USET Series: Personalized, Competency Based Learning

By: Nathan Auck, Milo Maughan, & Melissa Mendenhall | Feb 2024

Introduction

What is Personalized, Competency Based Learning (PCBL)?

Personalized, Competency Based Learning tailors the instructional methods, content, and pace of learning to the individual needs of each student as they acquire specific skills and master predefined learning objectives. It utilizes a student's different strengths, weaknesses, interests, and learning styles to advance mastery of content. Simply stated, PCBL is high quality instruction in action.

A PCBL approach empowers students to take responsibility for their learning by giving them voice, choice, and customized support to achieve success in the essential knowledge, skills, and dispositions described in Utah's Portrait of a Graduate. PCBL shifts the focus of the classroom from teacher directed learning to a culture of learning driven by the students. There are five essential components of PCBL:

1. Culture of Learning
2. Learner Agency
3. Demonstrate Competency & Assessment
4. Customize Supports
5. Social and Emotional Learning

How is Three-dimensional Science connected to PCBL?

PCBL provides a framework for finding coherence across educational content areas and settings. While each content area has its own instructional promising practices, these practices are at the center of effective PCBL instruction for that content area. High quality three-dimensional science instruction is the way that science educators can most effectively leverage PCBL in their classrooms.

RESOURCES

Utah's PCBL Framework

Utah's Portrait of a Graduate

What is PCBL?

PCBL's Evidence Based Practices

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PCBL:
Culture of Learning

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What is the essential component of Culture of Learning within PCBL?

Each learner is supported by communities committed to creating the culture, structure, policies and instructional practices that engage them in their journey towards college, career and life readiness. By leveraging a learner's unique assets and interests, holding high expectations, executing teacher clarity and fostering meaningful relationships, an inclusive culture of learning allows each learner to define their pathway to success.

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CLASSROOM APPLICATION

When observing a science classroom in which the utilizes the PCBL component of Culture of Learning, the following **student actions** should be visible:

- Actively making sense of a phenomenon or solving a problem.
- Engaging in the science and engineering practices.
- Framing thinking through the crosscutting concepts.
- Student discourse centered around disciplinary core ideas and sensemaking.
- Applying science concepts to real-world situations.

To support science instruction that utilizes the PCBL component of Culture of Learning, **teachers' plan** by:

- Developing three-dimensional learning objectives
- Developing routines which encourage listening and purposeful talk
- Selecting phenomena that are complex and puzzling to students while being in familiar or from everyday contexts
- Activating and eliciting student ideas about science phenomenon

IMPLEMENTATION RUBRIC

Basic	Emerging	Effective	Exceptional
Content connections are made to the students' interests and relationships are developed.	Content connections are made to the students' interests, learning objectives are communicated, and relationships are developed.	The students' unique assets and interests are leveraged within the phenomena, three-dimensional learning objectives are communicated, and meaningful relationships are fostered.	The students' unique assets and interests are leveraged within the phenomena, high expectations are held, three-dimensional learning objectives are clearly communicated, and meaningful relationships are fostered.

RESOURCES

Utah's PCBL Framework

Utah's Portrait of a Graduate

What is PCBL?

USET 02 - Using Three-Dimensions in a Student-Centered Classroom

USET 06 - Student Sensemaking of a Phenomenon

Evidence Based Practices:

- Teacher Clarity
- Curiosity
- Success Criteria
- Inquiry-Based Teaching
- Clear Learning Intentions

PCBL: Learner Agency

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What is the essential component of Learner Agency within PCBL?

Each learner develops understanding, skill and responsibility for the learning design and process in pursuit of achieving the characteristic of Utah's Portrait of a Graduate. Learner agency is achieved through a broad range of instructional strategies including goal setting, choice in learning pathways, voice in how to demonstrate competency and learner self-assessment.

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CLASSROOM APPLICATION

When observing a science classroom in which the utilizes the PCBL component of Learner Agency, the following **student actions** should be visible:

- Hypotheses, experiences, cultural knowledge, and questions are treated as resources to help the class build toward big science ideas.
- Making decisions about how they engage in the science and engineering practices.
- Self monitoring on the progress made towards learning objectives.

To support science instruction that utilizes the PCBL component of Learner Agency, **teachers' plan** by:

- Providing varied opportunities for students to reason through talk
- Using frequent formative assessments that allow students to show what they know.
- Choosing good anchoring phenomena that allow students to construct different types of explanations and models.
- Allowing students to be self reflective about their learning and the progress they are making.

IMPLEMENTATION RUBRIC

Basic	Emerging	Effective	Exceptional
Students follow a prescribed learning sequence as they learn science content.	Students are guided through the science and engineering practices with limited choices as they explore, learn about, and explain phenomena.	Students make choices how they use specific science and engineering practices to explore, learn about, and explain phenomena.	Students have full autonomy in how they use the science and engineering practices to explore, learn about, and explain phenomena.

RESOURCES

Utah's PCBL Framework

Utah's Portrait of a Graduate

What is PCBL?

USET 02 - Using Three-Dimensions in a Student-Centered Classroom

USET 06 - Student Sensemaking of a Phenomenon

Evidence Based Practices:

- Effort Management
- Self-Directed Learning
- Self-Verbalization - Questioning
- Cooperative Learning
- Inquiry-Based Teaching

PCBL: Demonstrated Competency & Assessment

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What is the essential component of Demonstrated Competency & Assessment within PCBL?

Each learner progresses through their learning based upon applying their knowledge, essential skills and dispositions. Timely, effective feedback and data from a variety of formative assessment processes are used to measure learner growth, progress and advancement based on high expectations.

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CLASSROOM APPLICATION

When observing a science classroom in which the utilizes the PCBL component of Demonstrated Competency & Assessment, the following **student actions** should be visible:

- Thinking made visible and subject to commentary by the classroom community
- Developing an explanation or model of observed phenomena
- Communicating verbally or with written text to explain a phenomena
- Demonstrating competency of the SEEd standards in a variety of methods
- Engaging in a sequence of science and engineering practices during a summative assessment to describe a novel phenomenon.

To support science instruction that utilizes the PCBL component of Demonstrated Competency & Assessment, **teachers' plan** by:

- Providing students multiple opportunities and methods to demonstrate learning.
- Having students revise models and explanations in responses to new evidence and ideas
- Summative assessments are phenomenon based which use a novel phenomenon. Students use the GRC process (or 3D Science learning sequence) during the assessment to develop an explanation of the phenomenon.

IMPLEMENTATION RUBRIC

Basic	Emerging	Effective	Exceptional
Students are assessed at the end of the learning process. Students demonstrate competency via one prescribed method.	Students are assessed and receive feedback 1 - 2 times throughout the learning process. Students demonstrate competency via one prescribed method.	Students are assessed and receive feedback multiple times throughout the learning process. Students have options on how to demonstrate competency.	Students are assessed and receive feedback multiple times throughout the learning process. Students demonstrate competency in a variety of ways.
Summative assessments have students demonstrate mastery of content.	Summative assessments are phenomenon based. Students develop an explanation of the phenomenon.	Summative assessments are phenomenon based. Students use a sequence of SEPs during the assessment to develop an explanation of the phenomenon.	Summative assessments are phenomenon based which uses a novel phenomenon. Students use a sequence of SEPs during the assessment to develop an explanation of the phenomenon.

RESOURCES

Utah's PCBL Framework
Utah's Portrait of a Graduate
What is PCBL?
USET 14 - Three-Dimensional Assessments

Evidence Based Practices:

- Mastery Learning
- Feedback via Technology
- Peer Assessment
- Formative Assessment Process

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PCBL: Customized Supports

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What is the essential component of Customize Supports within PCBL?

Each learner is provided with or selects appropriate and timely support to achieve growth or competency and to engage in personalized learning pathways. These customized supports are based on data about the learner's demonstrated strengths, interests and needs.

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CLASSROOM APPLICATION

When observing a science classroom in which the utilizes the PCBL component of Customized Supports, the following **student actions** should be visible:

- Engaging in learning activities where they have the supports needed to explore, reason, and communicate about a phenomenon.
- Actively making sense of a phenomenon or solving a problem.
- Engaging in the science and engineering practices.
- Framing thinking through the crosscutting concepts.
- Student discourse centered around disciplinary core ideas and sensemaking.
- Applying science concepts to real-world situations.

To support science instruction that utilizes the PCBL component of Customized Supports, **teachers' plan** by:

- Using the Universal Design for Learning Guidelines and three-dimensional science pedagogy to support students in achieving SEEd Standards
- Utilizing tiered instruction interventions for students lacking essential foundational skills (reading, writing, just-in-time support course, etc.)
- Engaging in collaborative, data-driven discussions to determine the support students need within the learning environment.
- Solicit feedback from learners on the customized supports provided and ways to improve their impact.

IMPLEMENTATION RUBRIC

Basic	Emerging	Effective	Exceptional
All students receive the same support to achieve growth or competency.	Students receive suitable support to achieve growth or competency. Supports are grounded in data about the class as a whole.	Students receive customized, timely, and suitable support to achieve growth or competency. Supports are derived from data about the student.	Students receive customized, timely, and suitable support to achieve growth or competency. Supports are derived from data about the student's strengths, interests, and needs.

RESOURCES

Utah's PCBL Framework
Utah's Portrait of a Graduate
What is PCBL?
USET 03 - Scaffolds in Three-Dimensional Science
USET 07 - Equitable and Accessible Science Instruction for All

Evidence Based Practices:

- Mastery Learning
- Feedback via Technology
- Peer Assessment
- Formative Assessment Process

PCBL: Social Emotional Learning

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What is the essential component of Social Emotional Learning within PCBL?

Each learner is provided with opportunities to acquire and apply the knowledge, attitudes, and skills necessary for understanding and managing their emotions; setting and achieving positive goals; feeling and showing empathy for others; establishing and maintaining positive relationships; making responsible decisions; and self-advocating. The development of these SEL strategies is critical for a student to learn to effectively work with others, overcome challenges, and achieve success in multiple settings. Social Emotional Learning is intentionally and seamlessly integrated into classroom activities to allow students to continually build these skills.

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CLASSROOM APPLICATION

When observing a science classroom which the utilizes the PCBL component of Social Emotional Learning, the following **student actions** should be visible:

- Working together productively in groups to:
  - Actively make sense of a phenomenon or solve a problem.
  - Engage in the science and engineering practices.
  - Frame thinking through the crosscutting concepts.
  - Student discourse centered around disciplinary core ideas and sensemaking.
  - Applying science concepts to real-world situations.
- Acquiring and applying SEL Characteristics:
  - Understanding and managing their emotions
  - Setting and achieving positive goals
  - Feeling and showing empathy for others
  - Establishing and maintaining positive relationships
  - Making responsible decisions
  - Self-advocating

To support science instruction that utilizes the PCBL component of Social Emotional Learning, **teachers' plan** by:

- Eliciting student ideas and activating prior knowledge
- Helping students represent their thinking publicly
- Selecting learning experiences which help students build toward cumulative and nuanced understanding of big science ideas
- Providing varied opportunities for students to reason through talk
- Establishing norms that establish an atmosphere of civility and safety
- Establishing routines that encourage listening and purposeful talk
- Purposefully and seamlessly teaching SEL characteristics.

IMPLEMENTATION RUBRIC

Basic	Emerging	Effective	Exceptional
Students work together to complete learning activities.	Students acquire and apply SEL strategies as they work together to complete learning activities.	Students acquire and apply SEL strategies during the science and engineering practices as they work with their peers to describe phenomena.	Students acquire and apply SEL strategies seamlessly during the science and engineering practices as they work with their peers to describe phenomena.

RESOURCES

Utah's PCBL Framework
Utah's Portrait of a Graduate
What is PCBL?
USET 04 - Student Science Discourse

Evidence Based Practices:

- Teacher Student Relationships
- Positive Peer Influence
- Emotional Intelligence
- Belonging

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