Evidence-based Instructional Strategies to promote learning

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Education is "the right and the necessity to examine everything."

— James Baldwin

Teaching is about providing an environment in which students can learn, and getting them unstuck when they are stuck.

— Len Jossem

The goal of education is to prepare students for their next step.

— Ken Wilson
About Us

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“Ohio State will be an exemplar of the best teaching, demonstrating leadership by adopting innovative, at-scale approaches to teaching and learning to improve student outcomes.”

— TIME AND CHANGE STRATEGIC PLAN
Outcomes

• Increase awareness of
  ▪ Evidence-based instructional practices
  ▪ Scholarship of teaching and learning (SOTL)
  ▪ Education research results (DBER)

• To encourage ongoing examination of student learning and student success.

• To promote continued reflection on your own teaching practices
Consider a class/topic you will teach.

From your perspective as instructor or student, were there (or are there)
• Problems
• Issues
• Challenges
with teaching or learning?

How do you know?
Sharing Perspectives Part 2

• What are some effective instructional practice in your discipline?

• How do you know they are effective?
Freeman et al. *PNAS*, 2014
All teachers should know...

1. Define learning goals and make them explicit
2. Find out what students are thinking.
3. Provide timely and specific feedback.
4. Embrace a growth mindset
5. Teach students how to learn
6. Convey that you care about all students
7. Don’t be afraid to copy what works

Wieman, 2014
Examples of effective practices

1. Clinical Teaching

2. Structured peer review of written work
   (Henry & Ledbetter, 2011)

3. Using “Clickers”
   (Wieman, 2014)
The trajectories shown below represent the paths of two projectiles. Which flight takes more time?

1. Flight A takes more time than flight B
2. Flight B takes more time than flight A
3. Flights A and B take the same amount of time
PCK includes an understanding of what makes the learning of specific topics easy or difficult: the conceptions and preconceptions that students of different ages and backgrounds bring with them to the learning of those most frequently taught topics and lessons. (Shulman 1986, 9).

FIG. 2. Results from a survey of 722 physics faculty indicating percent of faculty who knew about, used, or had discontinued use of Research Based Instructional Strategies (adapted from Ref. [24]).

Process for transformation

What should students learn?

What are students learning?

Which instructional approaches improve student learning?

Chasteen et al. (2011) Journal of College Science Teaching
Scholarship

Scholarship of teaching and learning (SOTL)
Journals, conferences, Learning Communities, funding

Discipline Based Education Research (DBER)
Journals, conferences, research funding
Reflecting on your practice

1. Define learning goals and make them explicit
2. Find out what students are thinking.
3. Provide timely and specific feedback.
4. Embrace a growth mindset
5. Teach students how to learn
6. Convey that you care about all students
7. Don’t be afraid to copy what works

Wieman, 2014
Questions and Conversation