



DAVID P. WEIKART
CENTER FOR YOUTH
PROGRAM QUALITY

Facilitating Problem Solving

Participant Notebook

Name: _____



Improving & Aligning
Policies

About the Forum

The Forum for Youth Investment provides products and services to help leaders improve partnerships, policies and practices to change the odds so all young people are ready for college, work and life. These products and services are based on best practices in youth development and on our experience working with hundreds of communities around the country since our founding in 1998.



Planning and Partnering
for Impact

About the Forum's Weikart Center

David P. Weikart Center for Youth Program Quality is a leader in empowering education and human service leaders to adapt, implement and scale best-in-class, research-validated quality improvement systems to advance child and youth development. Training and technical assistance in quality improvement system design, effective performance data and lower stakes accountability has helped OST networks across the country be successful, scale-able and sustainable. The Weikart Center is a critical part of the Forum for Youth Investment's overall effort to build leadership capacity to advance readiness and equity.



Strengthening Practices
and Programs

Facilitating Problem Solving

In this workshop, we explore how and why to facilitate problem solving with youth, which is defined in *Preparing Youth to Thrive* as “Abilities to plan, strategize, and implement complex tasks.”

Learning and the Brain

Learning occurs when connections are made between facts, experiences and emotions. Neural pathways are formed and become well-used. The deeper and more interconnected learning becomes, the more available it is to support problem solving.


The brain can actually grow in size into the mid-twenties. Learning—new neural connections—can happen and reshape the brain throughout life, but those neural connections that are not well-used and connected meaningfully to other concepts are dissolved. This process is called “pruning.” There is rapid development of neurons during the school years, so this period is the key time to focus on learning problem solving skills. Use it or lose it!

For problem solving, we are focusing on “critical thinking” or “executive functions” not just random neural connections between, say, the smell of cinnamon and the idea of baking cookies, but higher order neural networks. The skills we lump together in the “Cognitive” domain and the ones we think of as problem-solving skills are all located in this front part of the brain—the prefrontal cortex.

Action + Reflection = Learning	
Action	Reflection
• Contribute	• Describe
• Practice	• Evaluate
• Choose	• Connect
• Tinker	• Envision
• Encounter	• Integrate

From CCSR Foundations for Young Adult Success: A Developmental Framework

PROBLEM SOLVING Abilities to plan, strategize, and implement complex tasks.



Key youth experiences

- Youth engage in projects that involve organizing actions over time.
- Youth learn through cycles of strategic planning, execution, responding to emergent problems, trial and error, and reflection on outcomes.
- Youth reflect on how outcomes of their work provide information that helps build and verify youth skills.

Staff practices

- Staff provide sufficient structure to youth-driven projects.
- Staff create opportunities for youth to observe models of successful work.
- Staff provide assistance, as needed, to help youth learn and solve problems on their own.
- Staff offer youth opportunities for reflection on project outcomes.

Problem Solving means applying learning, thinking, and action to a task or a goal. The processes that are most effective in supporting learning are also the processes involved in problem solving. “Action plus Reflection” synthesizes best practices for supporting learning¹ and are also represented in our problem solving model. In the SEL Challenge, practitioners started with helping youth learn the skills they needed before they began a project.

Problem Solving, the DEAL model and Plan-Do-Review.

Problem solving is a complex skill set that is used in all sorts of life situations. Because it is both important and complex, researchers, scholars, and others have tried to define it and break it down into component parts and have labeled those parts in different ways. Ultimately, most models of problem solving can be summarized or simplified into Plan-Do-Review with the addition of first gaining needed knowledge or understanding of the problem. George Pólya’s² famous model from the mid-twentieth century is basically “understand the problem” plus plan-do-review. The SEL Challenge study highlighted the plan-do-review

¹ Farrington, C.A., S.B. Ehrlich, and R.D. Heath. “Foundations of Young Adult Success: A Developmental Framework.” Consortium of Chicago School Research, 2015.

² George Polya, (1945). *How to Solve It: A new aspect of mathematical method*. Princeton University Press

planning-action cycle, but also identified starting with helping youth gain the knowledge or skills that would be needed for their project.

The DEAL Model. The DEAL model is a version of Pólya's model using an acronym adapted from a model of reflection or critical thinking³. Its intent is to be a fun and easy way to remember the steps involved in problem solving. Staff support and encourage problem solving by asking prompting questions. Open-ended questions that align with the current step in the DEAL model are best. Note that even though we describe steps or components of problem solving in an order, problem solving is not always linear and the whole plan-do-review process is intended to repeat.

There are developmental differences as children grow older. The abstract thinking involved in some problem-solving strategies develops over childhood, with substantial gains made about the time of adolescence. Younger children can problem solve, however, staff may need to select simpler or more concrete problems and challenges and provide more scaffolding. Responding appropriately may mean individualizing the problem content or the supports needed, depending on the age and abilities of individual youth.

- **Describe:** Pólya noted that the first step is to understand the problem. Begin with describing the facts and what you already know and defining the problem or goal.
- **Explore:** Exploring options and strategies is the essence of planning. This process can begin by brainstorming and exploring options and/or related feelings. It can involve making lists, evaluating options, backwards planning, and many other methods of generating strategies, selecting a course of action, and mapping out a plan. Recording or representing that plan in some tangible way is a best practice for helping to define it carefully, remember it clearly, and have accountability. The Planning and Reflection workshop gives ideas about ways to help young people plan.
- **Act.** Doing or acting is an obvious part of problem solving. Having a problem with enough challenge and providing any needed supports helps make the “doing” of plan-do-review a better learning experience. Initiative and perseverance come into play in the doing part of problem solving. The Engaging Youth in Supported Struggle method explores this topic in more depth. While young people are doing an activity or enacting a plan, staff can facilitate problem solving by responsively asking open-ended questions.
- **Look back and Learn.** This is an important part of problem solving that can be easily overlooked. Looking back can involve reviewing progress made, reflecting on challenges and celebrating successes, and evaluating outcomes. One type of looking back that is often overlooked is looking back on one's thinking processes or *metacognition*. Learning is enhanced when staff support young people to look back on their thought processes. Engaging in metacognition is shown to improve learning and help young people regulate their thought processes and emotion and is an important part of the review and reflection process.⁴

³ Sarah Ash, Patti Clayton, Myra Moses (2009) referenced in <https://www.gviusa.com/blog/the-deal-model-and-evaluating-reflection/>

⁴ See Benjamin Rott (2013) for a review of metacognition in problem solving.

Other Problem-Solving Models

What? So what? Now what?

What?

- What happened? What did you observe? What are the facts?
- What were your initial expectations?

So What?

- How does this relate to your past experiences?
- Did you learn a new skill or clarify an interest?
- Why did it happen this way?
- Why does this matter?

Now What?

- How can you apply what you learned from your experience?
- What would you like to learn more about, related to this project or issue?
- What follow-up is needed to address any challenges or difficulties?

SODAS

Situation
Options
Disadvantages
Advantages
Solution

Problem Solving Ditty

This ditty or rap can be sung or chanted as a way to remember representative questions for each step in problem solving.

Problem solving—Do it now!

Here are the questions to tell you how:

"What is the problem?"

"What do you know?"

"Why is it so?" and

"Where do you go?"

"How was your thinking?"

"How does it flow?"

Five basic questions,

Now you know.

Preparing Youth to Thrive

Problem Solving Standards and Practices (p.109)

KEY YOUTH EXPERIENCES	YE
SET GOALS. Youth engage in projects that involve organizing actions over time.	
(PS1) Youth build project-specific knowledge and skills (e.g., carpentry, leadership, public speaking). (PS2) Youth conduct projects that require organizing multiple, cumulative steps of work (e.g., creating a work of art, planning an event or a service project).	
PLANNING-ACTION CYCLES. Youth learn through cycles of strategic planning, execution, responding to emergent problems, trial and error, and reflection on outcomes.	
(PS3) Youth engage in planning, including: a) brainstorming and generative planning; b) thinking strategically about the purposes, methods, content, and outcomes of the project; c) anticipatory thinking, if-then thinking (e.g., about how the work and various constraints interact), and contingency planning. (PS4) Youth have multiple opportunities to practice implementing the same skills to achieve greater success (e.g., by trying and trying again). (PS5) Youth grapple with adjusting short- and long-term goals and strategies to emerging challenges and changing circumstances in their work.	
OUTCOMES VERIFY SKILLS. Youth reflect on how outcomes of their work provide information that helps build and verify youth skills.	
(PS6) Youth reflect on the outcomes of their efforts at all stages of the work to identify mistakes and successes, note progress, and identify current challenges. (PS7) Youth's sense of self-efficacy, accomplishment, or confidence grows as outcomes demonstrate their developing skills, and they critically evaluate how their actions influenced outcomes. <i>See also Initiative.</i>	
STAFF PRACTICES	SP
STRUCTURE. Staff provide sufficient structure to youth-driven projects.	
(PS8) Staff provide training experiences for youth to help them learn project-related skills. (PS9) Staff place a high priority on youth having latitude to make choices and learn from experimenting within their projects. (PS10) Staff set high expectations and structure projects that are achievable (e.g., by setting goals, setting timelines and deadlines, setting boundaries).	
MODELING. Staff create opportunities for youth to observe models of successful work.	
(PS11) Staff model skills youth need to learn for their projects (e.g., carpentry or speaking skills, skills for planning and problem solving) and expose youth to models of successful work that set high expectations (e.g., youth learn about projects from prior years, novices work with veteran youth or expert staff).	
SCAFFOLDING. Staff provide assistance, as needed, to help youth learn and solve problems on their own.	
Staff scaffold youth progress on projects by balancing: (PS12) stepping in to provide assistance and input as needed to help youth solve problems and learn (e.g., helping youth develop strategies when stuck or unsuccessful), and (PS13) stepping back to support youth's increasing independence in their work as their skill grows and to allow youth space to struggle with challenges.	
REFLECTION. Staff offer youth opportunities for reflection on project outcomes.	
(PS14) Staff ensure that youth have opportunities to reflect on the processes that led to the outcomes of their work and to evaluate the impact and meaning of completed projects for both the youth and other stakeholders.	

A free digital download of *Preparing Youth to Thrive* is available at selpractices.org

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DEAL			
Describe the situation, the facts, the problem and/or the goal.	Explore strategies, feelings, reasons, planning options.	Act on next steps and best options.	Look back & Learn About the process, the meaning, the outcomes.
What is your goal?	What feelings are involved?	Take the next step	What did you learn?
What are the facts?	Would that be a good strategy?	Implement the plan	What was the outcome?
What do you know about the situation?	What other options are there?	Try out the best option	What was your thinking process?
What is the problem—objectively?	What caused the problem?	Do what you can do about it now.	How did that work out?
Who was involved?	What important thing do you need to find out?	Try several options	What could you do differently next time?

DEAL Card Options:

- Use the DEAL model to lead youth through an issue or problem. Use the supplied questions or come up with your own to fit the situation.
- Print the table and cut out squares. Shuffle cards and have youth sort the questions into the correct column.
- Have youth use the DEAL cards to work through their own problems, selecting a card or several cards from each column to work their way toward a solution.

Role-Play Scenarios for Facilitating Problem Solving

Directions: Choose one of the following scenarios to role-play. One person can act as the staff member, another can act as a youth, and a third person can observe and take notes. Take turns so that everyone in your group has an opportunity to participate in one of the roles. After each role-play, debrief using the DEAL model.

1. Youth at Central High were very upset when a classmate was sent home for getting into a fight. Two youth in the afterschool club have angrily approached the principal in their school to advocate for instituting peer mediation. The idea was quickly shot down by the principal. The youth are upset and come back to the program angry and hurt.
2. Kendall frequently forgets to turn in homework.
3. The playground at the school typically has a lot of litter and trash on the premises. Youth in the afterschool program are trying to figure out how they can improve the situation.
4. Youth were asked to pick science fair topics from a list provided by the teacher. Students cannot have the same topic as another student. Amy and Victor both chose the same topic and are in a heated argument over who chose it first.
5. Pat is upset that the coach is letting someone else be the starter in the basketball game.
6. Jamal has been left out of his usual lunch table group in the cafeteria.

Reflection Questions

1. What is a key insight or take-away from the opening activity?

2. What specifically can I remember to do or not do in-the-moment to facilitate problem solving?

Implementation: DEAL with it!

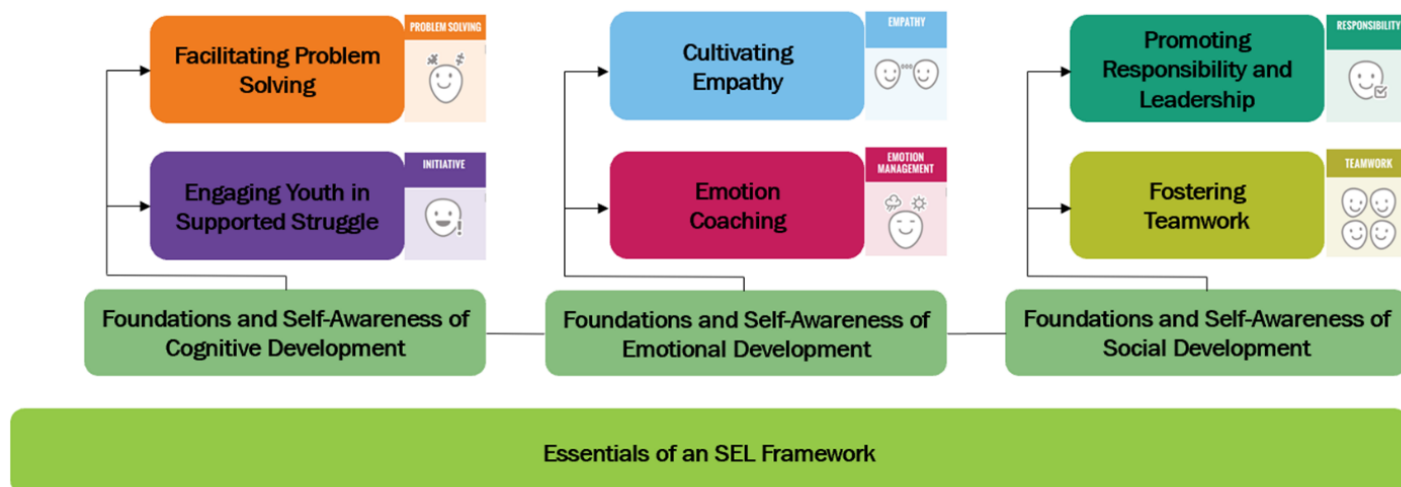
Define. Describe the situation in your program

Explore. What you can change? What are the obstacles?

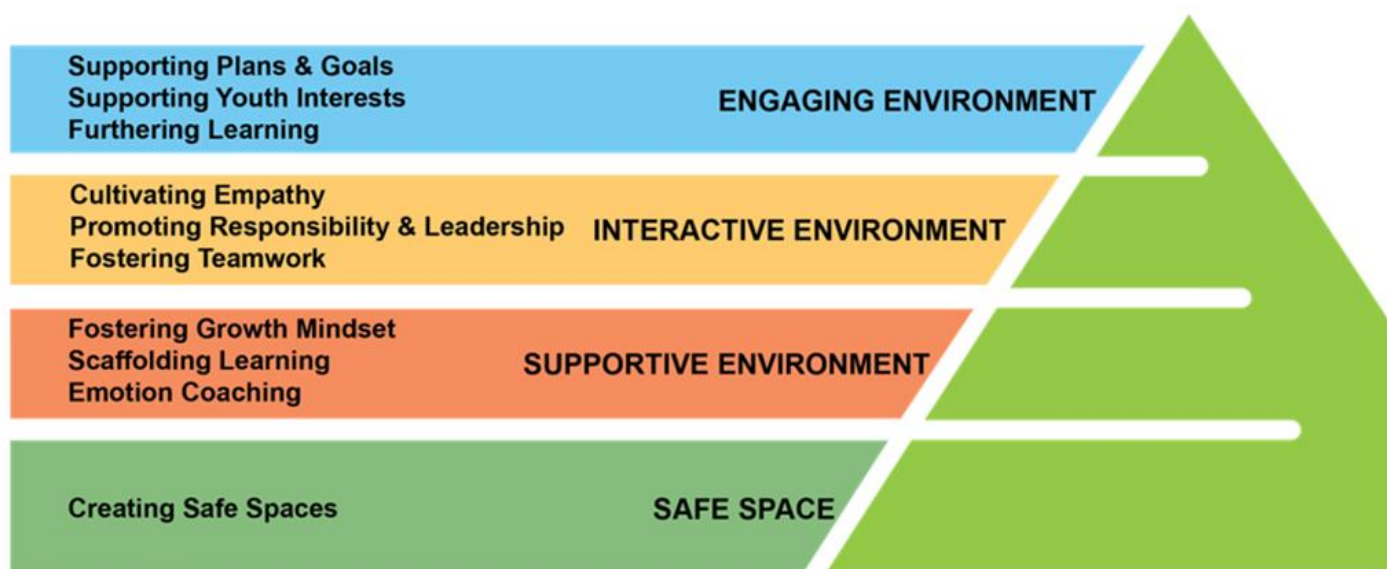
Act. What is the next step you will take?

Look back and learn. What did you learn from this process?

Social Emotional Learning Methods Sequence with *Preparing Youth to Thrive* Domains



Social Emotional Learning Pyramid of Program Quality with SEL PQA Scales



Crosswalk of Weikart Center's SEL Resources and Supports

<i>Preparing Youth to Thrive</i>	Youth Work Methods	SEL Methods	SEL PQA
			ENGAGING ENVIRONMENT
Problem Solving	Active Learning	Facilitating Problem Solving	Furthering Learning
			Support connections to previous knowledge
			Link examples to principles
			Encourage extending knowledge
			Encourage logical reasoning
Initiative	Youth Voice		Supporting Youth Interests
			Provide open-ended choice
			Provide multiple opportunities for choice
			Support creativity
Problem Solving, Initiative	Planning and Reflection	Facilitating Problem Solving	Supporting Plans and Goals
			Set up planning opportunities
			Ensure young people record or represent plans
			Facilitate monitoring progress toward goal
			Support problem-solving alternatives
			INTERACTIVE ENVIRONMENT
Teamwork	Cooperative Learning	Fostering Teamwork	Fostering Teamwork
			Promote active collaboration
			Establish shared goals
			Provide group-process opportunities
Responsibility	Youth Voice	Promoting Responsibility & Leadership	Promoting Responsibility and Leadership
			Assign responsibility for tasks
			Support carrying out responsibilities independently
			Provide mentoring opportunities
			Provide leadership opportunities
Empathy	Building Community	Cultivating Empathy	Cultivating Empathy
			Structure activity for sharing and listening
			Encourage understanding other's emotions
			Structure activities for showing kindness
			Support valuing of differences
			SUPPORTIVE ENVIRONMENT
Management Safe Space (Curriculum Feature)	Reframing Conflict	Emotion Coaching	Emotion Coaching
			Acknowledge emotions
			Support young people to name emotions
			Discuss constructive handling
			Discuss emotion causes
Responsibility	Active Learning, Intro to Active Participatory Approach	Engaging Youth in Supported Struggle	Scaffolding Learning
			Break task into steps
			Model skills
			Encourage young people to improve performance
			Monitor challenge level
Initiative	Ask-Listen-Encourage	Engaging Youth in Supported Struggle	Fostering Growth Mindset
			Guide young people to self-correct
			Use non-evaluative language
			Attribute achievement to effort
Safe Space (Curriculum Features)			Creating Safe Spaces
	Building Community, Reframing Conflict	Fostering Teamwork	Foster positive emotional climate
	Building Community,	Fostering Teamwork	Convey warmth and respect
	Structure & Clear Limits Reframing Conflict	Cultivating Empathy	Provide support for safe space
	Building Community	Cultivating Empathy	Demonstrate positive group management style
			Demonstrate mutual accountability
			Show active inclusion

PQA Item Reflection

Below is a list of items with their level 5 indicator from the Social Emotional Learning Program Quality Assessment (SEL PQA) that are related to Facilitating Problem Solving in program spaces. Use the space below each to reflect on how this practice was demonstrated during today's workshop and how you can adapt what you experienced today to promote these practices in your own setting.

Engaging Environment – Furthering Learning: Staff encourage young people to deepen their learning

- Staff have young people make connections between session activities and young people's previous knowledge (e.g., related topics previously studied, "real world" applications or issues. Staff ask young people questions like "how does our program gardening project relate to what you learned about river pollution?")
- More than once, staff support young people in linking concrete examples to content-related principles or categories, (e.g., "Giving more specific names to your feelings will help others understand you better." "What other four-sided figure would be a quadrilateral?" "Understanding a candidate's platform will help voters make informed decisions.").
- Two or more times, staff encourage young people to deepen or extend their knowledge or thinking (e.g., staff ask open-ended questions that encourage young people to analyze; define a problem; make comparisons or inferences; predict, apply, evaluate or generate alternate solutions. "How do you think the distance from the lamp will affect the seedlings?" "What does this have in common with what you learned last week?").
- More than once, staff support young people to use logical reasoning (e.g., "Why do you think that would happen?" "Please explain your reasoning.")
- Staff frequently make comments, ask questions that guide young people in discovering an answer to a problem, or guide young people's initiative in learning (e.g., "And what else do you notice?" "Your paragraph tells me what, but not why." "What tools do you think you need before you start?")

Engaging Environment – Supporting Plans and Goals: Staff provide opportunities to plan, set goals, and solve problems

- Staff provide multiple opportunities for young people (individual or group) to set goals, or make or revise plans for projects and activities (e.g., how to spend their time, how to do a task).
- Staff provide opportunities for young people to record or represent their plans (e.g., a small group draws a diagram before building; staff help full group make a large idea web to plan an event; young people create a list or timeline).
- Staff have young people monitor progress toward goals the young people set for themselves.
- Staff support young people to try more than one way to meet a goal or solve a problem (e.g., staff tell young people to devise more than one solution, try another approach; staff structure activity to use different processes to anticipate or solve a problem).

A free digital download of the SEL PQA is available at www.cypq.org/downloadpqa