Supporting Social-Emotional Learning with Computer Science

Katherine Livick, M.Ed.
@mslivick
ESD 112
Instructional Technology Coordinator

Dr. Erin Lark
@erlnlarkwrites
Vancouver Public Schools
Highly Capable & Differentiation Coordinator
Why SEL?

- **Benefits to learning**
  - Students receiving social emotional interventions improved significantly
  - Skills, behaviors, and academic performance increased,
  - Attitudes towards self and others were more positive,
  - Conduct problems were reduced, and
  - Emotional distress lessened.

- **Benefits to behavior**
  - “SEL recognizes students are complex human beings whose learning and behavior are just as impacted by their emotions—and their control over those emotions—as they are by the quality of instruction and discipline.” - Hertel & Butcher, 2018

- **Benefits to community**
  - “…our ability to form relationships and build social awareness increases, enhancing our ability to connect with individuals of diverse perspectives, cultures, languages, histories, identities, and abilities. By implementing SEL on a macro-level, we create more equitable, better performing schools and communities.” - Fertakis, 2018
Why CS?

- Benefits to learning
  - Logic and computational thinking
  - Creating, not just consuming
  - Yes...job skills!

- Benefits to behavior
  - Engage students with a wide variety of interests by expanding the amount of choice in your learning projects

- Benefits to community
  - Collaboration is an essential coding skill that can be generalized to nearly all other areas of learning, life, and career
  - Civic engagement: if you live in a world where computers are ubiquitous, you should understand what you’re dealing with
Bringing It Together: SEL & CS in the time of Covid

- Students, teachers, AND families have additional needs for agency and belonging while living through this unprecedented experience

- Remote learning & teaching implications - Constructionist learning is inevitable during remote learning and post-remote integration; making and sharing CS artifacts supports this

- CS activities offer an opportunity for agency and to facilitate problem-based learning and real-world connections to careers and solutions that are being created in real time...during a time when much is out of our control
Common Vocabulary

- **Social-Emotional Learning (SEL):** the process through which children and adults understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions.

- **Computational Thinking (CT):** formulating problems in a way that enables us to use a computer and other tools to help solve them. ([simplified](#))

- **Computer Science (CS):** the study of computers and algorithmic processes, including their principles, their hardware and software designs, their implementation, and their impact on society. ([also simplified - what it’s not](#))

- **Growth Mindset:** the theory of self wherein a person believes their basic abilities can be developed through dedication and hard work, as opposed to a fixed mindset wherein a person believes their level of intelligence cannot be changed (can be problematic in some contexts, let’s check intent)

- **Constructionism:** learning theory by Seymour Papert based on Piaget’s constructivism theory; asserts that we don’t “drink in” knowledge but rather construct it by experiencing the world and reflecting on those experiences
SEL in Washington

- Standards: Washington State [SEL Standards and Resources](#) from OSPI
- [Equity in SEL](#)
- [PSESD Racial Equity Tool](#)
CT and CS in Washington (Pillars & Practices)

**WA Computer Science Standards**

**Computer Science Practices**
1. Fostering an Inclusive Computing Culture
2. Collaborating
3. Recognizing and Defining Computational Problems
4. Developing and Using Abstractions
5. Creating Computational Artifacts
6. Testing and Refining
7. Communicating about Computing

**Computational Thinking Pillars**
- Decomposition
- Pattern Matching
- Abstraction
- Automation (Algorithm Design)
Bring SEL into the Classroom

**Examples**

*Target specific social and emotional skills.*

Teaching students how to communicate needs and self-advocate:

1. How to approach a conflict with a peer
2. Asking for help from a teacher when you don’t want whole class attention

*Integrate social and emotional skills with academic content.*

Teaching students ways to make responsible decisions:

1. Discussing ethics of science practices
2. Team building skills in athletics

*Use general teaching practices that create conditions to support SEL.*

Teaching patterns and systems of behavior that can be applied in many places:

1. Establishing group working norms for projects.
2. Concluding projects with a class community circle.
<table>
<thead>
<tr>
<th>CT/CS Terms</th>
<th>SEL term</th>
<th>Classroom integration examples</th>
</tr>
</thead>
</table>
| Debug      | Problem identification/Problem solving (Responsible Decision Making) | a. Restorative Practices  
b. Using rubrics for analysis |
| Iteration  | Recognizing strengths/growth mindset | a. Continuous improvement  
b. Opportunity for new start |
| Algorithm  | Organizational skills, impulse control (Self-management) | a. Teaching classroom routines  
b. Communicating expectations |
| Decomposition | Analyzing problems (Responsible decision-making) | a. Using assessment tools  
b. Equitable inclusion |
| Pair Programming | Communication, relationship building, social engagement, teamwork (Relationship skills) | a. Shared group roles  
b. Rotating group roles |
Easy Classroom Integrations - Classroom Climate

- **Printable Scratch blocks** for routines
- **Group norms** (all subjects)
- Growth mindset (all subjects)
Easy Classroom Integrations - Opportunities for Change

- Pre-corrective
- Communication
  - “Trouble huddle” - debugging
  - All subjects
  - Choice points
  - Depersonalizing/actionable statements
  - Creating goals
Easy Classroom Integrations - Academic Subjects

- Double-blind peer editing (ELA)
- Problem framing - historical home restoration project (math)
- Creating earthquake preparedness media (science)
- 3D designed museum exhibits which then become a whole installation (social studies)
Next Steps...

- Decomposition - where can you integrate?
- Pattern Matching - find resources or an experienced partner and emulate
- Abstraction - where else can you apply successes?
- Automation - how can you use the technology available to integrate more SEL and CS/CT?
Resources

Computational Thinking/CS
Computational Thinking Resource Repository from ISTE
Defining Computer Science

SEL
What Is SEL? (CASEL)
SEL Infographics
SEL Microcredential Pilot at OSPI

Standards/Practices
WA Computer Science Standards - OSPI
Computer Science Practices
Pillars of CT @ ISTE

Other
Group Norms mini-lesson
Growth Mindset
More on Growth Mindset
Printable Scratch Blocks

Kapor Center EquitableCS Framework
Session Evaluation Information

NSTA is committed to providing a safe and healthy environment for its attendees. In doing so, it is imperative that everyone attending a session complete the session evaluation for the session. This process allows NSTA to identify and track those in a particular space, should we need to contact you.

1. By completing the session evaluations, attendees also create a transcript, which tracks their professional development hours as well as provides feedback to the presenters.

2. To evaluate a session online, registrants must be logged in at www.nsta.org with their registration credentials and then click here.

3. An attendee can retrieve his or her transcript by:
   b. Clicking here. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee’s individual profile.