

Interactive Online Interventions for Helping Students Succeed in Physics

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Background

- **Kathy Koenig, Alex Maries and I have made Interactive Video Vignettes and Interactive Video-Enhanced Tutorials for 15 years.**
- **Interactive: Video segments with branching questions and feedback for student answers.**
- **Presented at previous MPTL conferences.**

Belonging

- Koenig and Maries also developed in-class activities to enhance students' feeling of belonging in the class and in college.
- This project is making interactive online activities that enhance belonging.
- Very different from our previous interactive online activities!
 - Student success oriented
 - Not content oriented

More on Belonging

- <https://www.gregorywalton.com/media.html>
- <https://youtu.be/ztt5cUpqcDI>

Social Belonging

- **Feelings of inclusion in a community**
- **Relates to students' perception of the inclusion of the learning environment**
- **Relates to students' motivation and self-efficacy**
- **Belonging uncertainty is more likely during transition (e.g., to college)**

Self-Efficacy

- Belief in one's capability to succeed
- Relates to persistence and engagement
- Can affect effectiveness with which students engage with learning

Previous Intervention

- Adapted by Koenig and Maries as an in-class activity
- 30-minute activity done in the second recitation
- Students prompted to reflect in writing on concerns they have about physics/college
- Testimonials from other students
- Normalizing struggle: everybody goes through it
- For background, see: <https://gregorywalton-stanford.weebly.com/uploads/4/9/4/4/49448111/waltonwilsoninpress.pdf>

Interactive Online Interventions

- IOIs are interactive online activities modeled after the previous intervention.
- Preliminary version currently being used at the University of Cincinnati.
- Designed for University of Cincinnati students but can be modified for your school.

Sample IOIs

- <https://sciencetutorials.net/IOI>

IOI Best Practices

- Discuss purpose of IOI in class prior to assigning
- Tell students why the IOIs are valuable
- Make integral part of course (e.g., assign as homework through LMS)
- Give credit for completion but not for answer correctness
- Require students to submit written responses to some questions
- Provide students with control
- Can complete as many times as desired
- Appropriate timeframe to complete

Timeline of IOI Assignments

- **First Week of Class:**
 - Assign “What Worries You?” after the first class (complete it before the second class)
- **Second Week of Class:**
 - Assign “Saying is Believing” anytime during second week (complete it before the next class)
 - Students submit their letter via Canvas LMS before the next class
- **After First Exam has been graded and returned to students:**
 - Assign “Exam Wrapper” (complete it before the next class)
- **Last Week of Class:**
 - Assign “End Reflection” any time during this week (complete it before the next class)
 - Students submit completed grid via Canvas before the next class

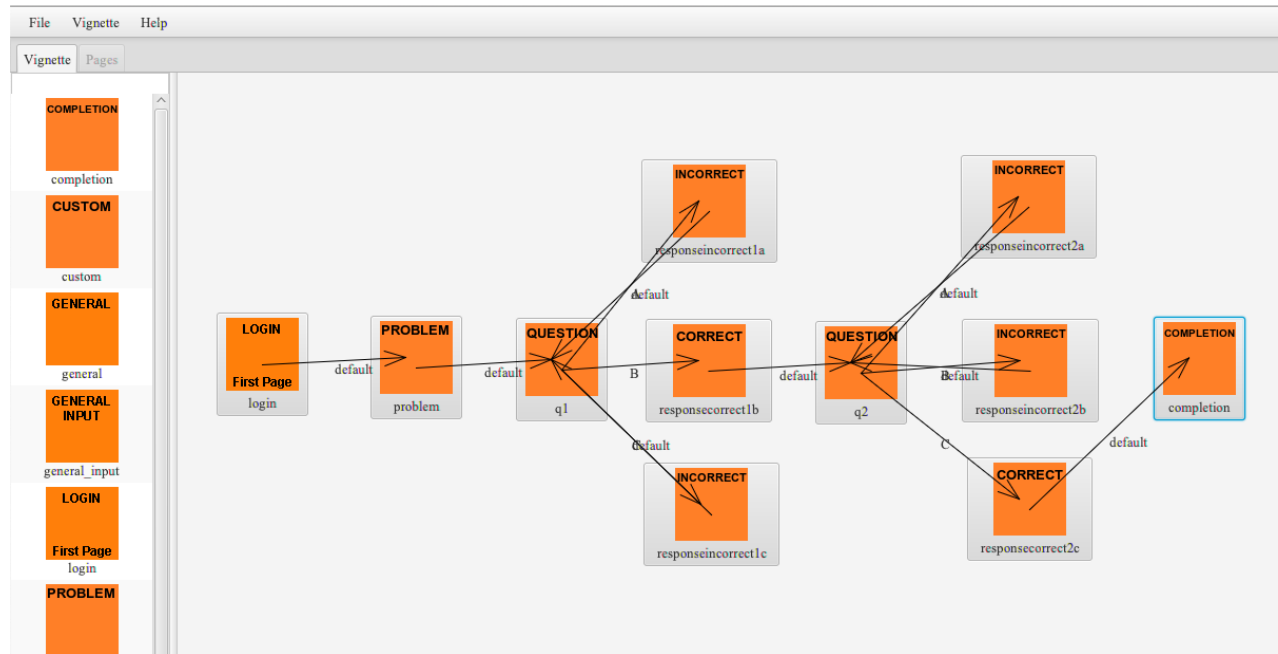
What do you want to get from this workshop?

- Information about IOIs? (already covered)
- Information about Belongings research and interventions? (already covered)
- How to modify or make my own IOIs?

Create your own IOIs or interactive tutorials

Vignette Studio II software with text and/or video guidance:

compadre.org/IVET/ (requires very basic familiarity with HTML)



Install Vignette Studio II

- Go to compadre.org/IVET/VS2.cfm and make sure you have Java version 8u441. Download Vignette Studio II.
- Unfortunately a bug in Vignette Studio II requires us to start it from the Windows Command Prompt if you have a font with non-English characters.
- Put Vignette Studio II in the Documents folder.
- Switch to the Documents folder in Command Prompt (`cd Documents`)
- `java -Dfile.encoding="UTF-8" -jar vignette-studio-ii-2-8-2025.jar`