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What Undergraduates in Biology Don't Know About Plant Structure and Growth

Kathleen Archer
Trinity College

Maryann Herman
St. John Fisher College, mherman@sjfc.edu

Grace Miller

Laura Olsen

Jodie Ramsay

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Disciplines
Biology

Comments
Presented at the American Society of Plant Biologists Annual Meeting in Providence, Rhode Island, 2013.
What undergraduates in biology don’t know about plant structure and growth

Kathleen Archer, Maryann Herman, Grace Miller, Laura Olsen, Jodie Ramsay

Goals and Objectives

• Overall Goal: Generation of a concept inventory in plant structure and growth
  – Need for objective measures to evaluate student comprehension
  – 1st Objective: Collect and analyze student misconceptions

Methods & Approaches

• 15 questions
• 68 interviews at institutions of various sizes
  – St. John Fisher College (NY)
  – Trinity College (CT)
  – Indiana Wesleyan University (IN)
  – Northern State University (SD)
  – University of Michigan (MI)

Methods & Approaches

• Student demographics:
  – Introductory biology (n = 11)
  – Introductory biology + botany (n = 32)
  – At least 1 upper division botany (n = 12)
• Coding of transcribed interviews
  – Correct
  – Misconception
  – Don’t know
• Coding inconsistencies were discussed and group consensus achieved

Questions with >80% Correct Responses

Distribution of responses
Overall Trends in Student Responses
- Students had the greatest correct answers for simple questions
- Highest percentage of misconceptions dealt with gas exchange and cell support
- Students lack a general understanding of plant development (lateral roots, bark, leaves)

Does Taking Botany Make a Difference?

Does Taking Botany Change Misconceptions?

Future Directions
- Complete coding of remaining ~15 interviews
- Further analysis of demographic data – Poster 12007
- Has core botany content changed? – Current emphasis in plant biology classes?
- Development of concept inventory
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