RECOMMENDATIONS FOR A MULTICAMPUS COURSE DEVELOPED THROUGH A "STUDENTS AS PARTNERS" PROJECT

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ABSTRACT

This paper presents recommendations for a Multicampus course, developed through a Student as Partners project. In this project students, a teacher and an educational developer collaborated following the principles of the Students as Partners framework. Through interpretation of previous course evaluations and discussions, we created a shared understanding of how the course had worked and what to improve. Our main recommendations are to have lectures and learning activities that are diverse and adapted to the students' different needs. These recommendations are not groundbreaking in themselves, however, the grounding in a common understanding through the use of the Student as Partners framework is novel and gives new perspectives to course development and educational development in general.

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1 INTRODUCTION

1.1 Students as Partners

Evaluations represent a source for information and quality assurance in course development. In these evaluations it is not only the ratings that are essential but the discussions they may lead to and possible improvements of teaching and learning activities [1]. To ensure sustainable development both student and teacher involvement are important in this process. A way to include students in course development is through a Students as Partners approach. This framework challenges the traditional roles and responsibilities of students and teachers. Cook-Sather et al. define *"student-faculty partnership as a collaborative, reciprocal process through which all participants have the opportunity to contribute equally, although not necessarily in the same ways, to curricular or pedagogical conceptualization, decision making, implementation, investigation, or analysis"* (p. 6-7) in [2]. According to Matthews, a good Students as Partners practice should aspire to the five propositions: *"1. Foster inclusive partnerships, 2. Nurture power-sharing relationships through dialogue and reflection, 3. Accept partnership as a process with uncertain outcomes, 4. Engage in ethical partnerships, 5. Enact partnership for transformation"* (p. 2) in [3].

We used the Student as Partners framework in a pilot project where a resource group was formed which consisted of six students, a teacher, and an educational developer. The students were selected through a recruitment process. To foster an inclusive partnership the students received a salary. The aim of the project was to develop recommendations for a first-year introductory course in physics and chemistry.

1.2 Course description

Ten teachers are involved in this first-year introductory course in physics and chemistry. It is a multicampus course that runs for 11 different Bachelor of Engineering programs at The Norwegian University of Science and Technology. Students and teachers are situated at three different campuses. The teachers have cooperated regarding exams, exercises and course content. All teaching resources, such as notes, calculus exercises, and lecture recordings are shared and available to all students and fellow teachers in the learning management system as described in [4].

2 METHODOLOGY

2.1 Data

Previously collected data from three anonymous questionnaires were used as a source for information. The first two surveys were conducted in the spring of 2020, before and after the online transformation, and the last one in 2021 when almost all activities were online. The questionnaires consisted of questions where the students were asked to rate how satisfied they were with lectures and mandatory exercises on a Likert scale. To get detailed and rich information about their experiences the

students were asked to elaborate their ratings through open questions [5]. In the questionnaires, the students were encouraged to describe what had worked well, and what had not, and also come up with suggestions on what to improve. In addition, the students answered questions about: their previous knowledge of physics and chemistry, how often they used the different online resources available in the course, and what they would recommend the teachers to preserve from the online format.

2.2 Work method

The questionnaires were used as background information which we in the resource group examined. We divided the data material among us and split into pairs to extract the essence, which then was presented to the whole of the group. These presentations laid the foundation for deeper discussions which formed the basis for a common understanding in the group. After each group meeting, all participant wrote individual reflections which were shared online. All elements: the essence of the original data, our discussions and individual reflections, formed the basis for the course recommendations that we developed. These were presented to all the teachers involved in the course.

3 RESULTS

3.1 Short summary of findings

The results from the questionnaires showed a decline in students' satisfaction regarding the lectures in 2020, due to the transition to an online format. However, in 2021 the students rated the lectures higher, compared to the pre-pandemic situation, even though they were still in an online format. There are, however, some variations between the campuses.

Several students mentioned that the difference in students' prior knowledge both in physics and chemistry, is a challenge. Some students have had courses that go beyond the admission requirements. There seems to be a tendency that these students do not participate in the lectures or engage in the course as long as they are familiar with the topics. At the same time, other students find it challenging to master the course and ask for a more thorough introduction to the syllabus.

Further, the students found it engaging and motivating when the teacher used quizzes to activate them. This was especially important in the online format, where the students reported that they easily got distracted. In addition they reported that using breakout rooms lowered the threshold for asking questions, but they still missed not having the opportunity to talk with the teacher individually.

There are differences in student satisfaction between the campuses regarding the mandatory exercises. The students that had mandatory attendance and did the exercises as part of a group work with practical exercises, were the most satisfied. While the students that had individual multiple choice tests were least satisfied. After the onset of the pandemic, it was not possible to have physical attendance and practical exercises, and the overall satisfaction decreased.

Recurring in all the surveys is a frustration with the online textbook, which is open source. This dissatisfaction is mainly because it is digital and the fact that it is an English textbook. Most of the students report they rather use the lecture notes produced by the teachers. The students that report reading the book use it as an encyclopedia.

3.2 Recommendations

Our recommendations for improving the course are divided into three categories: Lectures, Learning activities and Online resources.

Lectures adapted to the students' different needs

To facilitate the different needs and enhance the students' understanding we recommend replacing some of the lectures with short thematic videos, where the aim is to give a brief and pedagogical presentation of the topics. These thematic videos will be used asynchronously, and the students should be encouraged to watch them at their own pace, and as many times as they want. In this way, the videos can serve dual purposes, both as introduction and repetition. The remaining lectures should be synchronous, preferably physical lectures, and use active learning methods to increase students' learning and understanding. Since the students already are familiar with the topic, the teacher can to a greater extent design for student activity as well as give further explanations and show practical demonstrations.

Response systems can be implemented to activate and increase students' motivation and engagement, for example by using quizzes to check the learning outcome, or by asking questions about their learning experience. We also recommend that the teacher involves the students to a greater extent in the design of the lectures, to better align the teaching and learning activities to the students' different needs.

Learning activities and support adapted to the students' different needs

For online supervision, we recommend having digital tools available, for example, tablets for drawing and doing calculations by hand. These notes can be shared and made available to the students online.

When it is possible to meet in person, we see it as valuable to have the teacher present in addition to student assistants during exercises. Long response time or inadequate response can affect the students' work effort and motivation, and influence whether they participate or not. In addition, the teacher achieves valuable information about the students' learning.

Another recommendation that applies to both optional and mandatory exercises is to have variation and flexibility. Students should to a certain degree have the opportunity to choose whether they want to collaborate with other students or work individually. In addition, these should include both practical and calculus exercises.

The exercises should preferably have a connection to the specific study program and contribute to contextual learning. This can be challenging since the resources are shared among the different study programs, but nevertheless something to strive

toward. One way to embed the basic physics and chemistry course into the specific study programs is by introducing a larger project that allows different content.

Online resources

To make the textbook more accessible for the students we recommend that terms and words are introduced using both languages, to improve the students' vocabulary and understanding. Another recommendation is to have a shared discussion forum where all 1000 students have access, and where both students and teachers make comments and answer questions. The discussion forum should have a well-defined structure where it is easy to navigate and find related questions. To lower the threshold for participation we recommend that it should be possible for the students to be anonymous.

4 AFTERTHOUGHT

The suggested recommendations were presented to the teachers involved in the course. In an open dialogue, we discussed the recommendations and our interpretation of the course. Afterwards, the teachers used this information for course development. One of the suggestions that has been implemented is the use of short videos as part of a flipped classroom design. A set of videos are now distributed to all students and followed up by student active sessions facilitated by the teachers. This is a course design that has been discussed earlier among the teachers but needed encouragement from the students to be applied.

The recommendations we suggested are not novel in themselves, however, the Students as Partners approach where students and teachers are collaborating on equal terms might have contributed to higher credibility.

Using the Students as Partners framework contributes to a more holistic view on course development. The students have first-hand experience not only with the specific course but with the entire study program, while the teachers on the other hand, tend to focus on their own courses.

Course development is an ongoing process and this paper presents a pilot project. For a continuous and sustainable course development, it will be valuable to use the Student as Partners framework not only in a pilot project but on a regular basis.

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