (the OpenLab), and formal assessment methods.

Share your best practices with your colleagues! Use this form to record a favorite activity; an activity can be as small as an in-class exercise or as large as a semester-long project. Your description can be short or extensive – take as much space as you need.

Activity Title:	Creative Problem Solving
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## **Activity Description:**

*Provide a brief description of the activity.* 

In one of the first classes students are organized into groups of 3, each group receives a problem, that does not

require any sophisticated math skills, but requires logical thinking and translating a real life situation into

mathematical language, by making a short record, a diagram, introducing variables.

#### Learning Goals:

What do you aim to achieve with this activity?

Make students aware how mathematics applies to real life situations, make them feel that mathematic is useful and makes sense. Demonstrate the power of algebra. Make students exercise their critical thinking skills by applying logic to problem solving. Make them learn how to work as a team.

#### Timing:

At what point in the lesson or semester to you use this activity? How much classroom time do you devote to it? How much out-of-class time is expected?

This activity is planned to be the beginning of the course and can be repeated several times later with different problems. It should take 15-20 minutes, including quick discussion of possible solutions ideas in groups and presenting solutions on the board. The activity may include a write-up as homework assignment.

#### Logistics:

What preparation is needed for this activity? What instructions do you give students?

Students receive a handout with the problem, instructions and space for writing down all the ideas they've got during the discussion in group.

#### **General Education SLOs:**

Which of City Tech's General Education Student Learning Outcomes does this activity address?

- 1. Understand and employ both quantitative and qualitative analysis to solve problems.
- 2. Employ scientific reasoning and logical thinking.
- 3. Communicate effectively using written and oral means.
- 4. Use creativity to solve problems.

#### **High Impact Educational Practices:**

Which of <u>George Kuh's High Impact Educational Practices</u> does this activity incorporate? Does it use the <u>OpenLab</u> for <u>open</u> <u>digital pedagogy</u>? Does it include <u>place-based learning</u>? Choose all that apply and/or add your own.

George Kuh's High Impact Educational Practices:	
□ First-year seminars and experiences	V□ Common intellectual experiences (core curriculum)
□ Learning communities	Writing-intensive courses
V $\Box$ Collaborative assignments and projects	Undergraduate research
Diversity and global learning ("difficult differences")	□ Service- or community-based learning
Internships	□ Capstone courses and projects
Open Digital Pedagogy (the OpenLab)	Place-Based Learning

## □ Other (please describe):

#### Assessment:

How do you assess this activity? What assessment measures do you use? Do you include your evaluation in grade calculations?

Every productive idea during the discussions receives an amount of bonus points corresponding to its productivity. The final result (written assignment) is evaluated by a rubric similar to Problem Solving Value Rubric.

#### **Reflection:**

How has this assignment impacted your teaching? What challenges did you encounter and how did you address them? What feedback did students provide? How would you imagine this activity being used in different disciplines?

The assignment gives me an idea about my students' mathematical thinking. It also helped me to acquire skills

of organizing group work and leading a discussion. The greatest challenge for me was that sometimes my

remedial students had no ideas whatsoever, except probably, the guess-and-check solution. To address this

challenge I try to incorporate similar activities more often and encourage students to come up with their ideas.

I also think that I have to incorporate the "feedback" part in my handout.

## **Additional Information:**

*Please share any additional comments and further documentation of the activity - e.g. assignment instructions, rubrics, examples of student work, etc. These could be in the form of PDF or Word files, links to posts or files on the OpenLab, etc.*