

Supporting international student mobility with *e-learning*

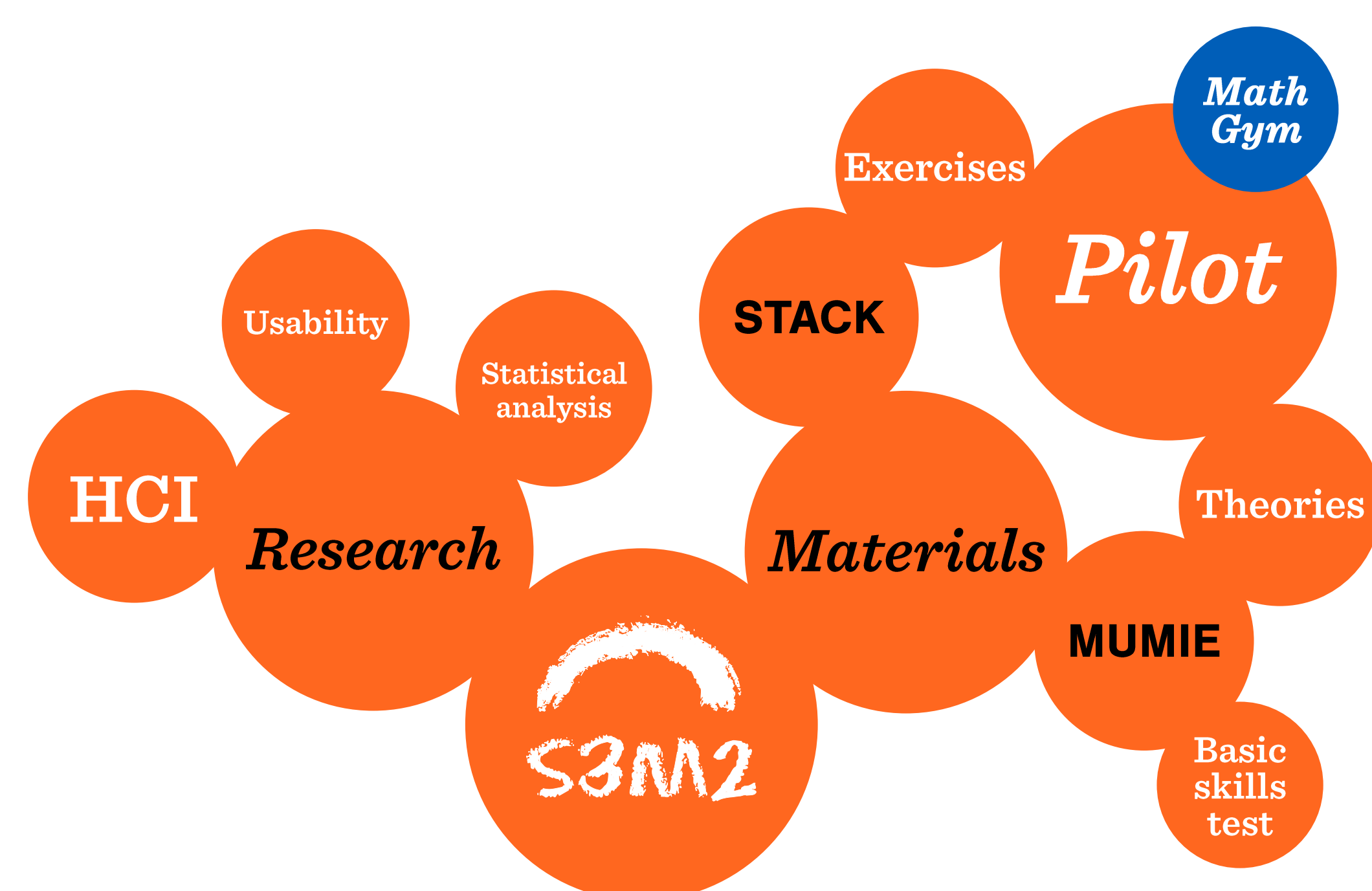
Introduction

Supporting international student mobility in higher education has been an important objective both nationally in Finland and in other countries. In EU, the Bologna process has unified the European university education by setting common structure and extent for university degrees. However, the experiences have been, that although the educational system favors mobility, there are still practical problems on how students are able to change between universities during their studying path.

One of the observed problems is that students coming from different backgrounds have a different set of skills. It is noted in science and engineering education, that starting students' skills on mathematics play a central role in determining the whole outcome of their performance in studies. Surveys indicate, that there is a high correlation between new engineering student's math skills and the probability for the student to graduate. Different skills bring also challenges for teachers in organising the teaching. The wide variety of student backgrounds would require resources in planning and preparing, which are not available in the universities. Gaps in mathematical skills appear in transitions from high school to bachelor studies, and again from bachelor to master level.

Pilot course *Math Gym*

We investigated organising a high school mathematics revising course for first year engineering students with two online learning environments, MUMIE and STACK. The students chosen for the course were first year chemistry students of Aalto University School of Chemical Technology. The materials were structured to respond the Finnish high school course structure.



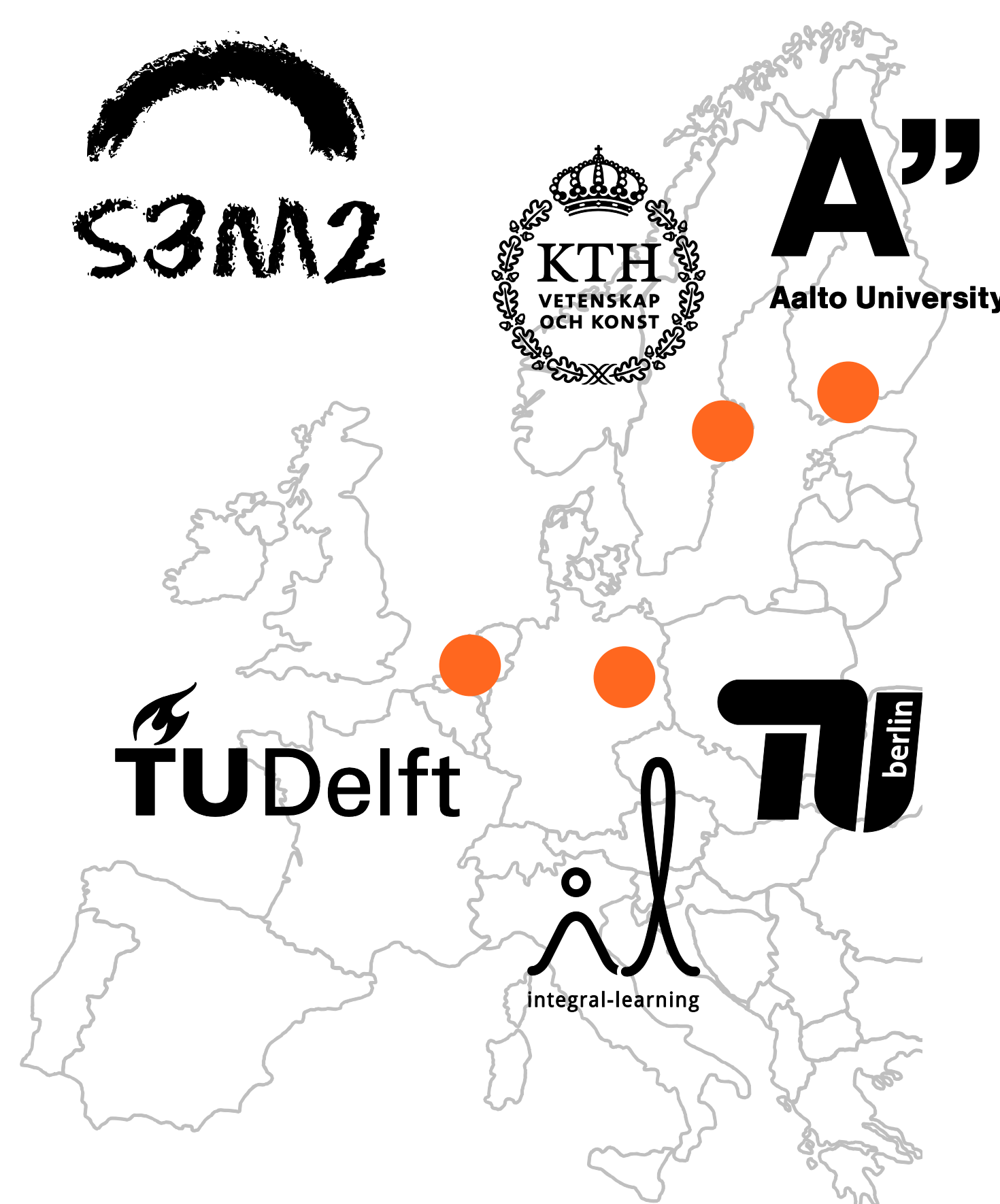
Aalto University conducted e-learning research and production of the materials within the S3M2 project. Math Gym was a pilot course for testing the suitability of the produced materials. MUMIE and STACK learning environments were used.

The materials used in Math Gym were produced within the S3M2 project. This work included conversion of theory and exercises to MUMIE, and automated assessment exercises to STACK. The materials were originally part of an old e-learning portal called Pikku-M by Kivelä, Lehtinen, and Tyrväinen.

EU project *S3M2*

Four European universities and one learning technology company formed a consortium for EU project S3M2 to produce e-learning materials for bridging courses in mathematics.

The project was divided into four packages. Each package contained materials for one bridging course. Aalto University designed the high school mathematics rehearsing course for incoming bachelor students. The course materials were implemented within the MUMIE learning environment.



S3M2 participant universities were from Delft, Berlin, Stockholm, and Helsinki. Berlin based company Integral Learning GmbH provided the MUMIE learning environment technology.

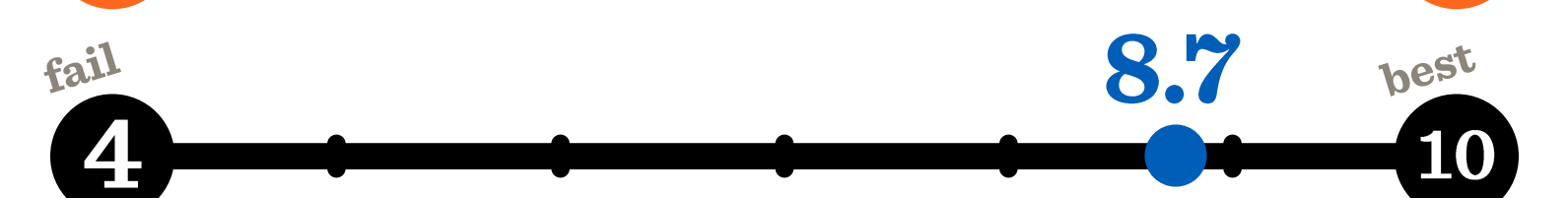
Participating the Gym was useful for me



Gym-styled rehearsing before studies in university is useful



Grade for Gym



The participating students were satisfied with the arrangements and materials. They expressed strong need and feeling of usefulness for such bridging course.

Discussion

The Math Gym was a success in the sense that it received good feedback from the participating students. The technology and studying materials were functional and suitable for the intended use. Students were able to use the learning environments almost without any guidance.

About the research

Project S3M2 (Support Successful Student Mobility with MUMIE) was supported by the Lifelong Learning Programme of the EU.



www.s3m2.eu

matta.math.aalto.fi