

## How the *Learner-Active, Technology-Infused Classroom* Builds Executive Function

*In a Learner-Active, Technology-Infused Classroom, students are presented with an authentic, open-ended problem to solve that launches a unit of study. Through activity lists that provide for differentiation, students schedule how they will use their time to accomplish the task of presenting a solution. The teacher becomes a facilitator of learning, guiding students academically and in developing executive function. There are many structures and strategies that build executive function in this classroom. These are just a few ideas ...*

<b>Executive Function</b>		<b>The <i>Learner-Active, Technology-Infused Classroom</i></b>
<b>Organization</b>	<b>Cognitive Flexibility</b>	Students learn to <b>shift focus from one event to another</b> when they follow a schedule they designed and have to stop, identify where to pick up later, and move on to the next event.
		Students learn to <b>change perspective</b> when they become peer-tutors and move from learners to instructors; schedule time and negotiate with peers to decide when to meet as a group, work in pairs, and work individually; and solve authentic, open-ended problems by looking at the problem through different lenses.
		Students learn to <b>see multiple sides to a situation</b> when they collaborate with others and build arguments.
		Students learn to <b>be open to others' points of view</b> by collaborating and solving authentic, open-ended problems that require them to negotiate and consider myriad options.
		Students learn to <b>be creative</b> by engaging in divergent thinking in the problem-solving process.
		Students learn to <b>catch and correct errors</b> by reviewing their work, particularly against a rubric, and by receiving peer and teacher feedback.
		Students learn to <b>think about multiple concepts simultaneously</b> by engaging in higher-order thinking to solve authentic, open-ended problems.
	<b>Working Memory</b>	Students learn to <b>store and manipulate visual and verbal information</b> by engaging in a variety of sub-tasks emanating from a problem-based task.
		Students learn to <b>identify same and different</b> by analyzing a problem situation and engaging in the convergent thinking phase of the problem-solving process.
		Students learn to <b>remember details</b> by researching a compelling, authentic, open-ended problem and building an argument for the solution.
		Students learn to <b>follow multiple steps</b> by using “how-to” sheets to learn skills.
		Students learn to <b>hold on to information while considering other information</b> by generating problem-solutions and collaborating to solve problems.
		Students learn to <b>identify cause-and-effect relationships</b> by solving authentic, open-ended problems, considering primary, secondary, and tertiary cause-and-effect relationships.
		Students learn to <b>categorize information</b> by gathering data and ideas while solving authentic, open-ended problems.

	<b>Planning</b>	Students learn to <b>set goals</b> by using a rubric to self assess and guide their learning.
		Students learn to <b>manage time</b> by scheduling activities toward completion of a unit task, including coordinating with others to schedule collaborative time.
		Students learn to <b>work towards a goal</b> by being presented with a unit-level, authentic, open-ended problem to solve at the start of a unit, and having a rubric to guide one’s work, fostering planning and continued movement towards a goal.
		Students learn to <b>organize actions and thoughts</b> by choosing instructional activities that match their learning needs and interests, and managing time and resources.
		Students learn to <b>consider future consequences in light of current action</b> by managing their own time and reflecting on personal progress, sometimes aided by a “table journal” or “Great Student Rubric;” and by considering the long-term validity of their solution to an authentic, open-ended problem.
	<b>Reasoning</b>	Students learn to <b>make hypotheses, deductions, and inferences</b> by engaging in authentic, open-ended problems and related brainstorming, action, and evaluation of their ideas based on content mastery.
		Students learn to <b>apply former approaches to new situations</b> through the multi-faceted nature of problems and by engaging in an end-unit transfer task requiring them to apply learning to a novel situation.
	<b>Problem-Solving</b>	Students learn to <b>define a problem</b> by offering students big ideas surrounding content and asking them to identify a problem of interest to pursue; and in engaging in authentic, open-ended problems that require students to continually define smaller problems to tackle as part of the process.
		Students learn to <b>analyze</b> by engaging in authentic, open-ended problems that require students to define problems and consider related data in search of a solution.
		Students learn to <b>create mental images</b> by analyzing problems and generating possible solutions, and testing solutions.
		Students learn to <b>generate possible solutions</b> through the divergent thinking phase of problem-solving.
		Students learn to <b>anticipate</b> through the convergent thinking phase of problem-solving in which students evaluate possibilities to anticipate problems and unintended consequences.
		Students learn to <b>predict outcomes</b> through the convergent thinking phase of problem-solving that requires students to predict outcomes, based on their solution generation.
		Students learn to <b>evaluate</b> through the convergent thinking phase of problem-solving, working both individually and collaboratively.
	<b>Self-Regulation</b>	<b>Inhibitory Control</b>
Students learn to <b>focus</b> by engaging in a personalized learning plan and related learning, practice, and application activities that require students to focus.		

	Students learn to <b>concentrate</b> by engaging in activities that depend on the student to follow directions or attend to information.
	Students learn to <b>think before acting</b> by managing their time and actions in a larger, social learning environment.
	Students learn to <b>initiate a task</b> by following their personal schedule of learning, practice, and application activities on a regular basis.
	Students learn to <b>persist in a task</b> by following their personal schedule of learning, practice, and application activities toward the solution generation for a larger problem.
	Students learn to <b>maintain social appropriateness</b> by learning in a collaborative, social environment in which students move freely around the room, work where they choose, share resources, and so forth.
<b>Self-Awareness</b>	Students learn to <b>self assess</b> by using rubrics for academic guidance and work habits.
	Students learn to <b>overcome temptation</b> by being afforded considerable latitude for personal choice in an academic environment.
	Students learn to <b>monitor performance</b> by tracking how they use their time, completing task management grids, and reviewing progress on a rubric.
	Students learn to <b>reflect on goals</b> by using rubrics and goal-driven portfolios.
	Students learn to <b>manage conflicting thoughts</b> by being afforded considerable latitude for personal choice in an academic environment.