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Students as Key Stakeholders: Exploring Undergraduates' Perceptions of Teaching and Learning in an Introductory Organic Chemistry Course

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Background

Student Learning & Organic Chemistry

Organic chemistry is a *challenging*, *cumulative* course where students often struggle to develop meaningful learning strategies and easily fall behind (Grove & Bretz, 2012; Lynch & Trujillo, 2010).

Students often lack the metacognitive skills and self-efficacy to effectively monitor, evaluate, and plan their learning (Ambrose et al., 2010; Zhao et al., 2014).

Purpose & Methods

This poster will examine undergraduate students' perceptions of their learning strategies and experiences in a second year introductory organic chemistry course that encouraged active learning strategies.







Student surveys, classroom observations, and 26 one-on-one interviews revealed a raw and complex array of factors students perceived as influencing their learning in CHEM 233.

References

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Context

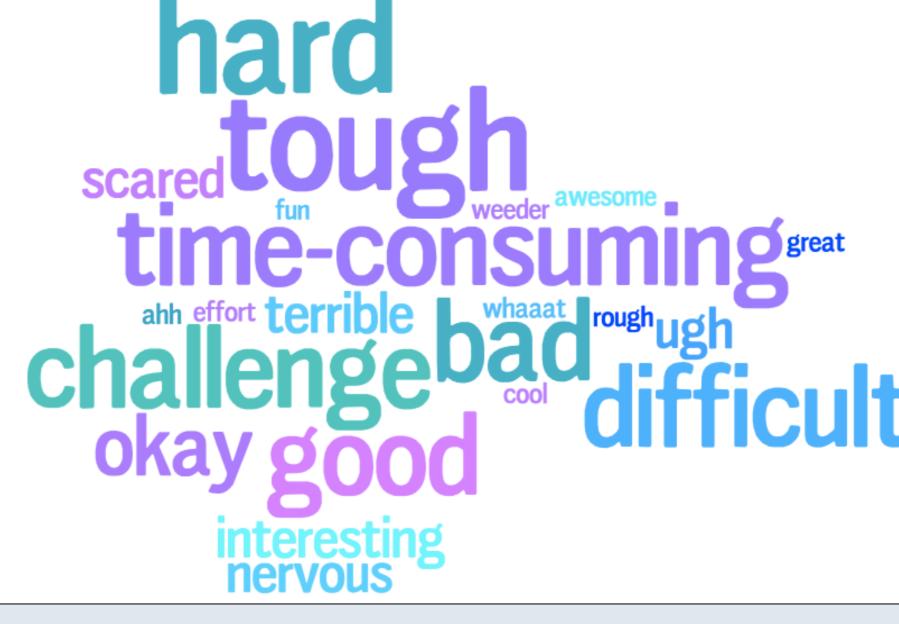
- This study focused on two sections of CHEM 233 (~500 students)
- Majority of students in second year of a biological science degree
- Course recently adopted "flipped classroom" format

Outside of Class

In-class

- Pre-class videos & quizzes
- Graded online homework
- Ungraded problem sets
- Groupworksheets
- Clicker questionsPractice
- Bi-weekly quizzes

Students' Descriptions and Sentiments of Organic Chemistry



Students' responses to the question: What were/are your impressions of organic chemistry?

Additional Resources for Students

- Face-to-face and virtual office hours
- Study strategy intervention workshops
- Reaction summary templates
- Online Piazza Forum
- Documents/readings about deliberate practice and effective studying

Results

"While I do study hard, I don't think I study smart."

High stakes exams:
Critical point of reflection

"Integrate more from the videos...like 10 minutes of review in lecture to help us make a connection."

Improvements for "flipped classroom" approach

"I didn't know about the virtual office hours. And they were archived?"

Lack of awareness or use of learning

resources

Struggle with developing appropriate learning strategies

Students'

Perceptions &

Experiences

"I studied in a focused manner. I would look back at every question and if I got it wrong, I would justify why I got it wrong."

Successful students share useful learning strategies

"Take the pre-class prep seriously.
Actually do the questions, don't just look at them."

Advice for future students

"I don't feel prepared to work in a group."

"In groups...you get to know your strengths and weaknesses."

Mixed perceptions of group work and discussion

Future Considerations

- The results of this study will be compiled as a report for CHEM 233 faculty, staff and students to outline: how successful students study; students' perceived barriers to learning; students' feedback regarding the course curriculum & pedagogy; and advice for future students.
- Students' perceptions will help faculty and staff to consider how we may refine the course curriculum & pedagogy to best support students' learning strategies and experiences.

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