All the World's a Laboratory: Inquiry-Based Learning Experiments in the First Year Seminar Research Lab

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What brings you here today?

1. Review the design and execution of a "Research Lab" pilot program aimed at one-shot instruction in First Year Seminar.

2. Weigh the benefits and costs of inquiry-based learning.

3. Swap and devise techniques for integrating collaborative inquiry-based learning in our teaching.
Established 1834
Liberal Arts
1600 students
11:1 student faculty ratio
Class size: 15-20
First Year Seminar
DESIGNING THE RESEARCH LAB
(SPRING 2014)
The library component of the First-Year Seminar introduces basic research skills that students need to become academically successful and information literate.

Students should learn to utilize Wheaton’s library both as a place, and as a gateway for information. They should become aware of the role of librarians as partners in learning. Of equal importance, students should understand how scholars communicate through publication in any media.

In collaboration with faculty, FYS librarians teach students to:

- Locate books in the HELIN catalog via author, title, or keyword;
- Use reference sources to narrow and refine topics and determine relevant keywords;
- Develop an awareness of the distinction between popular and scholarly sources, as both a question of intended audiences and as a technical question of differing tools and strategies for discovery;
- Use database search tools to broaden and narrow search results via limiters (sidebar/checkboxes) and the query itself (boolean operators);
- Find followup assistance (liaison contacts, on call hours, etc.).
- What is it that you wish to teach your students? Name one learning objective.
- What prior knowledge do the students bring and/or what is their academic level?
The idea of a lab appealed to me, as a place where researchers work both independently and collaboratively to solve problems, write reports, and share findings.

He loved his lab.
Consolidate FYS sessions by merging sections (2-3 sections per lab).

Stop lecturing. Collaborative learning around a research problem. Group reports and presentation.

Maintain FYS Library Component outcomes.

Use the standardized skill check (assessment).
Design phase

1. Adopted a methodology used by science teachers: Inquiry-based learning

2. Settled on a level of inquiry based on the academic level of First Year students: Structured inquiry


![Figure 1.](image)

<table>
<thead>
<tr>
<th>WANTED</th>
<th>ACHIEVED</th>
</tr>
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<tbody>
<tr>
<td>• The end of lecturing</td>
<td>✔️</td>
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<tr>
<td>• Collaborative inquiry-based learning</td>
<td>✔️</td>
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<tr>
<td>• Collaborative writing and presentation in Google Docs</td>
<td>✔️</td>
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<tr>
<td>• Use of standardized FYS skill check (assessment)</td>
<td>✔️</td>
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<tr>
<td>• Combined multiple sections of FYS</td>
<td>✔️</td>
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<tr>
<td>• Preference of faculty partners/scheduling logistics</td>
<td>✔️</td>
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<tr>
<td>• Large classroom spaces with modular furniture</td>
<td>✔️</td>
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<tr>
<td>• BYOD (bring your own device)</td>
<td>✔️</td>
</tr>
<tr>
<td>• Blended/flipped component</td>
<td>✔️</td>
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<tr>
<td>• Drop-ins/observations by other liaisons</td>
<td>✔️</td>
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• Based on students’ prior knowledge, what is an appropriate level of inquiry?
• Given the level of inquiry, what kind of task(s) will you assign? Will students work collaboratively or independently?
• Does your design require the use of specific technologies (e.g. Google Docs, blogs, pen and paper, iPad, smartphone, etc.)?
PILOTTING THE FYS RESEARCH LAB
(Fall 2014)
Inquiry-based learning: Benefits and costs

- John Dewey was a fan.
- Studies show that students learn best when they take an active, hands-on approach (Smart and Csapo, 2007).
- Direct instruction relies on rote memorization, which leaves nothing to cling to when we forget. No process or judgement develops.
- Classroom spaces need to be set-up for group work.
- Instructor needs to rethink his/her role and physical presence in the classroom.
- Planning for inquiry-based learning is a ton of work.
- Student engagement can suffer without management and intervention.
- Direct instruction can be best for new skills (Robertson, 2007).
- The results of inquiry-based work can be messy. Direct instruction is the most organized, predictable way to teach and learn.
FACULTY FEEDBACK

Overwhelmingly positive:

- Best library session ever.
- No pedagogical advantage to merging FYS sections.
- Combining FYS was a genius move.
- Some students felt awkward working in groups. Maybe do an ice breaker.
- Inquiry-based learning is the best (highest impact) strategy.

STUDENT ASSESSMENT

Quantitative results are unknown:

- Separating pilot data from all data would not be possible.
- Student performance in the library catalog fell a few points, but it was an overall trend. We found a flaw in our new discovery system.
- Qualitative results are waiting for me in the form of "lab reports." I will spend time this summer analyzing them.
• Where will you teach (e.g. online, library classroom, active learning space, blended learning environment)?

• Can you identify at least one benefit and one cost to your inquiry-based activity?
MINI INQUIRY ACTIVITY

(YOU!)
References


