1. Background, objectives & accomplishments

**Premise:** Most UBC improvement projects target face-to-face (F2F) teaching and learning. But – flexibility for students and efficiency of delivery demands increasing use of distance education.

**Questions:**
- Can face-to-face learning activities be adapted for DE courses?
- Can F2F courses benefit from DE strategies?

**Our answer:** Yes – with some caveats. "How people learn" does not change, but each delivery medium imposes distinct opportunities and constraints.

2. High-resolution interactive images of samples, with videos of handling to see scale and rock context.

3. Online sketching app, simple, save to .png, ensures consistency of student product for assessment and sharing or discussing.

4. Example outcomes

**Online behaviors**

**Student Learning Experiences Survey in eosc326**

**Workload:** depends on season; steadily "less" work

**Enthusiasm:** roughly unchanged.

**Feedback from students**

**Student Learning Experiences Survey in eosc326**

**Workload:** - depends on season; - steadily "less" work

**Enthusiasm:** - roughly unchanged.

**Two opinion questions about benefits of discussion boards:**
- Both improved significantly after introducing small groups.

**Activity (interaction) increases. Mainly in structured discussions.**

**4.1 Adapting F2F ➔ DE: lessons learned**

**General**
- Enthusiastic participating instructors are the key to success. In DE, that often means sessionals.
- **Learning goals** need to drive all innovation. Design cycle is slower/more meticulous in DE.
- Non-standard resources are challenging to sustain.
- Getting and using analytics is an unsolved problem.
- DE instructors need "more" support/doc'n than F2F.

**Student - Content**
- LMS constrains innovation but supports familiarity.
- **Technology** is a moving target (eg security of browser).
- **Student buy-in requires:** - iterative introduction; - repeated use. Don't try one-offs, authentic tasks.

**Student - Instructor**
- Scaling up needs simple student products and rubrics.
- **Sketching** as alternative to writing to "see" thinking.
- Streamlined the feedback process for TAs.
- Give help and feedback via open discussions.
Interactive resources:

- Interactive specimens (326, 118)
- Interactive content (116, 326)
- Sketching (326, 118)
- Visible geology (326, 110)
- Google earth (PME – targeting 118)
- External resources (DB, reading, video, VG, etc)

- Wkshs + Connect quiz.
- Enhanced Connect questioning.

Helpfulness, on a scale of 1-4.

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean DE1</th>
<th>Mean DE2</th>
<th>P vs Watch 2-tailed t-test</th>
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</thead>
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<tr>
<td>q12</td>
<td>1.98</td>
<td>2.22</td>
<td>0.029 *</td>
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<tr>
<td>q15</td>
<td>2.55</td>
<td>2.89</td>
<td>0.004 **</td>
</tr>
</tbody>
</table>

DE1 = 3 terms before Jan 2015; DE2 = 3 terms after Jan 2015

Student - Content: the "easiest" enhancement in DE.
- LMS constrains innovation but supports familiarity
- Technology (e.g. security of browsers) is a moving target
- Student buy-in requires:
  - iterative introduction
  - repeated use. Don't try one-offs.
  - authentic tasks

“Low-tech” solutions:
- Worksheets followed by “quiz-based” data entry
- Questions OTHER than multiple choice
- “Blooming” questions enhances auto-graded tasks

“Solo motivation” is harder than “social motivation”
- Group work benefits from sequenced solo-group tasks
- Scaffold the discussion cycle.
- Groups of ~8 seem better than ~4
- Uniformity of product focuses discussion on thinking.

Feedback (Student - Instructor)
- Constant vigilance – both TAs and instructors.
- Use ‘products’ with assessments that are scalable.
- Rubrics.

Evaluating improvements (in DE settings)
- Connect reports and item analysis.
- Sketches easier than writing
- Bloomng question sets works but is challenging
- Documentation for instructor transfer is important.

Challenges:
- It takes 2-3 iterations to “stabilize” new strategies.
- Connect ‘reports’ and ‘analytics’ are arcane!
- Results depend on the term (winter, summer, fall).
- Add more feedback into auto-grading resources.
- How to do non-quiz-like auto feedback at UBC?!!

Add more pre-tests, mid-task feedback & “why we do this”
- Browser “security” is a moving target – requires support.
- How to store & maintain resources outside Connect?

Interactive resources (Student - Content):
- Worksheets followed by Connect ‘quiz’ as data entry.
- Deploy “first time” ideas as optional before required.
- Use strategies more than once in a course.
- Coordinating small groups takes practice.
- Solo deliverable first (worksheet, ‘quiz’, sketch, etc.)
- Scaffold the discussion cycle.
- Use ‘products’ with assessments that are scalable.
- Rubrics.”

Interactive resources (Student - Instructor):
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Student - Instructor:
- Scaling requires economy of product.
- Sketching as alternative to writing to “see” thinking.
- Streamlined TA feedback.

General:
- Video documentation for students AND instructors.
- Non-standard resources are a sustainability challenge.
- Design cycle is slower in DE because it’s asynchronous.
- Getting and using analytics is an unsolved problem.
- Learning goals should drive all innovation.