UBC’s ComPAIR Project
Studying the student experience as part of the development of a new teaching technology
Presenters

James Charbonneau (Instructor, UBC Department of Physics and Astronomy)

Letitia Englund (UX/UI Analyst, Centre for Teaching, Learning & Technology)

Pan Luo (Senior Programmer Analyst, Centre for Teaching, Learning & Technology)

Tiffany Potter (Associate Head, Curriculum, UBC Department of English)
ComPAIR

What we’ll cover today:

• How is ComPAIR used?
• How did we make it?
• How did we assess it?
• How does it work (hands-on demo)?
• How can you get it?
• Q&A
ComPAIR

How is it used?
ComPAIR

How is it used?

As a teaching and learning tool, not (yet) as an assessment tool
ComPAIR…

uses the principle of comparative judgement: even novices who do not yet have the disciplinary knowledge to offer confident assessment are able to discern which of two answers is “better.”
How would you describe this figure?
Comparisons give a reference point for learning

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
<tr>
<td>G</td>
<td>H</td>
<td>I</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A</th>
<th>D</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>E</td>
<td>H</td>
</tr>
<tr>
<td>C</td>
<td>F</td>
<td>I</td>
</tr>
</tbody>
</table>
Step 1: answer a question

Answer

Please note answers are not automatically saved as you type. However, you may manually save a draft of your answer below.

Practice critical premise on Shakespeare

Imagining that you are writing a 1000-word essay, draft a critical premise for the following question:

Discuss the significance of Shakespeare's representation of the relationship between innate human nature and the forces of culture in The Tempest. Your answer should not exceed 50 words.

Be sure to confirm that your answer includes both parts of an effective critical premise: a clearly-articulated critical observation and a sense of why that observation is significant (what does it help us to see/understand that we did not recognize before?--aka the "so what"?)

Attachment (maximum size 25MB)

Tip: Allowed file types include PDFs, MP3s, MP4s, JPGs, and PNGs. Try downloading Acrobat Reader or using Firefox or Chrome if you have problems uploading PDFs.

Choose Files  No file chosen
Step 2: compare and rank pairs

1) Choose the answer that best meets the criteria below

- Which is more interesting?

Select the premise you find more interesting. Which do you think presents a more intriguing idea to form a paper around?

- Which is better written?

Regardless of level or interest or creativity, choose which premise is more structurally sound, based on the principles we've been covering in class.
Step 3: write feedback

2) Give detailed feedback to the author of each answer

Use any instructor-provided guidelines or answer general questions, based on the criteria above: What did the author do well? Where might the author improve? Remember to make your comments—including criticisms—encouraging, respectful, and specific.
Step 4: that’s up to you...

*students complete a self-assessment or revision of their own answer in the app

*answers and feedback are assessed by teacher or TA (consider having both equally weighted in assessment)

*use the ComPAIR answers as a foundation for a followup group practice applying the skill to a new, more challenging question
Sample structure...

Communicating with students on ComPAIR as a one-week assignment arc, with defined windows for answering and comparing
How did we make it?

Participatory Design Process (2013-2016)

- All team meetings included:
  - English, Math, Physics faculty members
  - Developers, Programmers & HCI Experts
  - Research & Evaluation

- Students were involved in early development:
  - Pre-pilot using skeleton working version
  - Live feedback and updates during, structured survey afterward
How did we make it?

Diagram showing two options A and B with comments and flags, followed by a submit button.
How did we make it?


- Students invited to test prototype with mock assignments
- Booth set up in high-traffic area on campus
- Students self-select to test for 10-15 minutes (with sugar-based reward!)
- Results showed places to improve: user interface, basic assignment workflow
How did we assess it?

Official Pilot Evaluation (2015-2016)

For 3 courses (English, Math, Physics) using beta ComPAIR in real courses...

• **Usability**: How could ComPAIR and its implementation in courses be optimized?

• **Usefulness**: Did ComPAIR assignments support effective teaching and learning (according to people using it IRL)?
How did we assess it?

Data Collection Methods

At the end of term, we conducted...

• **Surveys**: 168 students and 6 TAs responded in separate surveys

• **Focus Groups**: 4 students and 5 TAs participated in separate sessions

• **1:1 Interviews**: All 3 instructors participated
How did we assess it?

What We Learned - Students & Usability

- **Ease of Use (English)**
  - Initially: 80% high, 13% neutral, 7% low
  - Later: 95% high, 8% neutral, 3% low

- **Ease of Use (Math)**
  - Initially: 58% high, 20% neutral, 22% low
  - Later: 70% high, 19% neutral, 11% low

- **Ease of Use (Physics)**
  - Initially: 69% high, 25% neutral, 6% low
  - Later: 100% high, 0% neutral, 0% low
How did we assess it?

What We Learned - Students & Usefulness

**My ability to... has benefited (English)**
- Evaluate peer answers: 51% high, 12% low
- Evaluate my own answer: 52% high, 16% low
- Do a similar assignment: 59% high, 11% low
- Give future peer feedback: 56% high, 8% low
- Start related assignment: 33% high, 25% low

**My ability to... has benefited (Math)**
- Evaluate peer answers: 38% high, 19% low
- Evaluate my own answer: 43% high, 26% low
- Do a similar assignment: 48% high, 25% low
- Give future peer feedback: 37% high, 28% low
- Start related assignment: 41% high, 31% low

**My ability to... has benefited (Physics)**
- Evaluate peer answers: 57% high
- Evaluate my own answer: 94% high
- Do a similar assignment: 38% high
- Give future peer feedback: 75% high
- Start related assignment: 81% high
How did we assess it?

What We Learned - Students & Both

![Bar chart for Overall Perceptions (English)]

![Bar chart for Overall Perceptions (Math)]

![Bar chart for Overall Perceptions (Physics)]
How did we assess it?

What We Learned - Student Experience

• Math course provided valuable contrast
• Looking at the context of the assignments (introduction, design, integration) as reported by instructors/TAs, helped identify:
  • What made English/Physics experience more satisfactory for students?
  • What made Math less satisfactory?
How did we assess it?

What We Learned - Student Experience

• Context + student comments revealed…
  • **Introduction**: Students needed to understand what course skill ComPAIR helped them develop
  • **Design**: Students liked more guidance (criteria, rubrics) for comparing and writing feedback
  • **Integration**: Students saw more value in ComPAIR when it played a clear role in something concrete within the course
How did we assess it?

Examples of What Student Input Changed

• Ways to improve peer feedback:
  • **User interface:** change *where* feedback happens
  • **Grading:** assess *both* answer and feedback

• Ways to improve confidence:
  • Show ranking for only top few answers
  • Keep peer feedback confidential

• **Focus of ComPAIR itself on comparisons as learning tool vs. peer-based assessments**
How does it work?

1. Go to: compairdemo.ctlt.ubc.ca

2. Next to “Create account”, click the student link to set up a demo account (see image at right).

3. Select “ComPAIR Demo Course” on the home page.

4. Click “Answer” next to the “What is the best film of all time?” assignment.
How does it work?

5. Click “Compare Answers” for the “What is the best film of all time?” assignment.

6. Complete 3 comparisons.
How can you get it?

• ComPAIR is available to everyone as an open-source project under GPL v3 licence
• ComPAIR demo instance is available at: compairdemo.ctlt.ubc.ca
  • Reset every night!
• Options to deploy your own instances:
  • Docker
  • Kubernetes
  • AWS
  • General Linux Server Installation
Questions?

• ComPAIR website: ubc.github.io/compair
• ComPAIR code: github.com/ubc/compair
• Stay tuned for our article in *Teaching and Learning Inquiry* this year…

Thank you for coming today!

The ComPAIR project was supported by a grant from the UBC Teaching and Learning Enhancement Fund and with support in kind from the UBC Center for Teaching, Learning and Technology (CTLT). We would like to thank our contributors: Simon Bates, Professor of Teaching in Physics and Academic Director of CTLT; Marianne Schroeder, Associate Director, Teaching and Learning Technologies at CTLT; John Hsu and Michael Tang, Programmer Analysts at CTLT; Philip Lee and Kolja Schwenghagen, co-op students at CTLT; Dallas Hunt, Garth McClure, Morag McGreevey, and Michael Taylor, Teaching Assistants for the pilot section of ENGL 110.