



Blended learning mathematics

Experiences redesign 1st year math programme

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Target innovation project

Innovate the math education to all TU Delft 1st year students in the academic year 2016/2017

Efficiency

Didactics

Study
success

Transfer

Pilot projects in 2015/2016

Every quarter of the academic year 1 pilot:

Calculus 1 (Civil Engineering)

Calculus 2 (Civil Engineering)

Probability & Statistics
(Electrical Engineering)

Linear Algebra
(Aerospace Engineering)



Course design



Active



Context



Feedback

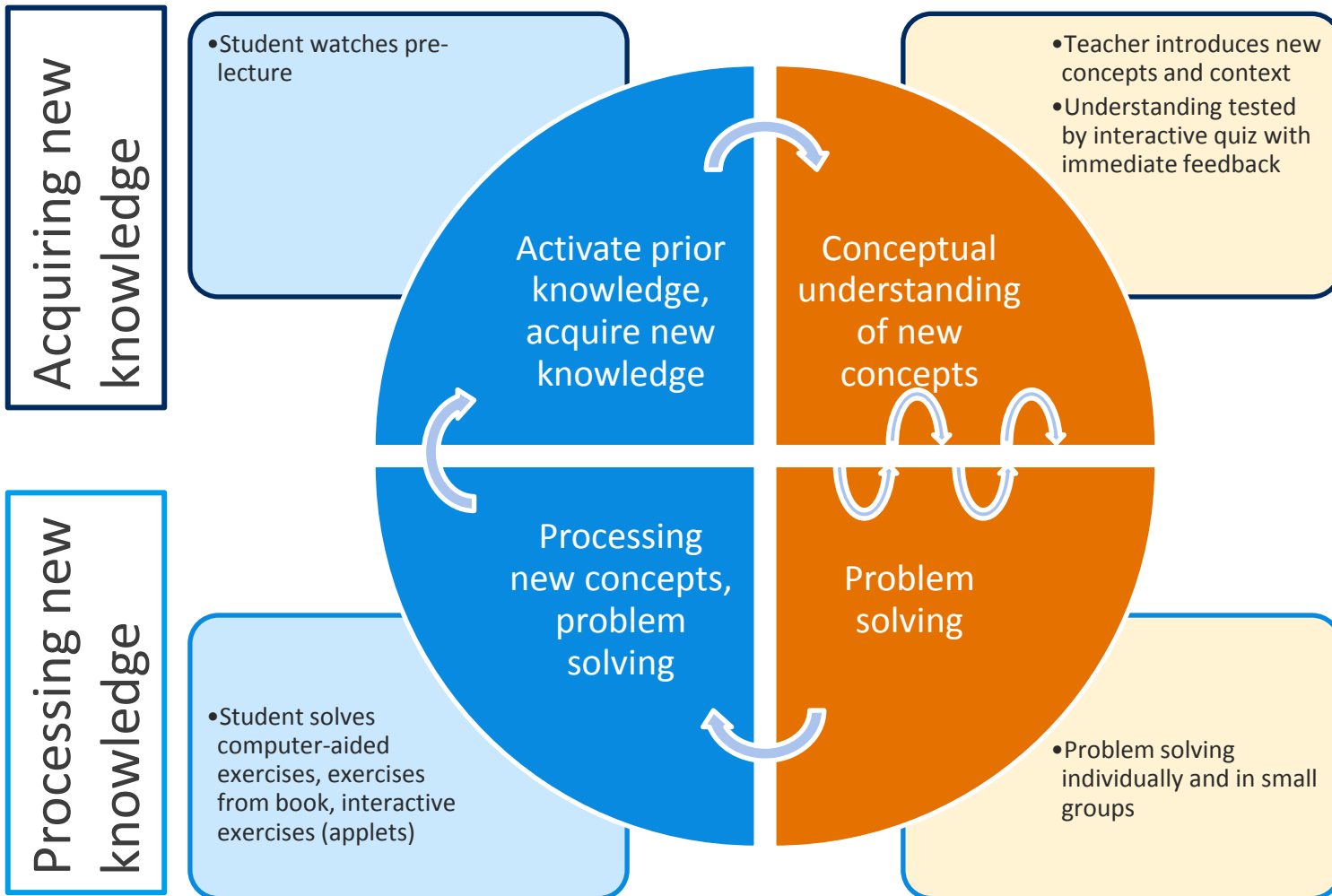


Conceptual understanding

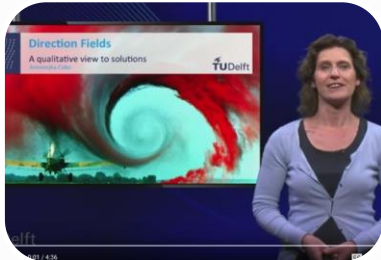
Blended learning cycle

Self study student

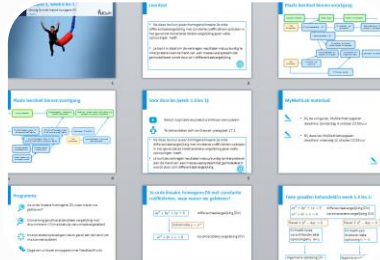
Face-2-face



Demo



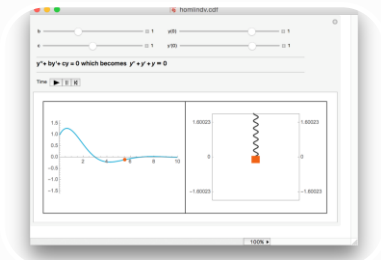
Pre-lecture



Lecture slide pack



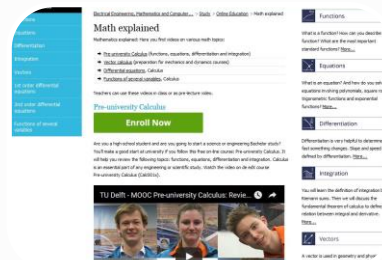
Feedback Fruits



Interactive exercise

Class Roster	Category Score	# of Results	Openexam MI, Ins. 1, in sect. 1	Openexam MI, Ins. 2, in sect. 1	Openexam MI, Ins. 1, in sect. 2	Openexam MI, Ins. 1, in sect. 2
Percent of overall score	70%	---	23.85%	62.85%	67.33%	81.5%
Class Average	58.41%	---	77.27%	76.33%	81.23%	75%
Class Median	---	3094	344	344	344	344

MyMathLab



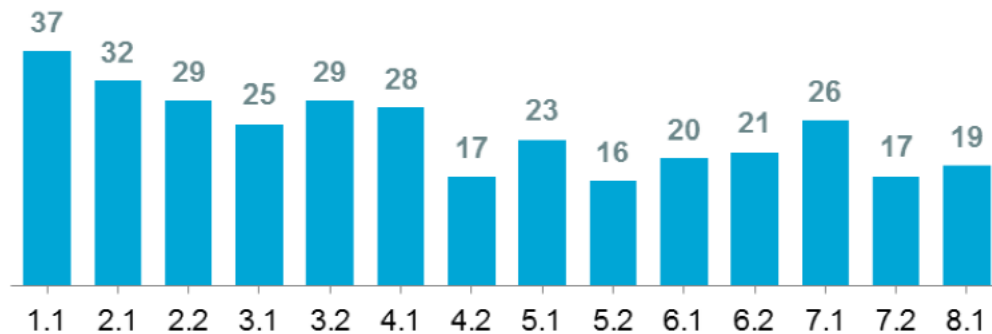
Math-explained

Main results: 359 students (9 groups)

Lectures (campus)

PARTICIPATION

Average number of participating B-CT students per teacher by weekly lesson

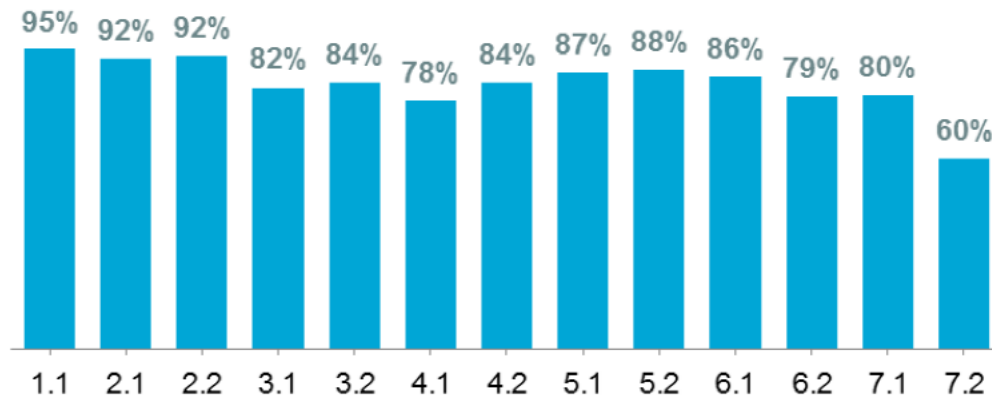


MyMathLab

PARTICIPATION

Percentage of participating B-CT students by exercise

* Participation is counted as a received grade above zero.



Pre-lectures:
166 – 555 views per video

Average number of participating students:
24

Average participation level:
63,77%

Interactive exercises:
done by 122 students

353
(98,60%) participated

Average participation level:
83,65%

24
other students participated

Main results: 359 students (9 groups)

MyMathLab

Average final score:
68,45%

Mid-term test

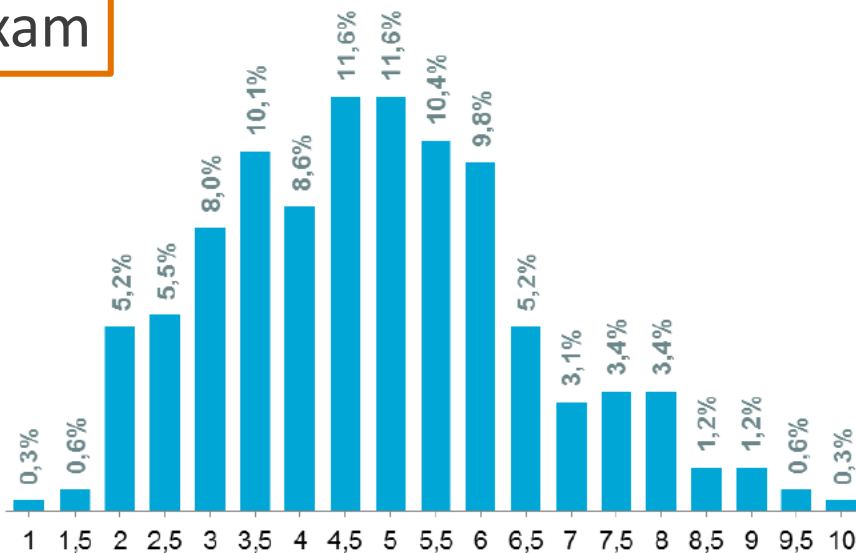
344
(96,09%)
participated

Average grade:
6,60

RESULTS

Distribution of final grades on the exam for B-CT students

Exam



327
(91,34%)
participated

Average grade:
4,83

9
other
students
participated

Improvements

Problem	Improvement
Students don't watch pre-lecture	Video really replaces part of the content. Teachers were again instructed not to repeat pre-lecture content. Better connection between pre-lecture and lecture, by starting with quiz about or definition from pre-lecture.
Students don't make interactive (applet) exercises	More PR during lecture.
Teachers have difficulty with details or sequence of slide packs	In slide packs only definitions, graphs, pictures and quiz questions are included.
Feedback Fruits quizzes sometimes take too long	Teachers are trained to say upfront: 'You have 2 minutes' or to say: 'Another 30 seconds before closing the question'.
Students may rely too much on the "help" they get in MyMathLab	In MyMathLab a few questions with help and a few without help, so students have to solve it themselves.



Good luck with your blended learning

For questions: I.M.Vos@tudelft.nl

Videos available on: math-explained.tudelft.nl

