The Effect of Using Online Homework Exercises on Student Achievement in a Quantitative Methods Course

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Plan of the Presentation

- The Context
- The Problem
- The Research Questions
- The Methodology
- Results and Discussion
- Questions
The Context

- Quantitative Methods (QM) is a compulsory course in the Social Science program in CEGEP.
- Many QM instructors assign a number of homework exercises.
- Exercises that provide feedback have a large and positive effect on student learning.
- Feedback is also important for student motivation.
The Problem

- Traditional written exercises have two disadvantages:
  - The feedback process is often very slow.
  - Written exercises can generate a large amount of correcting.

- Online homework systems address both these problems

WebWorK: [http://gauss.vaniercollege.qc.ca/webwork2/QMbelanger/]
The Research Questions

How do WeBWorK exercises affect the student learning process and outcomes?

- Will students who do WeBWorK exercises get significantly higher grades than students who do written exercises?

- Will students who complete more of the WeBWorK exercises get significantly higher grades than students who complete fewer of the WeBWorK exercises?

- What are students’ perceptions/opinions regarding the WeBWorK and written exercises?
The Methodology

- Quasi-experiment
- Crossover design schedule
- Convenience sample of two sections taught by the researcher
- Matched-pairs and independent samples
- A survey to collect data about students’ perceptions and opinions of both the WeBWorK and written exercises
Results

- t-tests showed no statistically significant difference in grades between students who did the WeBWorK exercises and students who did the written exercises.

- There was a moderate positive correlation between the number of exercises done and grades.

- Students found the written exercises more helpful but preferred the WeBWorK exercises.
Discussion

- The tests were always written, not done online.

- WeBWorK only told the students whether their answer was right or wrong.

- The immediate feedback from WeBWorK was more satisfying, but the more detailed feedback on the written exercises was more helpful.
Further Study

- Add the hints and suggestions to the WeBWorK problems.

- WeBWorK may be more beneficial than written exercises to some students, but not to all.

- Ask students to explain why they found one type of exercise better than the other.


Thank you!