Strategies for Fostering the Four Cs Through STEAM

Critical Thinking and Problem Solving

- Provide opportunities for students to analyze claims, arguments, beliefs, and evidence (both text/Internet and peer) based in the context of the STEAM inquiry.
- Provide opportunities for students to synthesize information, make connections across different aspects of the STEAM inquiry, and reflect on the inquiry as a whole (not just in parts).
- Challenge students to solve problems in unique and innovative ways as you pose meaningful questions to extend and guide their thinking.
- Encourage students to draw conclusions based on the analysis of data and research.

Communication

- Have students communicate their ideas in a variety of ways: written, oral, nonverbal, presentation, demonstration, multimedia, etc.
- Require that students communicate their ideas using appropriate vocabulary in the STEAM subject areas and to communicate their ideas precisely and clearly.
- Provide opportunities for students to communicate their ideas using a variety of technologies and mediums.
- Challenge students to communicate their ideas for different reasons such as to persuade a school board, to motivate a company to make a change, to appeal to lawmakers, to teach others—set in the context of the STEAM inquiry.

Collaboration

- Strategically organize student partners and groups in ways that maximize student collaboration.
- Establish classroom expectations that students will work collaboratively in ways that are respectful, honor the contributions of classmates, and function as a team working toward a common goal.
- Establish the classroom expectation that students have a shared responsibility for the work of their group and hold students accountable.
- Consider assigning students meaningful roles within their groups to build students as leaders. Roles could include design manager, engineer, social media reporter, public relations, scribe, budget and materials manager, etc.

Creativity and Innovative Thinking

- Provide opportunities for brainstorming in many different ways such as through drawings, building, discussions, lists, graphic organizers, and through the use of existing resources.
- Provide multiple opportunities during an inquiry to iteratively refine ideas to foster creativity and improve original ideas in the context of the STEAM inquiry.
- Be open to novel, innovative, nontraditional, and risky ideas. Let your students explore.
- Create an environment where failure is viewed as a natural part of the STEAM inquiry process and a key way through which we learn and refine our thinking.

Source: Adapted from NEA 2012