

The Math ~~Exam~~ Educational Resources Wiki

BC Open Open Ed Chats

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Outline

- ▶ Welcome and brief history.
- ▶ Recent updates.
- ▶ Current ideas and issues.
- ▶ Possible future directions of the MER wiki.

Items to ponder during the short demos

- ▶ Is this work sustainable? How can we make it so?
- ▶ How one can use this resource in class/for instructors?
- ▶ How do we best align this resource with our teaching goals?

Brief history of the MER wiki

- ▶ Math Department makes previous exams publically available.
- ▶ Entirely student initiated and run, this project started [20 Feb 2012](#). Now, it has become [this!](#)
- ▶ Goal: improve quality of content, system of content delivery.
- ▶ Wiki format allows flat hierarchy, is easy for new contributors, great to work collaboratively and is intuitive to use.

How far did we get in two years?

- ▶ 39 complete exams, 954 fully written solutions with hints (and counting!) by about 35 contributors.

Student feedback

Do students use it? Oh yes, they do!

- ▶ “I just wanted to express my sincere gratitude for the resources you have provided us! This first year course has certainly been a challenge for many of us, and your help really means a lot to us. Indeed, creating this resource must be a crystal of hard work, effort and time, that your team have contributed, for the sake of others.”
- ▶ “I used the tagging system and found it to be very helpful as I could find similar types of questions that I had a difficult time with quickly (sort of like using an index in a textbook).”
- ▶ “The tagging system was GREAT! It's funny because I remember seeing those tags for some topics but not the one I was looking for, so I was frustrated. Then the next day it was there! That was cool.”

What happened recently?

- ▶ Additional insight on usage and exam design from [the rating bar](#). We can now start to rate by [difficulty](#).
- ▶ Improve the [tagging system](#) and connect it to the [course syllabus](#). Display syllabus on [exam course page](#).
- ▶ Embed and remix wiki content on [wordpress](#) and [connect](#).
- ▶ Grant applications to [Teaching and Learning Enhancement Fund](#) and [Innovative Dissemination of Research Award](#).

Research on worked-examples

Question: Is this useful for students or harmful?

- ▶ For the sake of this presentation, let's assume that our goal is to aid students on achieving a high score on their examinations.
- ▶ Research suggests that
 1. Students who see worked examples and conventional problems versus only seeing conventional problems do better on test questions containing similar problems (Sweller-Cooper '85), (Cooper-Sweller '87), (Paas-Van Merriënboer '94).
 2. Students also spend less time on worked examples than on conventional problems (S-C '85), (C-S '87), (P-V M '94).

Research on worked-examples

3. Students who are in the worked example group also can perform better and spend less time on transfer problems (that is, examples not identical to the practice ones) provided the variance in difficulty is not too large (C-S '87), (P-V M '94).
4. Strong students are not effected by the type of practice so long as they spend “enough time” on task. Weak students however perform much better on tests provided they have spent enough time on worked examples (C-S '87).

Research on worked-examples

5. When normalized for time, students perform substantially better and are faster on transfer problems than a conventional problem group (C-S '87).
6. Students seeing worked examples on problems of large variability will in general perform better on transfer tests (P-V M '94).

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Summary: Students need to develop schemata for organizing problems which can be facilitated by worked examples.

Where do we want to take this?

MER wiki's vision:

- ▶ Make this the best resource possible for undergraduate students at UBC.
- ▶ Be role model for similar initiatives.

Possible future directions

- ▶ Add non-exam questions and “fill in the details” solutions.
- ▶ Add more features, eg. reasonable marking scheme.
- ▶ Tie to other open education resources.
- ▶ Course integration: Invite students to contribute. Eg. explain a concept and post on tag pages.
- ▶ Make an instructor's life easier.
- ▶ Become sustainable.