Personalized Learning²

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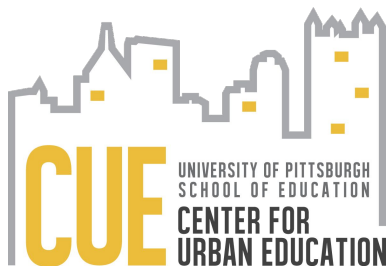dchine@andrew.cmu.edu

http://personalizedlearning2.org/

What is Personalized Learning^2?

Our vision is to bridge the opportunity gap in math.

We empower mentors and tutors to double learning gains for students.

Who is Personalized Learning^2?
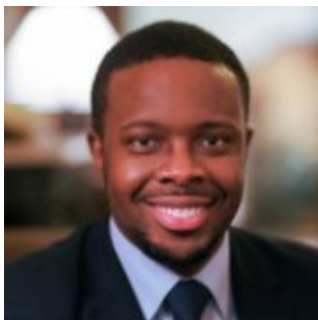
Carnegie Mellon University:

University of Pittsburgh
Center for Urban Education (CUE):

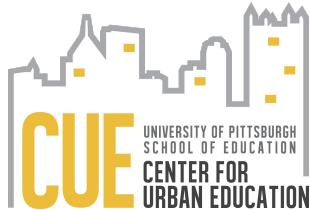Ken Koedinger
PI

Shiv Gupta
Product Lead

T. Elon Dancy
Exec. Director, CUE

Cassandra Brentley
Director of Special Projects, CUE

Our Institutional Partners

A partnership to train and equip community-based tutors and other paraprofessionals to contend effectively with COVID-related learning loss in urban schools, focusing initially on math.

The Problem

Now more than ever, schools and organizations are facing many obstacles to improving learning outcomes:

- Shortage of mentors/tutors
- Lower level of experience among current mentors/tutors
- Increased achievement gaps among marginalized students
- Wider diversity of need among students
- More students needing social-emotional support
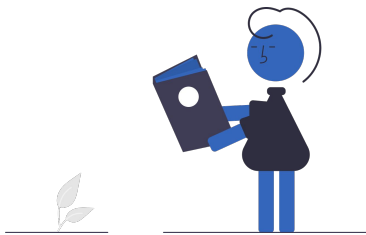- Influx of students needing academic mentoring

The 3-pronged PL^2 Approach

1. Personalized research-driven professional development

2. Personalized tools for data-driven student support
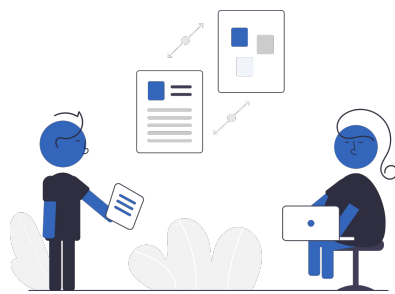
3. A corps of highly qualified tutors

Our Solutions
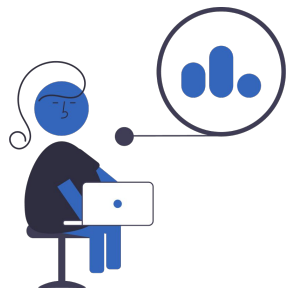
PL^2 Training

PL^2 Toolkit

PL^2 Tutors

PL^2 Training

Interactive, engaging live training- *delivered to tutors in areas of expressed need*

Asynchronous training- *engage tutors at their own time and pace*

Resource Library- *over 100 quality resources for tutors students*

PL^2 Training

Based on in-house CMU research

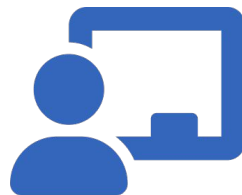13 competencies across 5 strategic areas needed for successful mentorship:

1. Social Emotional Learning
2. Mastering Content
3. Advocacy
4. Relationships
5. Technology Tools

PL^2 Training

100% free for tutors at partner organizations

Can be delivered in-person or virtually

Scenario-based learning

Example Topics (Fully customizable):

- Introduction to Teaching Math and Gaining Math Support
- Culturally Responsive Teaching Practices
- Student Engagement & Motivation Strategies Using PL^2

Student Engagement & Motivation Strategies using PL[2]

Dr. Danielle Chine & Shiv Gupta
Carnegie Mellon University

http://personalizedlearning2.org

PL[2]

Scenario 1: Cannot Concentrate or Unfocused

You notice one of your students, Jarrell, cannot maintain focus or concentrate on the math problem he has been working on. He often squirms in his seat and cannot "sit still".

How do you respond or approach Jarrell?

Step 1: Greet the student and say their name.
Step 2: Make sure student's basic needs are met.
Step 3: Ask them how you can help them. (Make it an open question. Do not use 'yes' or 'no'.)
Step 4: Determine the source of lack of focus and intervention.
Step 5: Provide remedy.

What are some challenges regarding student engagement & motivation?

The purpose of this training is to provide mentors with strategies, practical tips, and scenario-based supports to assist students with motivation and engagement.

1 Strategies
2 Practical Tips
3 Scenario-based Supports
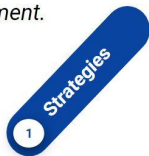
Think About It!
What are some common challenges you've experienced?

Learning Objectives:

Mentors will learn how to:

- Define and identify intrinsic and extrinsic motivation
- Apply strategies for both intrinsic and extrinsic motivation
- Assess students' needs and create comfortable learning environments
- Apply strategies to maintain engagement
- Access helpful resources related to motivation in PL[2] app

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Student Engagement & Motivation Strategies Using PL[2]

Gayle Rabare, Americorps Program Manager

Homewood Children's Village

Stories from our Partners of PL^2 Training

Live training on *Student Engagement & Motivation Strategies Using PL^2*

I appreciate the fact that the training was rooted in specific (and general) member challenges and that it offered practical strategies to address those challenges. (The PBIS World link is an absolute god-send!)

The engagement tools have dramatically helped me "get through" to my students.

-Very informative
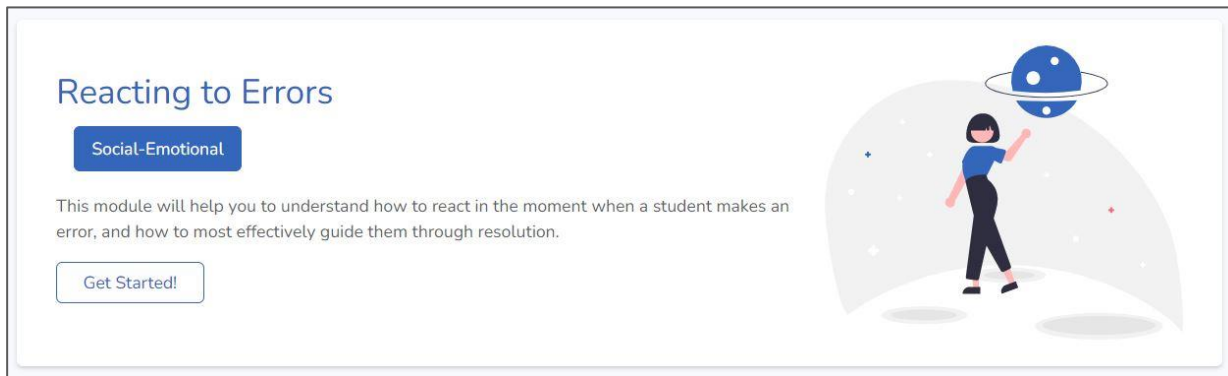-Good resources
-Good explanation

Very informative training.

The teachers I work with are using many of the tools you suggested

PL^2 Training - Lessons

Short (7-12 min) Asynchronous lessons to *engage tutors at their own time and pace*

Examples:

- Supporting a Growth Mindset
- Using Intrinsic & Extrinsic Motivation Strategies
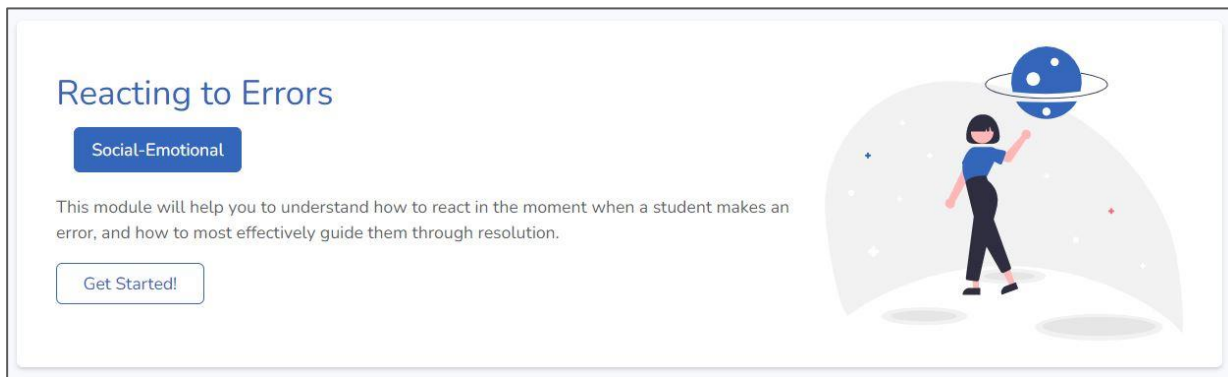- Reacting to Student's Errors

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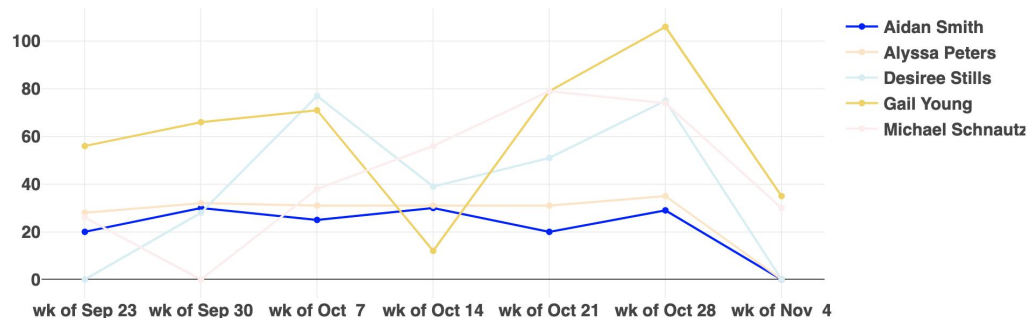
PL^2 Training

Resource Library
- Access to 100+ high-quality, curated resources for tutors and students
- Tutors can find their own resources or get assistance in finding the appropriate resources for professional development

I want to identify the root cause behind a challenge my mentee is facing

I already know the root cause and need to find a resource to resolve the issue

PL^2 Toolkit

Software that combines student math software and tutor inputs (i.e., feedback, reflections) to provide personalized resources at the click of a button

Recommended Resources for You

Relationship Building Activities for Back t...
An activity list with suggestions aimed to improve relationship building.

Guide for Racial Justice & Abolitionist...
Guide for Racial Justice & Abolitionist Social and Emotional Learning

Mindfulness Activities for Students
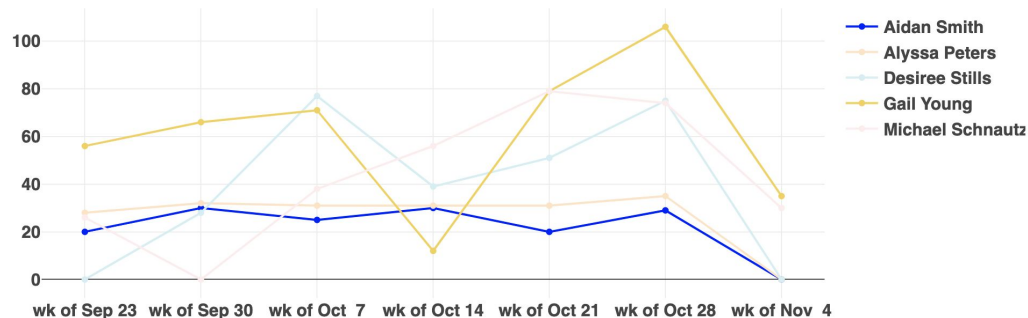This website blog discusses mindfulness activities mentors can use to regain focus and improve student engagement.

Social and Emotional Learning (SEL)...
SEL involves increasing students' awareness and management of their own and other's emotions

PL^2 Toolkit

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Aidan Smith
Alyssa Peters
Desiree Stills
Gail Young
Michael Schnautz

wk of Sep 23   wk of Sep 30   wk of Oct 7   wk of Oct 14   wk of Oct 21   wk of Oct 28   wk of Nov 4

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Our Software Partners

Our web application connects with and combines data from many different products.

PL^2 Tutoring - Tutors on Tap (NEW!)

Highly trained, certified and cleared tutors ready for deployment!
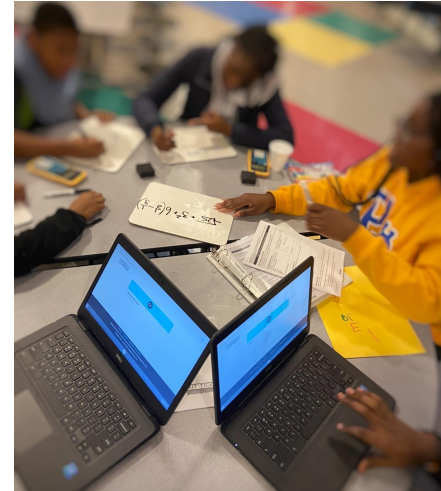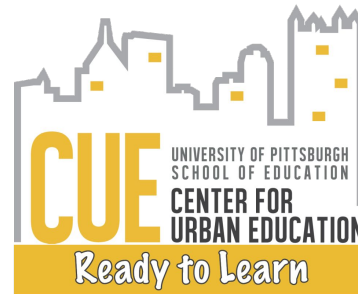
Trained in the following:
- Social-emotional and motivational strategies
- Math pedagogy and content knowledge
- Demonstrating awareness of biases
- Building relationships with students and caregivers
- Use of PL^2 and other technology tools

Documented Results

Results from the Ready to Learn program offered by the Center for Urban Education at the University of Pittsburgh (Pitt)

- After-school and summer math mentoring initiative
- Blends tutors and technology to create an engaging learning experience for students
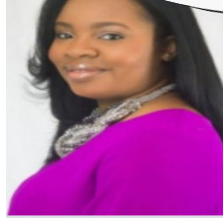- Tutors are Pitt undergraduates

Results from Ready to Learn in Person

Carmen

Cassandra

Mathia (Cognitive Tutor)

Data analysis overview

Compare Math Test Scores (RIT) pre & post
- *Pre*: Fall & Winter (2019-2020) RIT Score
- *Between*: RtL/PL2 for treatment,
  Usual schooling & *pandemic* for all
- *Post*: Fall & Winter (2020-2021) RIT Score

Demographics – 3 local urban schools
- Mostly grades 6-7; 52% female
- ~80-8-12% black-brown-white

Propensity matching by demographics & RIT
- Treatment: N=70
- Control: N=380 matched

Results: Our program nearly ***doubled*** the rate of math learning for participants

Math Test Score Gain
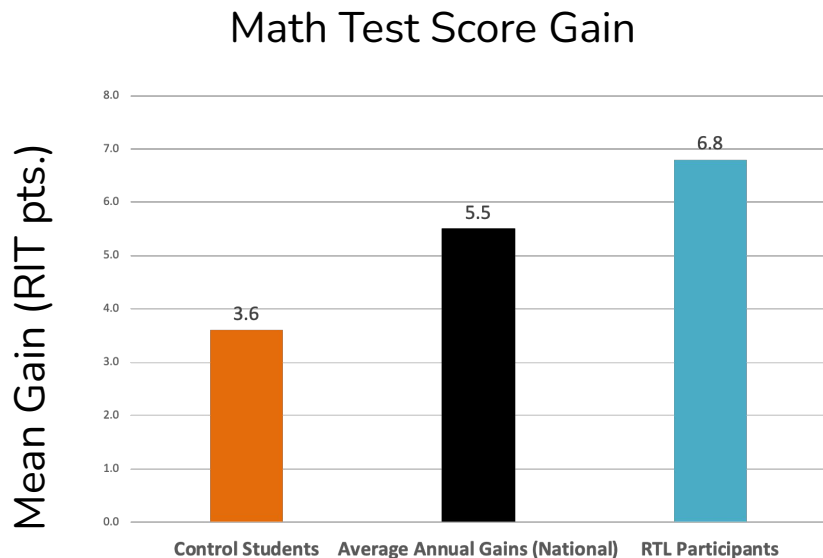
Students who participated in the RtL program demonstrated significant learning gains compared to control students.
Effect size: 0.4

If we could fully transfer these capabilities to other schools and organizations , we could have a much larger impact on student learning outcomes across the region!

How can you get involved?

There are several ways:

❏ Become a partner and gain access to one or even all our solutions.
    ❏ PL^2 Training
    ❏ PL^2 Toolkit
    ❏ PL^2 Tutors on Tap

❏ Sign up for our newsletter to receive current updates.

❏ Please contact us to discuss the best solutions for your organization.

Please fill out this: Google Form

For more information:

Shiv Gupta shivangg@andrew.cmu.edu

http://personalizedlearning2.org

Ready to Learn Virtual

Carmen

Cassandra

PL²

ALEKS

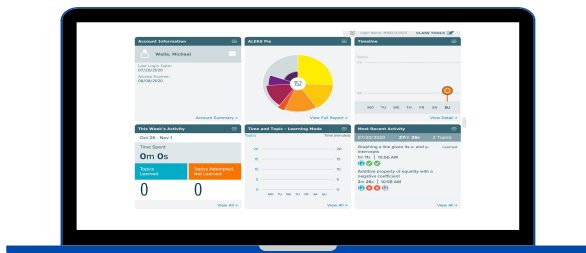**VIRTUAL SESSION FORMAT**

Students meet with math mentors twice a week for one hour

Warm-up 10 Minutes

Personalized Algebra Lesson 20 Minutes

Math Lesson taught by Dr. Browne

ALEKS Online Algebra Practice 40 Minutes
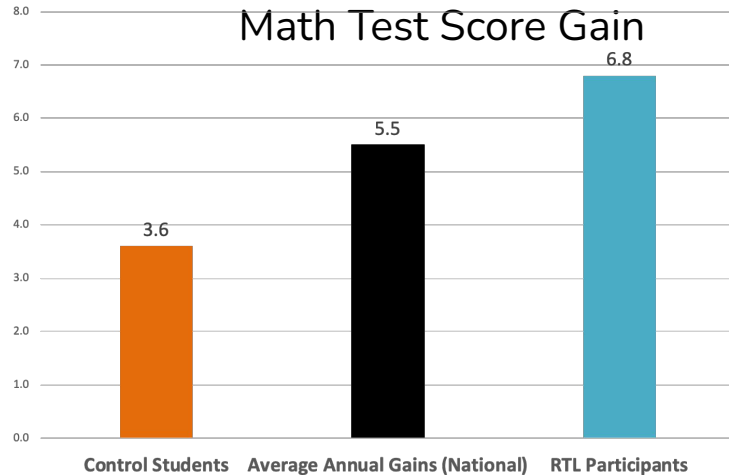
2:1 Student to Mentor

Reflection & Team Building 10 Minutes

CUE UNIVERSITY OF PITTSBURGH SCHOOL OF EDUCATION CENTER FOR URBAN EDUCATION
Ready to Learn

Pitt Education

Results: Our program nearly ***doubled*** the rate of math learning for participants

Math Test Score Gain

	6.8

Control Students: 3.6
Average Annual Gains (National): 5.5
RTL Participants: 6.8

Math Score Difference Results

Variable	Estimate	SE	df	t	p
(Intercept)	211.16	0.79	520.30	267.17	**0.000*****
Treatment	3.82	2.00	520.30	1.90	0.057
PostTest	3.60	0.43	448.00	8.30	**0.000*****
Treatment x PostTest	3.21	1.10	448.00	2.92	**0.004****

Significant

Treatment x PostTest interaction (p<.01)

=>

Greater learning for treatment

Effect size: .4 sd

Results: Distribution comparison

Control Group Scores

Treatment Group Scores
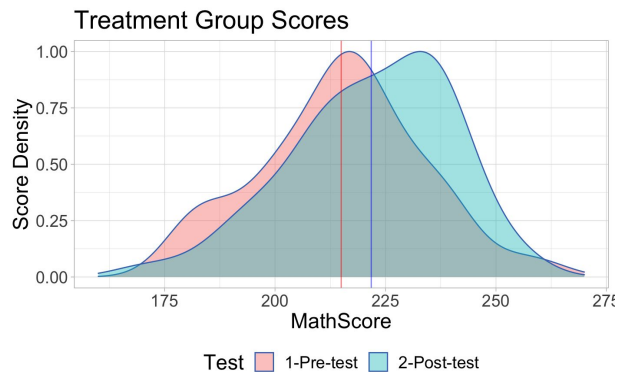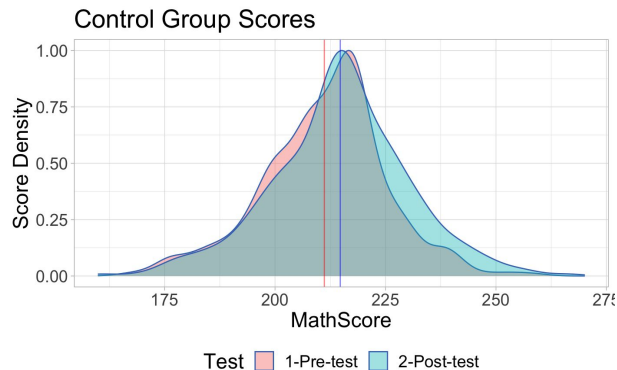
Treatment benefits students across a wide range of prior knowledge!

Results: A nonequivalent dependent variables* test shows no effect on *reading scores*

Reading Test Score Gain

	Value
Control Students	2.1
Average Annual Gains (National)	4.5
RTL Participants	2.7
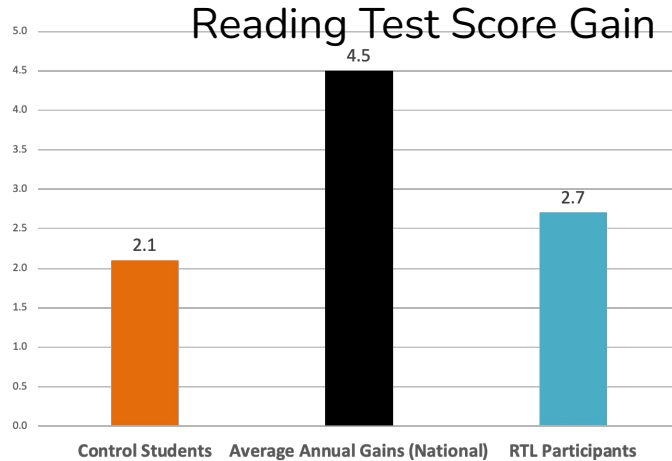
Reading Score Difference Results

Variable	Estimate	SE	df	t	p
(Intercept)	206.55	0.85	492.02	244.08	**0.000***
Treatment	1.43	2.13	492.02	0.67	0.051
PostTest	2.05	0.49	417.00	4.20	**0.000***
Treatment x PostTest	0.61	1.23	417.00	0.50	0.619

Both groups learn less than "normal"

No difference in amount of learning

Mitigates selection/omitted variable concerns

* Trochim & Donnelly (2007). The Research Methods Knowledge Base: 3rd edition.

Scenario-based training outcomes

- Situational and scenario-based training
- Tutors can complete on own
- Provides live feedback
- Found significant improvements in mentor understanding of approaches to support student self-efficacy
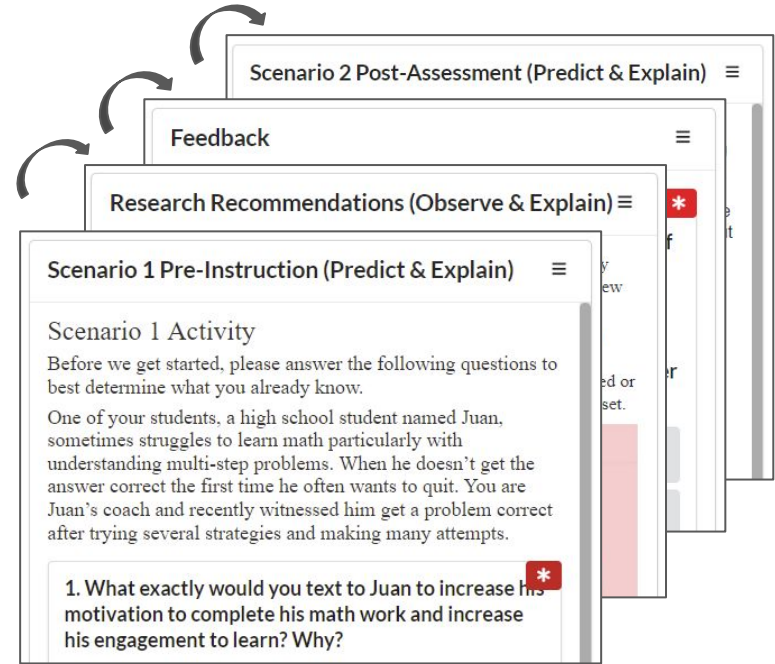
Training Feedback from Mentors (Example 1)

Student Engagement & Motivation Strategies Using PL[2] -
Jamboard Feedback:

The engagement tools have dramatically helped me "get through" to my students.

I know we were short on time, but I wish there was more time dedicated to allowing the members to work through different hypothetical challenges using the strategies and tools provided.

The teachers I work with are using many of the tools you suggested

I appreciate the fact that the training was rooted in specific (and general) member challenges and that it offered practical strategies to address those challenges. (The PBIS World link is an absolute god-send!)

-Very informative
-Good resources
-Good explanation

Very informative training