**Online Communication Platform for Mathematics Instructions**

**Final Report**

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***Objectives***

* An online communications platform is designed and implemented in OnCourse[[1]](#footnote-1) to support the practice of mathematics in the major course Signals (4CA00) in the second quarter of academic year 2015-2016. This platform allows students to weekly discuss exercises and help each other. The platform replaces the guided self-study.
* The platform generates data in order that the lecturer can monitor the progress of the students and can react on it during lectures. Also the use of the platform is monitored and evaluated.
* The success rate of the course and student satisfaction remain at least at the same level as in the course setup with guided self-study meetings.

***Educational principles of the design and implementation of the platform***

To make the communication platform a good alternative for face-to-face instructions, the redesigned course has the following elements as formulated in the proposal:

* Theory is explained in weekly lectures.
* Students practice individually.
* The training material is offered in OnCourse.
* Parallel with the training material, the communication platform is set up in OnCourse.
* The structure of the platform is within the sequence of the exercises, so it is clear that the discussion is connected to a specific exercise.
* The platform is used by students to give feedback to each other.
* It is easy for students to post their questions (i.e. no advanced processors for mathematical formulas), for example by uploading photographs or pdf documents.
* Student assistant instructors give general feedback in case the same questions are asked by several students.
* The platform provides information to the lecturer about the activity on the platform and which exercises are difficult for the students. And also, a weekly poll is done in which students indicate what are the most difficult assignments. The ‘top 3 of most difficult assignments of the week’ will either be discussed during the next lecture or the elaboration is posted on the platform.
* There will be a weekly hour for questions, so students can still have face-to-face contact with the lecturer or with an instructor about the exercises.

All elements have been realized.

***Evaluation of the use of the platform - plans***

The use of the communication platform was monitored and evaluated, to see whether the functionalities of the platform met the expected benefits. Evaluation criteria were, amongst others: the number of students using the platform, the number of times students giving feedback, the number of times the lecturer adapts the content of the lecture to the needs of the students .

The analysis was done using methods for collecting quantitative and qualitative information. This was done both during the quartile and at the end of the course, by weekly student panel meetings and questionnaires.

It was planned to compare the results of the course on student satisfaction and success rates related to the situation without the platform.

***Evaluation of the use of the platform - results***

Unfortunately the platform was used by very few students. Of these group nearly all students posted a question once. We asked at several occasions students for the reasons behind this behaviour. Several explanations appeared:

* Elaborations of the exercises are available at the internet. Students consult these elaborations.
* Many students are lagging behind during the course.
* Posting a question on the platform is not anonymous.

Next year we will use the platform again. The only change will be that posting questions will be anonymous.

The weekly poll was at most used by approximately ten students (out of 300). The weekly question hour was visited by 60-80 students. Again, anonymous posting may help.

Since few students used the platform it appeared to be impossible to compare platform activity and marks of students in a quantitative fashion.

The overall student satisfaction was approximately equal to the previous year of the course.

***Results of the innovation on room capacity***

The examination results for the course were approximately equal to the results in the previous year. From this it can be concluded that instructions are not necessary for the course. However, it cannot be concluded right now that the platform can function as a replacement for the self-study for mathematics instructions. Maybe the examination results will even be the same without any platform. It seems that the weekly question hour is of help for active students. Still, it is nice to conclude that tutors and instruction rooms are not needed for this course.

***Dissemination of the results***

The following dissemination activities were executed:

* + Presentation at a (3)TU session of the 3TU.CEE
  + Inspirational video for the six steps to blended learning intranet pages of the TU/e
  + Publication of the experiences within the TU/e community.

***Final conclusions***

It has been possible to construct a communication platform with all requested functionalities. However, only few students used the platform. Also after consulting some external sources some advices for the use of a communication platform for other courses can be formulated:

* A communication platform can be useful in case answers to questions can be really discussed, so e.g. for USE-courses. In that case the student participation can be activated by assessing this participation, quantitatively and qualitatively.
* Anonymous participation of students can be an issue.
* Effort is needed in order that students are not lagging behind.
* OnCourse has many functionalities in order to implement a communication platform. The student participation can be monitored easily.
* In light of the limited sources of TU/e w.r.t. educational staff and room facilities, it should be considered seriously whether traditional tutor hours can be replaced by online student activities.

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1. OnCourse is a learning management system based on Moodle, maintained by Hans Cuypers and Jan Willem Knopper of the Mathematics and Information Science Department of TU/e. [↑](#footnote-ref-1)