SEL Helps Valued Outcomes to Happen: A Series of Examples…

Embedding SEL in the STEM Subjects

There is a place in every subject area where social-emotional learning (SEL) can enhance instruction and help students to build their competency in these skills. The STEM subjects (Science, Technology, Engineering, and Math) provide students with some unique ways to build these skills as part of their content learning. The following suggestions show ways that the STEM subjects can use and reinforce SEL skills as part of instruction. Several links to resources for each of the four subject areas are included at the end of each list of suggestions.

Science
- Ask students to think about how the "scientific method" can provide helpful guidelines for other kinds of **problem-solving** outside of science.
- Assign students lab partners or groups for part of the year and ask them to **establish group norms** they want to have to guide their **work together**. (**Social Awareness/Relationship Skills - Self-Regulation)**
- Emphasize the importance of **listening skills, following directions, and making careful observations** in gathering data.
- Use group projects to help students learn teamwork and collaboration, in addition to opportunities for students to learn to accept praise as well as constructive criticism. (**Relationship skills, student engagement and ownership of learning activities**)
- Ask students to **reflect** on their learning and the process involved in their learning activities; consider having them keep a "scientist's journal."
- Incorporate SECD into science activities by focusing on **ethics in science** and research in ways that reinforce emotional learning.
  https://www.edutopia.org/article/social-and-emotional-learning-science-class
  https://www.movethisworld.com/supporting-mental-health-covid-19/sel-in-science/

Technology
- Our students are "digital natives" with a built-in affinity for technology. Technology is a means for **student engagement** and can be an equalizer for students with other challenges.
- Technology can provide a window into **self-understanding and self-awareness**. Technology can provide a means for **verbal or written reflection**. Online journals and blogs provide a way to do this.
- Students often find **success** in using technology and this can breed success in other subject areas.
- When you provide parameters for the use of technology, you provide students with a means for developing **self-control and self-management**.
- **Problem-solving and decision-making** are an integral part of technology and particularly necessary in coding and gaming. We know that coding and gaming are absorbing activities for students.
- **21st Century Skills** are dependent on technology, especially in these times of online learning.

https://mdreducation.com/2019/06/18/social-emotional-learning-technology-education/
https://www.edsurge.com/news/2019-07-06-how-tech-is-taking-social-emotional-learning-out-of-its-silo
https://thejournal.com/articles/2021/08/11/prioritizing-the-social-and-emotional-learning-in-students-digital-lives-during-the-pandemic.aspx

Engineering

- Engineering is a subject area that is based on **problem-solving and decision-making**. Help students understand that engineering projects and innovations are all attempts at trying to solve a practical problem. These skills are essential for understanding and success in this subject area.
- Ask students to investigate the history of engineers' attempts to solve problems, such as designing and building bridges, tunnels, dams, aqueducts, reservoirs, airports, and seaports for container ships. Then have them **problem solve** the next generation of solutions to similar problems.
- Students must understand the parameters and requirements involved in any problem and then use their **problem-solving skills** to come to a workable solution.
- The subject of engineering often depends on **teamwork** to complete projects. Have students review the details of some engineering project teams. Ask teams to discuss their process and show students how **social awareness and collaboration** are necessary for these groups to function effectively.
- Consider having students research "Engineers Without Borders" and how they go about their work.
- Students learn best when they **reflect** on the learning process. An important stage in their learning is their ability to think about their process and consider alternative solutions that might have worked.
  https://www.eduporium.com/blog/eduporium-weekly-stem-education-and-sel/
  https://www.learntechlib.org/primary/p/182681/

Mathematics

- Use math lessons to examine **problem-solving** skills. Have students look at the stages they must go through to solve a problem.
- Use reasoning strategies to reflect on choices and goals as a way of developing strong decision-making skills (**responsible decision-making**).
- Develop skills for focusing attention, managing stress and anxiety, and accomplishing goals to effectively participate in learning (**self-management**).
- Ask students to articulate in detail – and share with one-another – how they solved a problem to **foster self-awareness and insight**. (Reflection)
- Use small group work to build **problem-solving and decision-making skills** in addition to **social awareness skills and relationship skills**.
- As an SECD math teacher, **reflect** with students on the skills involved in problem-solving and occasionally ask them to consider how those skills can be used in life outside of class.
  https://casel.org/wp-content/uploads/2017/08/SEL-in-Elementary-Math-8-20-17.pdf
  https://drc.casel.org/uploads/sites/3/2019/02/Integrating-Social-and-Emotional-Learning-and-the-Common-Core-State-Standards-for-Mathematics.pdf

The proliferation of STEM programs in K-12 education in recent years provides teachers with the opportunity to use these experiences to infuse social-emotional learning in these four subject areas. With relatively little effort, teachers who are SEL-aware can help their students build these competencies in an authentic way in their classrooms!