

Why Use Systems Thinking and System Dynamics in K-12 Education?



Systems Thinking and its underlying discipline, System Dynamics (ST/SD), provide tools for understanding complexity in an ever-changing world. ST/SD offers a unique methodology for practicing higher-order thinking skills in a way that creates a framework to gain knowledge, as well as the tools to communicate thought effectively. They help to create the context for students to gain experience and rigorous practice in the process of thinking critically. ST/SD offers an integrated way of thinking, in practical, visual and useful ways, about the systems that surround us, and how they change over time.

Systems Thinking and System Dynamics (ST/SD) offer tools that

- bring thinking to life.
- improve communication of ideas.
- connect classroom learning to real-world situations.
- help in finding effective solutions to problems.
- provide a common language that facilitates collaborative exploration.
- expose delays in systems.
- help in identifying unintended consequences of actions.
- nurture mature thinking skills.
- create a perspective that facilitates functional citizenship.

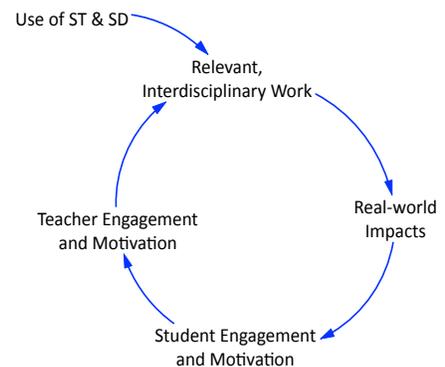
They are especially useful for

- students and adults who seek to construct their own understanding of the world.
- those who are curious and want to delve more deeply, beyond the simple knowledge level into the interconnections and structure.
- anyone who wants to communicate their ideas clearly and without confrontation, including those with learning and language challenges.
- all learners who need something beyond passive knowledge reception, benefitting from a constructivist approach.

First Graders Using Stocks and Flows



When ST/SD tools and concepts are used in conjunction with a student-centered approach, schools, students, teachers and communities benefit. As ST/SD is integrated into the culture of classrooms and schools, it creates a positive cycle of engagement and motivation for both students and their teachers. In the classroom, students become more engaged and excited about learning. ST/SD directly correlates with educational standards, such as NGSS, STEM initiatives, Common Core and 21st Century skills, so teachers are better able to create relevant, interdisciplinary work centered around important issues of concern. As students grapple with complex problems, they think more responsibly about their school and community, thus becoming even more engaged as participants in their own learning and more actively involved in taking positive action in their world.



Reinforcing Loop of Engagement