The Blended Instruction Case Studies

Overview of Case Studies - LS3

Challenge: Using Technology to give students a valuable research experience they would otherwise never get.

Timeline:
- Fall and Winter 2004 – development
- Spring 2005 – Pilot in Honors section
- Fall 2005 – Pilot in multiple sections
- Winter 2006 – Full scale implementation

http://www.lsic.ucla.edu/ugri/

Server, computer labs configured, student interface being prepared

BICS Purpose and Vision

To develop hands-on experience with new forms of teaching using principles of blended instruction.

RFP process resulted in the selection of three different courses, each providing a unique opportunity for institutional learning.

Overview of Case Studies - Stats 10

Challenge: Using online quizzes and a homework tool to revise lectures, facilitate small-group learning activities and provide students with frequent individualized feedback in a timely manner.

Timeline:
- Summer and Fall 2004 – Development
- Winter or Spring 2005 – Implement in one section
- Fall 2005 – Full implementation

Moodle chosen and being set-up, databank being populated.

Overview of Case Studies - Pol Sci 6/50

Challenge: Using online lectures to increase enrollment for the linked course by simplifying scheduling problems and facilitating active learning experiences.

Timeline:
- Spring 2004 – pilot two online lectures in otherwise traditional course
- Summer and Fall - development
- Winter 2005 – Full implementation

2 lectures created, data gathered for formative assessment, new software program chosen, quiz tool being configured, rest of lectures being produced

Assessment Plan - Constructs

- Effectiveness in elevating student academic achievement and other learning outcomes (L1 vs L3 of Bloom’s Hierarchy)
- Effectiveness in increasing student interest, satisfaction, and enjoyment
- Documenting the nature of faculty work and changes in faculty teaching experiences
- Course delivery issues
- Implications for administrative policies and practices
**Assessment Plan for Life Sciences 3**

Randomly assign lab sections to ‘BICS’ lab and ‘traditional’ lab. Thus, bics lab and traditional lab will be taken by some students from each lecture section.

Lecture One

- LAB 1
- LAB 2
- LAB 3

Lecture Two

- LAB 4
- LAB 5
- LAB 6

Also, Carry over experiment

LS 3, LS 187

**Assessment Plan for Life Sciences 3**

- Randomly assign lab sections to BICS version or traditional version. Compare BICS lab to traditional:
  - Academic Achievement measures– scores on lab reports, quality of wet-lab work.
  - Measure student interest, satisfaction, and enjoyment at end of quarter.
  - Compare drop rates between labs.
- “Carry-Over” Experiment in LS 187 in Fall/Winter ’05.
- For BICS Versions only:
  - Survey on student perceptions concerning effectiveness of online lectures, course delivery issues, other technology issues (e.g., student support) and formative assessment data.
  - Interviews with Cheryl and lab instructors

**Assessment Plan for Statistics 10**

- SPRING ‘05: Two sections taught by the same instructor

**Assessment Plan for Statistics 10**

- One instructor teaches two sections (BICS, traditional) in same Quarter,
- Traditional section - 3 hrs lecture
- BICS section - 2 hours lecture 1 hour in discussion, first lecture introduces concepts, students complete online homework assignments and quiz, TA arranges into small groups based on quiz summary data, discuss difficult concepts in groups, second lecture focuses on these difficult concepts
- Also use quiz tool to administer online midterm and final practice tests and structure reviews

**Assessment Plan for Statistics 10**

- Academic Achievement measures – comp of scores on common questions in mid-terms and final exams across sections (diff instructors) and from previous quarter (same instructor)
- Student motivation and satisfaction, and course delivery issues measured in surveys - halfway through course, end of course, also from dfw rates
- Interviews with instructors to assess initial readiness criteria, work involved in the transformation from web enhanced course to blended course, changes in satisfaction with teaching experience, expectations met

**Assessment Plan for Poli Sci 6R/50**

- Pilot Spring 04
- 62 students assigned to group (presentation mode) by sections. Sections matched based on mean and st dev of midterm scores.
- Lecture 1, June 1
  - Group 1: Face to Face
  - Online survey
  - All take content quiz in disc Section
- Lecture 2, June 8
  - Group 1: On-line
  - Online survey
  - All take content quiz in disc Section
Assessment Plan for Pol Sci 6/50

- Pilot study Spring 04 with 2/19 lectures
- Prof. Posner teaches two versions of each lecture (BICS, traditional) in same Quarter.
- BICS – fully online (media rich with learning activities), students can view when they wish
- Traditional – face-to-face, during scheduled class time
- Measures: Quizzes with L1 and L3 questions; online survey to assess student attitude, motivation, interest, technical issues; CMS user data; helpdesk logs, faculty interview, lectures recorded & attendance taken

Questions: Learning Outcomes

- Do students learn as much from the online lecture as they do from the face to face lecture?
- Is learning different via these two modes of presentation?
  - Active learning exercises may produce ‘deep learning’
  - Lecture two - student’s download data and analyze to generate knowledge
  - How do we measure ‘deep learning?’
    - Used Bloom’s hierarchy
      - L1 questions - factual knowledge
      - L3 questions - conceptual/application

Results: Learning Outcomes

- 3 X 2 Repeated Measures ANOVA
- With group (online, f, 2f, neither) as between subjects variable and,
- Bloom’s level (factual, conceptual) as within subjects variable
- Performed on quiz scores for lectures 1 and lecture 2
- N~42

Learning Outcomes

Main effect of Group
- For both lectures, ‘Online’ and ‘f-2-f’ groups did equally well (NSD), for lecture 1 both of these did significantly better than students who did not attend either online or f2f lecture (for lecture two we did not have a 3rd group that did not attend either lecture)
- Predicted interaction effect not found.
- F-2-F and online groups do equally well on both L1 and L3 questions.

The Student Experience

What do you think about this type of experience in comparison to a typical lecture format/experience?

I like the typical lecture format much more than the online format.

I like the online format much more than the typical format.

In the future, would you prefer to take classes that combine typical lecture and online lectures, or would you prefer the typical lecture-only structure?

Strongly prefer the typical lecture only format

Strongly prefer the new mixed format
Would you have liked this class to include fewer online lectures, the same number of online lectures or a greater number of online lectures?

- I would have preferred NO online lectures
- I would have preferred HALF of the lectures to be online.
- I would have preferred ALL online lectures.

**The Student Experience: Perceptions of Learning**

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I was better able to understand the concepts taught in the online lecture than I would have had I been exposed to them in a regular in-class lecture.</td>
<td>4.37 (1.45)</td>
</tr>
<tr>
<td>I was better able to visualize the concepts taught in the lecture than I would have had I been exposed to them in a regular in-class lecture.</td>
<td>4.60 (1.40)</td>
</tr>
<tr>
<td>I missed important information because I moved through the online lecture too quickly.</td>
<td>2.88 (1.42)</td>
</tr>
</tbody>
</table>

For all of the questions above 1 = strongly disagree, 7 = strongly agree.

**The Student Experience: Perceptions of Benefits**

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of scheduling</td>
<td>40</td>
</tr>
<tr>
<td>Self-paced exercises</td>
<td>38</td>
</tr>
<tr>
<td>Not having to come to class</td>
<td>37</td>
</tr>
<tr>
<td>Engaging multi-media presentation</td>
<td>31</td>
</tr>
<tr>
<td>More Learning</td>
<td>16</td>
</tr>
<tr>
<td>More exercises</td>
<td>17</td>
</tr>
<tr>
<td>Also: Indicate that ability to review lecture before data analysis class and before exams is a major benefit.</td>
<td></td>
</tr>
</tbody>
</table>

**The Student Experience: Use of Technology**

- 86% of students accessed the lectures from campus.
- 93% of students had NO prior experience with online lectures.

**The Student Experience: Use of Technology**

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel that my lack of experience with computers was a barrier to getting the most out of the online lecture.</td>
<td>1.79 (1.08)</td>
</tr>
<tr>
<td>I don’t have access to a computer that can use all the necessary applications to view the lectures online.</td>
<td>1.84 (1.11)</td>
</tr>
<tr>
<td>Because of the features of this online lecture, my connection to the Internet is too slow or unreliable.</td>
<td>2.19 (1.45)</td>
</tr>
</tbody>
</table>

For all of the questions above 1 = strongly disagree, 7 = strongly agree.

**The Student Experience: Difficulties**

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I had more difficulty paying attention to the online lecture than I ordinarily do in an in-class lecture.</td>
<td>3.72 (1.80)</td>
</tr>
</tbody>
</table>

For all of the questions above 1 = strongly disagree, 7 = strongly agree.

This attitude was also reflected in students’ open ended statements regarding “the three greatest barriers to your successful use of technology.”
Student Attitudes: Comparing lectures 1 and 2

<table>
<thead>
<tr>
<th>Question</th>
<th>Lecture 1 Mean (SD)</th>
<th>Lecture 2 Mean (SD)</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>The online activities for this lecture were stimulating.</td>
<td>5.40 (.82)</td>
<td>4.67 (1.19)</td>
<td>2.40</td>
<td>0.021</td>
</tr>
<tr>
<td>I had more difficulty paying attention to the online lecture than I ordinarily do in an in-class lecture.</td>
<td>3.12 (1.79)</td>
<td>4.56 (1.50)</td>
<td>-2.77</td>
<td>0.008</td>
</tr>
<tr>
<td>I found it more difficult to view the lecture on time in the online format.</td>
<td>2.96 (1.31)</td>
<td>4.06 (1.60)</td>
<td>-2.44</td>
<td>0.019</td>
</tr>
<tr>
<td>I don’t have access to a computer that can use all the necessary application to view the online lecture.</td>
<td>1.56 (.82)</td>
<td>2.22 (1.35)</td>
<td>-2.00</td>
<td>0.053</td>
</tr>
</tbody>
</table>

For all of the questions above 1 = strongly disagree, 7 = strongly agree.

The Student Experience: Communication

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The online lecture made me feel more isolated from the instructor.</td>
<td>4.4 (1.53)</td>
</tr>
<tr>
<td>While viewing this online lecture, I would have preferred to be able to discuss the lecture with other students online.</td>
<td>4.37 (1.16)</td>
</tr>
<tr>
<td>I missed the opportunity to ask questions during the course of the lecture.</td>
<td>4.09 (1.17)</td>
</tr>
<tr>
<td>Compared to the face-to-face lectures in this class, how frequently did you discuss the concepts taught in the online lecture with the following people: Posner, Zaller, TAs, students</td>
<td>All clustered around ‘same amount’</td>
</tr>
</tbody>
</table>

Lessons Learned

- NSD - Need more time for pedagogy
- Need to find ‘easy use’ technological solutions to providing interactivity
- Students lack experience with online lectures – may have unrealistic expectations – provide guidance early on (e.g., help sheet)

Technology Takeaways

- Faculty readiness (faculty perceptions may differ from the development team’s perceptions)
- Substantial cross fertilization across projects
- Non open source CMSs are a barrier to the adoption of new tools
- Good collaboration and common goals with divisions