A tutorial-based learning portal in basic mathematics

SALLA KOSKINEN
JAANI PASKI
TURUN KLASSELLINEN LUKIO

CPH 2019
5.8.2019
The project is funded by the Finnish National Agency for Education

Our goals:
- To overcome learning difficulties in the basic syllabus of mathematics
- To increase interest in learning mathematics

What you will hear today:
- Short introduction to the learning tool
- Learning analytics: the data and how it can be used
ViILLE

- ViILLE is a collaborative and tutorial-based learning tool developed at the Centre for Learning Analytics at the University of Turku.
- Material is developed collaboratively for all levels of education and for multiple subjects.
  - Researchers, future teachers and schools are all involved in development of this tool.
- We have created courses for six basic mathematics courses in upper secondary education.
- The courses form a basis for learning further skills and strengthen those already learned.
- We use ViILLE in various ways to support learning:
  - Rounds of exercises
  - Tutorials
  - Peer review
The basics

- The rounds strengthen basic mathematics skills
- The tool provides immediate feedback based on the students’ answers
- The feedback guides the students through the exercises and gives explanations
Immediate feedback and interactive material

- Students get immediate feedback based on their answers
- The exercises guide students if they get stuck
- The exercises may also contain
  - Study material to help students revise
  - Interactive content to help with the exercise or to make it possible to investigate the subject
Learning analytics support the teacher

Student diligence

Time (h) vs. Points

- Time (h) on the y-axis, ranging from 0 to 12
- Points on the x-axis, ranging from 0 to 2500

Scatter plot showing the relationship between time spent and points earned by students.
A research was conducted during the first mathematics course in upper secondary education.

The goal was to determine whether the exercises had an impact on learning mathematics.

The general attitude towards mathematics decreased in both groups, but significantly less in the group that did the exercises (p=0.035).

Learning results were about 14 percent better than in the control group (p=0.000).

Confidence seemed to be better among the group that did the exercises (p=0.070).
The courses are being used all around Finland
The courses are currently available in Finnish and Swedish
  - In addition, the environment has been translated to English, Chinese, Lithuanian, Russian and Spanish
  - Material for lower stages of education is ready in most of these languages