Collaborative Problem Solving
Working together to collaboratively design solutions to problems

Key Method
Good collaborative problem solving depends on both a clear, effective problem-solving method and a collaboration process, such as the four phases of collaborative problem solving, to craft an effective solution to a challenging problem.

Method Components
As students undertake an activity, the educator guides them through the four phases of collaborative problem solving. This can be done in small groups or in whole-group instruction. These strategies can be deployed as a stand-alone activity or as a part of a lesson.

Four phases of collaborative problem solving
- **Define**: Explore, discuss, and build understanding of the problem.
  - Examples of defining activities include:
    - Capture what each team member already knows about the problem.
    - List similar problems previously encountered and what worked for those problems.
    - Discuss the context and knowledge areas involved in the problem.
    - Collectively identify the “Need To Learns” to solve the problem and where to research these (see the Productive Researching micro-credential).
    - Brainstorm some creative approaches to solving the problem (see the Idea Generating micro-credential).
- **Devise**: Create a plan to solve the problem.
  - Examples of devising activities include:
    - Determine whether the problem can be divided into smaller problems that can be tackled by different team members.
    - If possible, distribute the “Need To Learns” research tasks among team members.
    - If there is more than one possible solution, list the benefits and drawbacks of each one, then choose the most promising solution to work on.
    - List the key resources that would be helpful to solve the problem (experts, digital tools, etc.).
    - Clarify the roles of each team member, taking advantage of individual strengths.
    - Develop a timeline for the major tasks each team member is responsible for completing.
    - Decide how often to meet to share individual progress and to work together as a team.
    - Document all of the plans in one shared online document that everyone has access to.
- **Do**: Execute the plan, modifying as needed.
  - Examples of doing activities include:
    - Make sure there are regular check-ins for team members to update each other on progress and setbacks.
    - Revise the plan as needed based on what is learned in carrying out the individual tasks in the plan.
Review: Reflect on the results and return to previous stages to further refine a solution to the problem as necessary (see related micro-credentials Managing Project Cycles, Productive Teamwork, Design Thinking & Doing, and Designing Effective Solutions).
- Example of reviewing activities include:
  - Collaboratively decide whether the solution needs more work and repeat previous phases as needed.

Suggested preparation
- Students recall a problem they successfully solved recently and list the things they did to solve the problem, then do the same for a problem they were not successful in solving.
- Students discuss in small groups which problem-solving strategies were effective and which were not; each group presents its findings to the other groups.
- Students choose a problem they care about to solve and move through the phases of collaborative problem solving.

Suggested review
- Students discuss what they liked best about the collaborative process and what could be done differently next time.
- Students present their solution to the other teams and celebrate the work of the problem solvers.

Supporting Research
Although problem-solving strategies differ depending on the type of problem (such as simple, well-structured problems vs. complex, messy problems) and the knowledge areas needed to solve it, having a general methodology, as well as some team-based problem-solving methods, is helpful in collaboratively devising effective solutions to problems.


Resources
Submission Guidelines & Evaluation Criteria

Following are the items you must submit to earn this micro-credential and the criteria by which they will be evaluated. To earn this micro-credential, you must receive a passing evaluation for Parts 1, 3, and 4 and a “Yes” for Part 2.

Part 1. Overview questions
(200-word limit for each response)

- **Activity Description**: What kind of activities did you and your students engage in to become more proficient in collaborative problem solving? Please describe the learning activities and strategies you used.
  - **Passing**: Activity description is clear with sufficient detail to illustrate what the students did to gain competencies.

- **Activity Evaluation**: How do you know your students increased their proficiency by engaging in the collaborative problem solving activities, and what evidence did you collect that demonstrates these learning gains?
  - **Passing**: Activity evaluation process and evidence are clear, appropriate, and sufficient to evaluate the competencies.

Part 2. Evidence/artifacts

Please submit work examples from two students (such as links to writing samples, audio, images, video, or other artifacts) that demonstrate progress toward the collaborative problem solving competency, including such items as “Need to Learns” lists, planning documents, check-in progress notes, presentations of results, or other examples.

<table>
<thead>
<tr>
<th>“Yes”</th>
<th>“Almost”</th>
<th>“Not Yet”</th>
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<tbody>
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<td>Student work clearly demonstrates learning from the collaborative problem-solving strategies through: 1. Many examples of the critical thinking that went into solving the problem 2. Convincing evidence of the effectiveness of the collaborative team processes and strategies 3. Many examples of productive team discussions and decisions made in each of the problem-solving phases 4. Individual and group evaluations of the solution, team processes, and the lessons learned from the activities</td>
<td>Student work demonstrates learning from the collaborative problem-solving strategies through some examples of the critical thinking and team processes that went into the solution, but few examples of team discussions and evaluations of the process and lessons learned</td>
<td>Student work shows some learning from the collaborative problem-solving strategies, with a few examples of the critical thinking and team processes used, but no examples of the team discussions and no student evaluations of the collaboration and lessons learned from the activities</td>
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Part 3. Student reflections
For the two students whose work examples are included above, submit student-created reflections on their experience of the collaborative problem solving activities. Use the following questions as a guide (200-word limit for each reflection):

- How did the collaborative problem-solving activities help you and your team create more well-thought-out and creative solutions to the problem?
- How did the collaborative problem-solving strategies change your view of the value of working together in a team to tackle problems versus working alone?
  - **Passing:** Student reflections clearly indicate how the collaborative problem-solving activities helped them devise better and more creative solutions and clearly discuss how the activities changed student views on the value of teamwork versus solo work in problem solving. The reflections are specific and convincing.

Part 4. Teacher reflection
Provide a reflection on what you learned, using the following questions as a guide (200-word limit):

- What was the impact of engaging your students in the collaborative problem-solving activity?
- How will experiencing these project activities shape your daily teaching practice in the future?
  - **Passing:** Teacher reflections clearly indicate how the activity affected both the students and the teacher and clearly state how the experience will affect the teacher’s future practice. The reflections are specific and convincing.