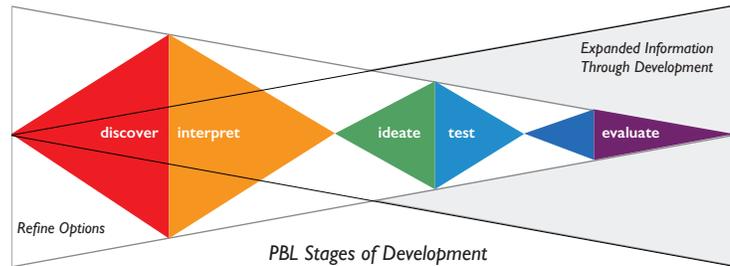


Project-Based Learning at ISU:

Inspiration, Ideation, & Implementation



“Nothing helps recruitment, admissions, and accreditation as much as compelling content created by students (using PBL).”
– Kris Wobbe, Worcester Polytechnic Institute (WPI), Director of Great Problems Seminar.

What is Project-based Learning?

Project-based learning (PBL) is a high-impact educational practice that uses creative problem-solving to deliver formative learning experiences through applied-learning. Using PBL, teachers and students can dive deeply into content-specific problems, generate and evaluate various options, and apply the lessons to a particular educational emphasis—often through collaborative teamwork. Research has shown that PBL is more effective in engaging students in their work, embedding learning through active-learning exercises, finding connections between topics, and developing collaboration skills than traditional classroom activities.

Importance of Project-Based Learning at ISU

There are several factors unique to Iowa State University that make a project-based learning approach critical to our efforts: Our Land-Grant mission compels innovative and practical course work with an emphasis on applied-learning. As our educational practices evolve to address more vexing global challenges and the expectations of a new generation of learners, a project-based learning approach offers the ability to use meaningful educational experiences to deliver the content and collaborative working skills valued in practice. And finally, the creative problem-solving and collaborative educational efforts found in a PBL approach can help create the vibrant ecosystem of innovation and entrepreneurship that President Wintersteen has envisioned.

Project-based Learning and CELT

The Center for Excellence in Teaching and Learning (CELT) is instigating a broader, campus-wide initiative to bring together a wide-variety of instructors and administrators to explore more about this important, high-impact educational practice. The first phase of these initiatives involves a series of PBL workshops in February 2020, featuring experts from Worcester Polytechnic Institute (WPI) and their Center for Project-based Learning and CELT's Faculty Fellow for High-Impact Practices, Rob Whitehead.

Engaging with CELT and Project-based Learning Initiatives

There is a wide-variety of courses at ISU that use some variation of the project-based approach, but there are too few collective collaborations and discussions about it. These workshops will bring like-minded instructors together to learn about best-practices, develop course content to scaffold learning, and to explore how this work may be applied to specific topics related to social entrepreneurship and innovation-based initiatives. The workshops are ideal for both experienced and new instructors; the approach is inclusive and trans-disciplinary which makes it ideal for teaching and learning experiences across campus, including collaborative efforts.



Waterwall Proposal, ISU Design Option Studio, Ghana, 2018



Active-Learning through Design-Thinking & Systems Thinking



Zenith Zodiac XL 601 prototype, ISU Aerospace Engineering



EARTH Ag and Ecosystem Service Learning, ISU Horticulture

Project-Based Learning Workshops:

Integrating Entrepreneurial Activities and Human-centered Innovations into Coursework

February 20-21, 2020, ISU Student Innovation Center



Waterwall Proposal, DSN S 546, Ulla, Ghana, 2018

Project-based learning (PBL) is a high-impact educational practice in which a series of learning activities—thinking, making, and breaking—are applied to content-specific problems. PBL provides meaningful learning opportunities by focusing on the *application* of knowledge through inquiry and active-learning. PBL is ideal for *all disciplines* that hope to develop deeper engagement in real-world skills, stimulate innovative problem-solving, and forge meaningful collaborations and connections of knowledge across content areas.

WORKSHOPS will be led by PBL experts from [Worcester Polytechnic Institute](#) (WPI), and CELT's Faculty Fellow for High-Impact Practices, Rob Whitehead (Architecture). See [Page 2](#) for additional information

Session 1: Getting Started with Project Based Learning

February 20, 2020, 9am-noon

An introduction to PBL teaching strategies, suggestions for integrating PBL into course activities, and examples of best practices for activities and assessment. Ideal for instructors considering PBL for their courses, practice-based term faculty, and/or administrators.

Sessions 2 & 4: Teaching Great Problems with PBL

February 20-21, 2020, 1:10-4:10pm

Designed for those interested in cross-disciplinary initiatives related to UN's Global Issues. The session will introduce the "[Great Problems Seminar](#)" at WPI, discuss how to adopt / create similar courses and how to cultivate innovation and social-entrepreneurial practices in cross-disciplinary teams. Ideal for instructors and administrators at all levels and disciplines.

Session 3: Advanced PBL for Enhanced Outcomes

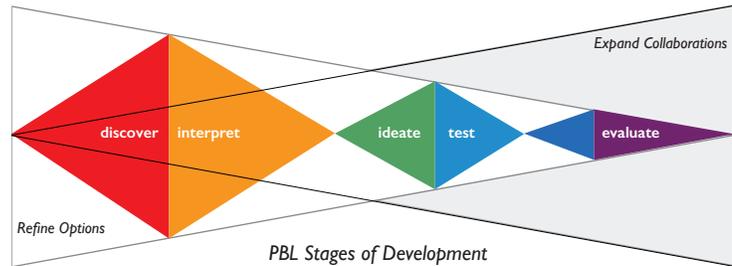
February 21, 2020, 9am-noon

A deeper dive into the evolving nature of PBL in contemporary educational experiences including cross-disciplinary teamwork, challenges of engagement and assessment, and use of "design-thinking." Ideal for instructors and administrators that are currently engaged in PBL work who are looking for critical discussions, and suggestions for Best Practices and "what's next" in education.

Enrollment in each workshop is limited. Please register now via [Learn@ISU](#) website before February 15, 2020. Questions can be directed to rwhitehd@iastate.edu and celt@iastate.edu

Project-Based Learning:

Inspiration, Ideation,
& Implementation



WHAT YOU'LL LEARN ABOUT PROJECT-BASED LEARNING

What are the benefits of project-based learning in the higher education classroom setting?

How can PBL stimulate entrepreneurial activities and innovations?

How do the roles of faculty and students change in PBL versus traditional coursework? Can a class just do SOME PBL?

What are the essential elements of PBL? What are strategies to navigate open-ended inquiries with specific course content?

How can PBL be used for STEM courses or "non-design" disciplines? What are the unique benefits to STEM courses?

How can project-based learning improve student performance? How is learning scaffolded?

How does assessment change if the problems are intentionally open-ended?

What are the differences in PBL vs. "design thinking"? What is human-centered exploration?

ABOUT THE PRESENTERS & MODERATORS

Paula Quinn, Associate Director for the Center for Project-Based Learning at WPI. MA in Developmental Psychology from Clark University, & BA in Psychology from Case Western Reserve University.

Quinn believes project-based learning holds significant potential for increasing the diversity of students who succeed in college and who persist in science, technology, engineering, and math (STEM) fields. Her background includes working in the field of education evaluation, where she focused primarily on the areas of project-based learning; STEM; pre-literacy and literacy; student life; learning communities; and professional development.

Rob Whitehead, Assoc. Prof. of Architecture, CELT Faculty Fellow for High-Impact Practices. M.Arch from University of Texas at Austin, & B.Arch from Iowa State University.

Whitehead has spent a career in project-based activities as a registered architect, Assoc. Prof. of Architecture, and CELT Faculty Fellow. He was named one of 30 Most Admired Educators by Design Intelligence (2014). He received the Iowa Educator Award (2014) by the Iowa Chapter of the American Institute of Architects (AIA), and the Emerging Faculty Award (2011) by the Building Technology Educators' Society (BTES). He is the author of the textbook, Structures by Design: Thinking, Making, & Breaking (Routledge, 2019).