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Before During and After Class Learning Cycle Activities

Michael R. Abraham, The University of Oklahoma
John I. Gelder, The Oklahoma State University
Thomas J. Greenbowe, The University of Oregon

The Learning Cycle

Phase of the Learning Cycle	Activity
Exploration	Before Class Exploration (BCE)
Invention	During Class Invention (DCI)
Application	After Class Application (ACA)

In large lecture environment Before Class students are online doing a BCE activity that involves an exploration activity (using a simulation to collect data) or a series of questions, in an order (scaffold), to help student organize their understanding. Student responses are collected in a database where the instructor can review prior to class.

The Learning Cycle

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The DCI can be a written activity or a series of clicker questions that student work on in small groups, or individually. The DCI engages the student, along with the instructor, to invent a concept.

The Learning Cycle

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Exploration	Before Class Exploration (BCE)
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The ACA is another online activity that involves a different activity (using a simulation to collect data) or a series of questions, in an order (scaffold) that applies the concept to determine how much the student has gained from the classroom discussion/invention.

Web Sites

- Workshop Page
- http://genchem1.chem.okstate.edu/BCCE2016.htm

- Faculty Web Site:
http://genchem1.chem.okstate.edu/BDA/Topics.php

- Student Web Site:
http://intro.chem.oksate.edu/BDA.html

Before Class Exploration
http://genchem1.chem.okstate.edu/BDA/Topics.php

- – Online web-based activity;
- – Activity generates data using technology;
- – Some questions to organize data and to setup the invention;
- – Technology: simulations, animations, digital video;
- – Response submitted online;
- – Instructor has access to all responses

The Concept

- Asking questions;

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Student Survey

- Fall, 2014
- 1st semester non-majors introductory chemistry;
- Pre-medical, engineering, pre-vet, biochem majors;
- 114 students responses

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Student Attitudes BCE length

- 71 students (62.3%) responded that the <u>length</u> of the BCE (question 1) was "just right"
- while 9 students (7.9%) responded that the length of the BCE was too long,
- remaining students being of mixed or no opinion.

Student Attitudes BCEs helped class preparation

- 76.3% (87 students) responded that the BCE helped them prepare for class (question 2)
- others disagreed with the premise of this question, stating that they did not help or that it was unclear if they helped.
- most students indicated that these before class activities introduced the topic or let students know what to expect in class. These responses are in line with the general idea the pre-lecture assignments are useful for students and help them comprehend the lecture better

Student Attitudes BCEs

- 26 students (22.8%) responded that they had completed all the before class assignments.
- most common reason students listed for not completing the before class assignments were that they forgot (52, 45.6%).
- Many indicated that contributing reasons were that they were not alerted by the system that they had a BCE assignment due,
- post times were not consistent, and that the post times were often late or at a time they had a conflict.
- Some students listed that the before class activity took too much time (5) or contained content they could not do (8),
- 23 students (20.2%) gave a mixed answer, listing two or more reasons. These were combinations of the reasons already given or that the BCE assignments could be confusing due to wording or content, that there were computer or internet issues, or that the timing for completing the assignment conflicted with other work.

Student Attitudes BCEs

- 89, 78.1% reported that they preferred the BCE assignments to book reading (
- 97, 85.8% found the BCE's Expert Response Page useful
- 6 students (5.3%) stated that the Expert Response Page was not useful.
- In general, students stated that the feedback was useful for them to realize their mistakes and learn.

Student Attitudes DCIs

- 75, (66.4%) reporting that they found the DCI activities useful;
- 52, (46.4%) reporting that appropriate time was given to the during class activities
- 34, (30.4%) would like more time;
- 23, (20.5%) less time

Student Attitudes Clicker Questions

- 89, (79.5%) commenting on the clicker questions being useful in some manner.
- Students commented that the clicker questions helped them review the material in class and also forced them to pay attention to lecture.

Student Attitudes ACAs

- 91, (80.5%) found the assignments to be useful in reviewing material from a lecture;
- 9, (8.0%) negative comments;
- 13 others were mixed
- Most students felt that the ACA assignments were great reviews of the class material and helped solidify their learning.
- 80, (70.8%) reported that they found that the length of the assignments were just right,
- 8, (7.1%) reported that the time was definitely too long, with others mixed.
- 92, (81.4%) reported that they would rather complete an ACA than read a section of the book,
- 8, (7.1%) preferring to read
- 13 students saying neither was preferred or giving a nonstandard answer such as 'no' or 'it depends'.

Workshop Organization

- Introductions
- Theoretical framework
- Java issues
- Data Sources (MoLE, NextGen)
- BDA Site (Faculty); mock activity: database access
- BDA (student)
- Exploration
- Who will use this site? (special BCCE deal)
- Next Generation Simulation Project

Java Fix

- Windows Button (lower left)
- Search for Java and open Configure Java
- Go to the Security tab
- Click on Edit site list, then click the Add button;
- Enter http://introchem.chem.okstate.edu
- Click the Add button again, then OK
- Open FireFox

Open to Your Students

- Email me (john.gelder@okstate.edu) if you would like me to setup a database for your students.
- If you have an idea for a BCE, a DCI, or an ACA or a BCE/DCI/ACA let me know, I will help.