

Designing the Future—Action Plan

Here is a summary of steps that can help you incorporate the ideas in this book into your classroom practices and culture, and then help you move forward to include projects.

Step 1	Priority	Notes
Deciding why: Creating a vision	Real-world connections	
	Transdisciplinary learning	
	Highlight 21st century skills	
	Project-based learning	
	Student choice and differentiation	

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Step 2		Possible Activities
Deciding how: Focusing on classroom and culture	Learning from failure	<ul style="list-style-type: none"> • Paper Tower of Power • Three-Legged Stool • Flight of the Table Tennis Ball
	Self-directed learning; developing need to know; observing others	Use concept maps; introduce a broad topic and allow different groups to find different information.
	Multiple solutions	Find three ways to get from classroom to cafeteria; investigate pros and cons.
	Systems thinking; considering impacts	<ul style="list-style-type: none"> • “Systems Thinking: A Cautionary Tale (Cats in Borneo)” video (Sustainability Illustrated, 2014) • Resources from the Waters Foundation (https://waterscenterst.org) and BrainPOP Institute of Play (https://educators.brainpop.com/tag/institute-of-play)
Always thinking of improvement	Make the things around us (desks, lunch line, homework) better	
Step 3		Possible Activities
Introducing the EDP: Step one— Know your problem.	Defining what matters in a problem	Five Ws
	Knowing your end user	Name Your Pain
	Understanding constraints and criteria	<ul style="list-style-type: none"> • Constraints that lead to objects in room • Reverse design space • Criteria ranking
Step two— Know your options.	Creativity and divergent thinking activities and projects	<ul style="list-style-type: none"> • Stars and Stripes (and Dots) • Chindogu • SCAMPER This!
Step three— Develop a solution.	Prototyping—making your ideas visible	<ul style="list-style-type: none"> • Ready, Set, Design • Sketches • Cardboard Arcade
	Testing and modifying	<ul style="list-style-type: none"> • ModiFly
	Communicating and collaborating	<ul style="list-style-type: none"> • LEGO Person Challenge • No Words

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Step 4		Project Planning
Engineering solutions: Project time (use forms indicated)	Overview—"Project-Planning Canvas" reproducible; describe challenge and final product	<ul style="list-style-type: none"> • Content • Skills • Process
	Details—"Project-Planning Template" reproducible	Notes
	Hook	
	Quick build	
	Direct instruction	
	Background research	
	Engineering notebook forms	
	Group size	
	Jobs	
	Materials	
	Assessment	

Step 5 ("Post-Project Reflection Checklist" reproducible)		Notes	
Reflect, revise, and re-engineer: Modify to optimize	Reflect	Content	
		Process and skills	
		Logistics	
	Revise	Figure 7.3: "Possible Project Revisions"	
	Re-engineer	Modification one	
		Modification two	
		Modification three	

Sustainability Illustrated. (2014). Systems thinking: A cautionary tale (cats in Borneo) [Video file]. Accessed at <https://sustainabilityillustrated.com/en/portfolio/systems-thinking-a-cautionary-tale> on July 7, 2018.