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Creating an Interdisciplinary Collection of Learning Objects to Address Basic Skills

By Adena Rottenstein, July 2011
The Challenge

- Undergraduate students enter the University with different levels of academic training

- Success in undergraduate education demands a solid foundation in a variety of basic academic skills

Examples:
- Writing skills
- Working in Groups
- Classroom Presentations
- Study skills

- How can we work towards leveling the playing field?
The Solution

- Players: “Michigan Education through Learning Objects” (MELO)
  - Faculty, Staff, & Graduate Students from gateway courses
  - Interdisciplinary (Statistics, Chemistry, Romance Languages, etc.)

- Resource: Online learning materials, or Learning Objects (LOs) accessed through MERLOT.org

- Outcome: Create an interdisciplinary collection of LOs that address basic skills
Discussion Break!

- Break up into groups by discipline
- Work together to come up with 3 basic/foundational academic skills that
  - Are critical for academic success
  - Students commonly lack
  - Apply across various disciplines
<table>
<thead>
<tr>
<th><strong>Math Skills</strong></th>
<th><strong>Study Skills</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fractions, Basic Algebra, Precalculus</td>
<td>• How to read &amp; take notes on a chapter</td>
</tr>
<tr>
<td>• General Statistics concepts</td>
<td>• Exam Preparation</td>
</tr>
<tr>
<td>• Graphing, Interpreting Graphs</td>
<td>• Communication &amp; Group Work</td>
</tr>
<tr>
<td>• Representing data in various forms</td>
<td>• Group dynamics</td>
</tr>
<tr>
<td></td>
<td>• Communication within groups</td>
</tr>
<tr>
<td><strong>Scientific Method</strong></td>
<td><strong>Problem Solving Strategies</strong></td>
</tr>
<tr>
<td>• Understanding a scientific experiment</td>
<td>• Critical Thinking</td>
</tr>
<tr>
<td>• Using different research methods</td>
<td>• Systematic Problem Solving</td>
</tr>
<tr>
<td><strong>Writing Skills</strong></td>
<td><strong>Presentation Skills</strong></td>
</tr>
<tr>
<td>• Complete structured sentences, etc.</td>
<td>• Creating an effective presentation</td>
</tr>
<tr>
<td>• Writing a group report</td>
<td>• Delivering an effective presentation</td>
</tr>
<tr>
<td>• References</td>
<td>• PowerPoint Skills</td>
</tr>
<tr>
<td>• In-text Citations</td>
<td></td>
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</tbody>
</table>
The Process II
Searching & Posting

- Search (independently) for LOs to address the areas of greatest need
- Create a group website for posting search results and composing LO commentary
- Submit individual LO findings to website with commentary
The Process III
Selecting

- Collaborate in Selection
  1. Review preliminary collection
  2. Establish inter-rater reliability with reviewer scorings
  3. Select best LOs for the final collection

- Which LOs were selected for the final collection?
  - 4.25 star rated LOs and above
  - Overlapping LOs (found & posted by multiple reviewers)
  - LOs applicable to at least three academic disciplines
The Outcome
An Interdisciplinary Collection of LOs to Address Basic Skills

- 17 LOs
- 6 Categories
  - Mathematics
  - Sciences
  - Technology
  - Writing
  - Interactive
  - General

The Cross-Discipline Collection

<table>
<thead>
<tr>
<th>Title of LO</th>
<th>Category</th>
<th>Topic or Skill Targeted</th>
<th>LO web address</th>
<th>Show</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study Guides and Strategies</td>
<td>General</td>
<td>A guide to a wide variety of study skills. Basic study skills, time management, and problem solving.</td>
<td><a href="http://www.studygs.net/">http://www.studygs.net/</a></td>
<td></td>
</tr>
<tr>
<td>Statistics Every Writer Should Know</td>
<td>Mathematics</td>
<td>A guide to very basic statistics</td>
<td><a href="http://www.robertniles.com/stats/">http://www.robertniles.com/stats/</a></td>
<td></td>
</tr>
<tr>
<td>Graphing the line $y = mx + b$</td>
<td>Mathematics</td>
<td>A tool for graphing a linear function</td>
<td><a href="http://www.ltconline.net/greenl/Java/BasicAlgebra/LineGraph/LineGraph.htm">http://www.ltconline.net/greenl/Java/BasicAlgebra/LineGraph/LineGraph.htm</a></td>
<td></td>
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</tbody>
</table>
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What People Say:

“Was stumbling the web until I found a very magnificent web site...”
Pros/Cons of X-Disc Project

Strengths

- Allowed for inter-departmental collaboration
- Found strong inter-rater reliability for evaluating LO usefulness
- Created a resource for faculty/GSIs

Weaknesses

- Deployment
  - Were people aware of the resource?
  - Did they have easy access to the resource?
- Evaluation
  - Did people find the resource useful?
  - Was there a mechanism for providing feedback or evaluating usefulness?
In the Future...

- Create a new interdisciplinary collection
- Build on strengths from previous collections
  - E.g. peer-review
- Address weaknesses from previous collections
  - E.g. create better deployment & evaluation mechanisms
Next Steps

■ As you work on your discipline-specific collections, keep an eye out for resources that you feel may be useful across disciplines

■ Brainstorm ideas for how this created resource could best be used by the people in your discipline

■ Buy Adena beer and/or chocolate
Thank You!
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