A Hands-on Workshop on Evaluating Teaching Enhancement Projects

Francis Jones, Ido Roll, Andrea Han, Gulnur Birol

Workshop objectives

You will move towards a practical evaluation plan by ...

• Using a framework to bring focus to your project evaluation.
• Articulating questions, indicators and techniques that address the focus (foci) of your project evaluations.
• Begin next steps – i.e. consider timelines, challenges, opportunities & milestones.

Outline

1. Introduction – why / what
2. Your projects & evaluation focus areas (with an example)
3. Worksheet 1: “focus, questions & indicators”
   -- Solo + share then facilitated sharing with all participants.
4. Evaluation techniques or methods (six types)
5. Worksheet 2: “Techniques, opportunities & challenges”
6. Considerations and next steps
   -- Worksheet 3: opportunities, timelines, milestones, considerations
   -- Importance of (a) focus, (b) audience, (c) variety of data & techniques
   -- Likelihood of iteration

We will transcribe / copy all work and return to everyone.

1. Why should we care?

• All innovation or research is iterative.
• Iterative implies feedback ... implies data for decision making.
• When to worry about evaluation?
   -- As part of project design and management ....
   -- Difference between fishing versus targeted effort.
Purposes of evaluation

- Part of a project design & management framework.
- Accountability.
  - What worked?
  - Were project objectives met?
  - Demonstrated ‘success’ leads to further success.
- Improvement.
  - How can we improve?
  - Why did efforts work or not work?
- Research.
  - What is new about it?
  - What is worth disseminating?

Basically “articulating” the mental checking that is probably going on all the time as you work on a project.

Audience – the stake holders:

- Formative (supports improvement)
  - Self – formative evaluation – improvement
- Summative (accountability & dissemination)
  - Funding sources
  - Institutional interests
  - Dissemination (maybe a different level rigor)
  - Peers – colleagues – contributors
  - Students? Maybe, especially to show changes due to student input.

The “stories” or evidence may be similar for these

Context: frameworks for a whole project

- Projects need planning → managing → evaluating.
- One framework is Kellogg Foundation’s Logic Model.
- Faculty Arts has useful derivative models.
- We will focus on evaluation, but constructs can be traced back to prior steps in these models.

Evaluation framework (i.e. workshop outline)

1. Step 1: focus on project goals
   - What questions will evaluation answer?
   - What are indicators of progress?
2. Step 2: identify evaluation techniques for questions & indicators.
3. Step 3: consider opportunities, timelines, milestones, challenges.
Step 1. What are your “focus areas”?  

- Facilitated discussion of  
  - Your project goals  
  - Focus areas (and “indicators” or “data”)  
- Take a moment;  
  - jot down one or two project goals  
  ... How vague? ... How precise?  
  
(Iteration will be expected!)

Example

- Improve learning  
  - Improve learning in tutorials  
    - Improve learning in tutorials by training TAs  
    - Improve learning in tutorials by increasing interactions between learners and TAs

Potential Questions and Indicators

- Do students do better in tutorials, as indicated by  
  - performance on tutorial problems  
- Are tutorials more interactive, as indicated by  
  - Number of interactions in tutorial  
  - Students’ perception of interaction  
- Do students find tutorials more helpful, as indicated by  
  - students’ perceptions  
  - Attendance

Outline

1. Introduction – why / what
2. Your projects & evaluation focus areas (with an example)
3. Worksheet 1: “focus, questions & indicators”  
   - Solo + share then facilitated sharing with all participants.
4. Evaluation techniques or methods (six types)
5. Worksheet 2: “Techniques, opportunities & challenges”
6. Considerations and next steps  
   - Worksheet 3: Opportunities, timelines, milestones, considerations  
   - Importance of (a) focus, (b) audience, (c) variety of data & techniques  
   - Likelihood of iteration

We will transcribe / copy all work and return to everyone.
3. Evaluation Planning Worksheet 1 of 3

- On your own ...
- Share at your table
- Share with whole group (facilitated)

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>Question</th>
<th>Indicator</th>
<th>Technique</th>
<th>Opportunities</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Are tutorials more interactive following TA training?</td>
<td></td>
<td>No. of interactions in tutorial</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quality of interactions</td>
<td></td>
<td>Quality of interactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Do students find tutorials more helpful?</td>
<td></td>
<td>Attendance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Perceptions towards tutorials and/or interactivity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Evaluation techniques

A. Interviews
B. Observations
C. Surveys
D. Diagnostics
E. Data mining
F. Experiments

4. Evaluation techniques

A. Interviews (direct or indirect)

- Semi-structured interviews with students can contribute to in-depth understanding of students' thinking habits and learning.
- Give more detailed understanding, but only for a small subset of the students.

- Examples:
B. Observations (indirect)

- Observing behaviours of students and instructors in the classroom can give a detailed, quantified, understanding of learning processes in the class.
- These often include observation protocols that are adapted to the specific context.
- Examples:
  - Observing TA behaviours and student engagement in physics labs found that students are more engaged when TAs initiate more interactions.
  - The COPUS tool is used to evaluate how interactive a lecture is.

C. Surveys (perceptions ... )

- An instrument that asks students to report their attitudes, motivations, or strategies.
- Very useful to compare groups of students within section or across sections, courses, and universities.
- A large collection of validated surveys.
- Examples:
  - Increased exposure to scientific writing improves the quality of students’ writing.

D. Diagnostics (hard / quantitative)

- These are well-crafted and often validated assessments that evaluate knowledge with regard to specific learning goals.
- Given across years and institutions. Students are not being graded.
- Often used in quasi-experiments to compare across sections, years.
- Examples:
  - One section had jigsaw group work; the other did not. Huge effects in favour of jigsaw.
  - How is students’ demographic and educational diversity related to their conceptual learning in introductory university physics? Gender matters, language does not, at UBC.
    Antimirova, T., Noack, A., MilnerUBolotin, M. (2009) [7].

E. Data Mining (quantitative / qualitative)

- A retrospective analysis of existing data that allows us to associate different factors in a given course.
- Examples:
  - Correlating incoming attitudes to students’ eventual choice of majors was used to evaluate who will become a science major.
F. Experiments (depends on experiment)

- These are experiments in which students within the same section are randomly assigned to a treatment group. These studies are harder to conduct.
- Examples:
  - Following an exam, students redid sections of the exam in groups. Performance on subsequent assessment improved following the group exam. Gilley, B. H., Clarkston, B. (2014). [9].

Balance in the evidence being gathered

- Evidence vs. perceptions
- Quantitative vs. qualitative
- Research, evaluation, and/or accountability
- Consider how you would answer this question as if it came from each relevant stake holder:
  “how do we know your project was a success?”

Outline

1. Introduction – why / what
2. Your projects & evaluation focus areas (with an example)
3. Worksheet 1: “focus, questions & indicators”
   - Solo + share then facilitated sharing with all participants.
4. Evaluation techniques or methods (six types)
5. Worksheet 2: “Techniques, opportunities & challenges”
6. Considerations and next steps
   - Worksheet 3: opportunities, timelines, milestones, considerations
   - Importance of (a) focus, (b) audience, (c) variety of data & techniques
   - Likelihood of iteration

We will transcribe / copy all work and return to everyone.

5. Worksheet 2 of 3; techniques

- Align techniques, opportunities & challenges with indicators.
- Solo, share at table, share with all (facilitated)
### Techniques, challenges, and milestones

**Focus Area:**

<table>
<thead>
<tr>
<th>Question</th>
<th>Indicator</th>
<th>Technique</th>
<th>Opportunities</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are tutorials more interactive following TA training?</td>
<td>No. of interactions in tutorial</td>
<td>Observations</td>
<td>An existing observation protocol</td>
<td>What control condition? Who will do observations? Will observations affect behaviour? Who to observe? Who to interview? (potential biases)?</td>
</tr>
<tr>
<td>Quality of interactions</td>
<td>Interviews</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do students find tutorials more helpful?</td>
<td>Attendance</td>
<td>Evaluate attendance in sections with TAs before and after training</td>
<td>Tutorials already use clickers. Could be used to obtain data. Collaboration with instructors teaching other courses with tutorials to compare perceptions and/or expectations</td>
<td>What about other factors that affect attendance, such as day, time, and proximity to finals Incorporate survey into course work to reduce extra student work How to define “helpful”?</td>
</tr>
<tr>
<td>Perceptions towards tutorials and/or interactivity</td>
<td>Survey</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 6. Next steps

**Use workshop results to:**
- Identify timing constraints
- Establish a timeline with milestones
- Remember to consider
  - Focus of the project.
  - Audience for evaluation outcomes.
  - Variety of data & techniques.
- **Iterate.** Planning, execution and evaluation are rarely linear, especially in academic settings.

### Evaluation is iterative!

1. **Project definition**
2. **Articulate & disseminate**
3. **Logic model clarifies goals & outcomes**
4. **Collect evidence**
5. **Evaluation plan**
6. **Evaluation tools**

### 6. Worksheet 3 of 3; details

**Components of a running an evaluation project**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Instrument</th>
<th>Respondents (eg, sample populations)</th>
<th>Data Analysis Plan</th>
<th>Responsibility (who is in charge of this part)</th>
<th>Timeline</th>
</tr>
</thead>
</table>
Questions, comments, discussions

• Questions?
• Concerns?
• Priorities?
• Feedback forms ...
• Other comments ... ?

Thanks to everyone who helped!

References and resources

Interviews

Surveys

Diagnostics

Experiments

Other Resources
1. Kirkpatrick logic model
2. Andrea’s check list?
3. There are of course many, and an online collection is being developed.