# Learning Sciences and Online Learning Symposium Summary and Participant Responses to Gaps with respect to "Concepts"

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## Abstract

The Learning Sciences and Online Learning Symposium is focused on how online learning might help meet the persistent challenges that discipline-based educational researchers have identified in teaching within their disciplines. In preparation for the symposium, participants were asked to reflect on three questions that will serve as the central themes for the symposium activities. The following represents one of the three prompts provided to participants.

*What gaps exist in helping students understand threshold and difficult to learn concepts, or to prevent/correct common misconceptions?*

Common challenges (mentioned more than once) emerging from participant responses are listed below. A full text version of this summary including responses by respondent number is available for download.

## Common challenges and opportunities identified by participants with respect to concepts

1. Challenges in understanding how to "measure" and "evaluate" conceptual understanding in the first place". Also, moving "beyond concept inventories" and having a focus on "deep conceptual understanding".

2. Challenges in overcoming "deeply seated, resistant to change and hard to overturn" prior understanding in learners. And in developers challenges of "expert blind spot" and how to overcome them.
3. Opportunity for students to "practice" and "address the misconception multiple times in multiple ways".
4. Opportunity to link learning from previous to subsequent classes to understand the impacts in "later courses, and into the workplace." The ability to understand the long-term impact on learning and understanding, and "transfer phenomenon" to new areas.
5. Opportunity for to develop learning activities that enable learners to "build" their own ideas, versus being recipients of "transmission" of content. And doing so in ways that are authentic and that link to practice and the real world.
6. Challenges in the design of learning experiences and the use of teaching methods that incorporate "assessment of what can be grasped by students, and the amount of practice required. Course content is often bloated, which leads (necessarily) to its trivialization".
7. Opportunity to provide learners and instructors access to their performance data (especially tied to competencies/masteries) and feedback loops and opportunity "iterative, systemic improvement".
8. Policy issues around "persistent leadership" to support faculty experimentation and time to implement these activities.

## About the Symposium

Online learning is becoming central to educational transformation efforts at institutions around the world. The increasing interest and engagement in digital and online learning suggest an urgency to examine the intersection of learning sciences/education research with digital learning practice. Symposium participants will discuss how online learning might help meet the persistent challenges that discipline-based educational researchers have identified in teaching within their disciplines with a focus on the following three themes:

- Threshold and difficult to learn concepts, as well as common misconceptions, that online and digital environments can address
- Unique and different opportunities that are afforded in online and digital environments
- Community and community interaction in online and digital learning experiences