# Empowering Student Self Study in Biochemistry

In this session, Dr. Blythe Janowiak and Dr. Charlotte de Araujo discussed strategies for supporting student learning in biochemistry across large and small course formats. They outlined structured and less-structured models using pre-class study guides and Process Oriented Guided Inquiry Learning (POGIL) activities, Achieve homework, and curated AI tutoring. They also discussed using iClicker for reflection, review, branching questions, and gamified sessions to build engagement and confidence.

This summary includes practical strategies you can try right away in your own courses.

## Student-Centered Course Design

- Emphasizing **high-structure course design** guides students through pre-class, in-class, and post-class learning.
- Interactive study guides help students extract **core concepts** without relying solely on long readings.
- Using both in-class assignments and curated AI reinforces **self-study habits** and supports student engagement.

## Supporting Self-Study With Digital Tools

- Achieve homework and case studies promote **independent learning** through repetition and context-based practice.
- The built-in **AI Tutor nudges students** with questions rather than giving answers outright, and provides more exposure to the material.
- Students reported that curated guidance helps them move past **learning obstacles**.

## Interactive Review and Reflection

- Use iClicker to run **pre-check-ins** that let students identify topics needing review.
- Consecutive and branching questions **expose misconceptions** in real time.
- Short post-session reflections encourage students to evaluate their **learning progress**.

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## Build Interactive, Flexible Review Structures

- Invite students to **submit multiple pre-check-in responses** so they can reflect on what they want to revisit.
- Display **word cloud outputs** to reveal class-wide themes or misconceptions while maintaining anonymity.
- Provide **instant feedback through iClicker**, helping all learners self-assess regardless of comfort level in large classes.

## Gamified Learning for Engagement

- Modified **Jeopardy-style reviews** mix low- and high-level questions aligned with Bloom's taxonomy.
- Gamification allows students with different comfort levels to participate through **anonymous responses**.
- **Instant feedback and post-class check-ins** help learners target areas needing additional practice before exams.

## Helpful Resources

- **Biochemistry Teaching Tools in Achieve:** Macmillan Learning offers curated biochemistry resources, including adaptive quizzing, the AI Student Tutor, molecular models, metabolic maps, and instructor analytics.
- **Try Achieve's Biochemistry AI Tutor:** A sample of biochemistry assessment questions in Achieve, including the AI Student Tutor that supports self-study.
- **Goal-setting and Reflection Survey Research Note:** Learn more about how the Goal-Setting and Reflection Surveys (GRS) enhance student performance, self-efficacy, and engagement.
- **iClicker Training:** Learn more about how to use iClicker for in-class polling, attendance, and group work, and how it works with Achieve.
- **POGIL.org:** An introduction to Process Oriented Guided Inquiry Learning.

## Speakers


- **Blythe Janowiak,** PhD, Assistant Professor, University of Alabama
- **Charlotte de Araujo,** PhD, Senior Lecturer, Florida International University


*This summary was created with the assistance of generative AI to synthesize key ideas from the Zoom session "Empowering Student Self Study in Biochemistry," held on November 20, 2025.*