

Scientific Teaching

Handelsman, Miller, and Pfund

The Wisconsin Program for Scientific Teaching

Part of the Teaching Mentoring Program

Sponsored by the CVM Teaching Academy

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Diversity affects learning

Review - Scientific Teaching

“Teaching science in a way that

1. Represents the nature of science as a dynamic, investigative process based on evidence,
2. Engages a diversity of people in a collaborative process and
3. Has clear learning goals in mind, uses methods and instructional materials designed to improve student learning, and evaluates the methods iteratively.”

Today's title is Diversity affects learning

What do you think of when you read diversity in this title?

When you think of human diversity in general?

Human Diversity Defined

Human diversity refers to the variation of human experience, ability, and characteristics

Case: Bantering

Included

Excluded

Assumptions

Biases

Creating Inclusive Classrooms

Lectures PowerPoint Examples

Multiple-Choice True-False Online

Expense Time Group Work

Included

Excluded

Assumptions

Biases

When teaching, why consider human diversity?

- We owe all students an education about the diverse world in which we live
- Diversity enhances learning
- Each student will experience the classroom differently from everyone else in the class

Generally, people differ in many ways

- Some of the ways we can see and measure
- Some of the ways remain unknown
- Some of the ways are imagined or assumed

We should treat every student as an individual who has the potential to be outstanding in science

Case: Cousins Vang

I've taught introductory biology for three years now. Half of the grade is based on written work, such as lab reports and short-answer essay exams.

I've noticed that every semester I have two or three students whose last name is Vang. I asked one of the students if she was related to another Vang in class. She said, "We're cousins." I also noticed that the Vang students seem to understand the material when I'm talking with them, yet their written answers tend to be unclear and often miss the point.

When I looked back at the grades for the past three years, I was surprised to find that no student with the last name Vang has ever received a grade higher than a C in my class. In fact, one-third of them have failed the course. I am horrified! And I'm worried that my teaching style has some terrible, racist undertone that I never meant to perpetuate.

What can I do?

Some Questions to Consider in This Case

- What issues might be contributing to this situation?
- What suggestions do you have for the professor?
- Have you faced a similar challenge?
- Does it make you uncomfortable to have a last name listed in this case? What are the pros and cons of discussing a case with the last name in it?
- What assumptions did you make about the professor and the students?

Unconscious bias

Unconscious bias – the filters that we apply unconsciously to situations and people, which can affect student learning and engagement in the classroom

Was unconscious bias at play in the case of the Cousins Vang?

Two models for student learning

- Scaffold – with regular feedback, students scaffold new information in new contexts
- Constructivism – learning accommodates and builds upon the experiences of the learner who actively integrates new knowledge into his/her existing framework

Scaffold – with regular feedback, students scaffold new information in new contexts

- Scaffolding is breaking up the learning into chunks and then providing a tool, or structure, with each chunk.
- For example you might preview the main topics in the chapter, discuss key vocabulary, or chunk the text and read and discuss as you go.

Scaffold – with regular feedback, students scaffold new information in new contexts

- Fills learning gaps which are the difference between what a student has learned and what the student is expected to learn at a certain point
 - Can support learning by the diversity of students
 - Can Include more students
- You can use scaffolding during instruction/lecture
- Example?

Tips to scaffold and help the diversity (all or more) of students learn

- Provide an example or demonstration
- Tap into prior knowledge
- Give time to talk and reflect
- Attend to vocabulary
- Use visual aids
- Pause, ask questions. Pause, review

Exit Assessment

Write for a minute.

“How does diversity affect learning?”