

# Engaging students in the development and quality assurance of degree programs – a case study

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## Abstract

The faculty of Telecommunication and e-Business has a long tradition of using student feedback as part of the cycle of continuous improvement. Since joining in the international engineering education initiative CDIO we have worked for improving the student engagement in the development and quality assurance of our degree programs. One of the important requirements of the initiative is to make engineering more interesting, and therefore increase student motivation and retention. To answer these requirements, we introduced a student engagement model for the development and quality assurance of our degree programs. This model engages students from freshman year to senior years. Basically, each study group selects representatives that participate in this effort. All representatives attend degree program meetings and bring student viewpoints to the meetings. Representatives from the second and third year study groups participate also in a special development group focusing on various aspects of education and organizing studies. Finally, the representatives from third year study groups participate in the work of advisory boards together with industry representatives. Our experiences from this model are very positive. The overall dialogue between the faculty members and students has increased and improved. In addition, together with the students we have identified several areas where we can do things better. Furthermore, a number of development initiatives have been started based on the increased student engagement. This paper will describe the student engagement model that we have implemented. In addition, we want to discuss and share the experiences and challenges recognized in this student engagement process.

## 1. Introduction

Modern knowledge society requires a capable, highly qualified and innovative labour force. Education systems are expected to ensure that education a) adapts efficiently to changing demand and b) learning is efficient and qualified leading to the right skills. [1] Effective education programs concern themselves with the question of the types of educational settings and faculty and staff skills that best promote student learning. They pay particular attention to the learning process and actively involve students in the learning process. [2]. The CDIO initiative shares these ideas. The overall idea of CDIO initiative is to support engineering education development and educate students who are able to [3]:

- master a deeper working knowledge of technical fundamentals
- lead in creation and operation of new products, processes and systems
- understand the importance and strategic impact of research and technical development on society.

An important tool in supporting education development are the 12 CDIO standards [4]. The CDIO Standards focus on

- program philosophy (Standard 1),
- curriculum development (Standards 2, 3 and 4),
- design-build experiences and workspaces (Standards 5 and 6),
- new methods of teaching and learning (Standards 7 and 8),

- faculty development (Standards 9 and 10), and
- assessment and evaluation (Standards 11 and 12) [4].

While the CDIO standards aim at ensuring working life connected education and high quality learning experiences for the students, we decided to systematically engage students in our development efforts and in our quality assurance work. However, the CDIO initiative was not the only rationale to create this student engagement model. Actually, there are many researches focusing on students' engagement in their studies and what factors are relevant in influencing student withdrawal and retention. One of the very well-known research and model is the Student Integration Model [5]. The Student Integration Model focuses on student's motivation, academic performance, academic integration and social integration. According to the model, greater students' level of academic integration leads to greater commitment to the goal of college graduation. [5] Another well-known model is the Student Attrition Model. This model focuses on behavioral intentions and financial factors in attrition. [6] Bean has published a synthesized causal model of student attrition too. This model identifies four variable categories that have direct or indirect effects on intent to leave and finally to dropping out. The four variable categories were background, environmental, attitudinal and outcome variables. [7]

Furthermore, the education system that is not meeting students' needs might experience high dropout rates [1]. Actually, one identified cause of early withdrawal is a gap between learner expectations and reality [8]. Similarly, poor quality of the student experience was identified as one of the main reasons for student withdrawal as well [9]. The staff and faculty of an HEI should realize that the perceived quality of the education the student is receiving is one of the most important variables in influencing institutional commitment [6]. In addition, the continuing emphasis upon frequent and rewarding contact between faculty, staff, and students in a variety of settings is important [2]. Actually, successful program have implemented solutions that have helped students to become valued members of a supportive educational and social community [2].

The outline of this paper is following. First, we describe the developed student engagement model. Secondly, in section 3 we describe the research and in section 4 the results. Finally, we will discuss and share the experiences and challenges recognized in this student engagement process.

## **2. Engaging students in quality assurance**

Our student engagement model (Figure 1) answers the challenges described earlier. The systematic approach engages students from freshman year to senior years. Basically, each study group selects representatives that participate in this effort. Student representatives are chosen every autumn in November when also freshman students have learned to know each other. Study groups consist of 18 to 40 students and every group chooses one or two representatives with the assistance of the group's tutor teacher. The tutor teacher explains especially the freshman students what kind of development possibilities the student representatives have. The most active students are usually chosen. If there are many willing students in one group they can all be chosen. Sometimes even three representatives have been chosen, sometimes only one. The tutor teachers give the names of representatives to their degree programme managers and the managers give the names to the quality expert of the faculty. The quality expert calls the student representatives to a meeting in January with the dean of the faculty. The work of representatives starts with introducing the possibilities to influence on developing, the study environment, curricula and quality systems.

All representatives attend degree program meetings and bring student viewpoints to the meetings. Representatives from the second and third year study groups participate also in a special development group focusing on various aspects of education and organizing studies. Finally, the representatives from third year study groups participate in the work of advisory boards together with industry representatives. All student representatives have active role in

their own study group. They serve as messengers from the study group to the faculty and vice versa. The roles and expectations of the student representatives are presented in the Figure 2.

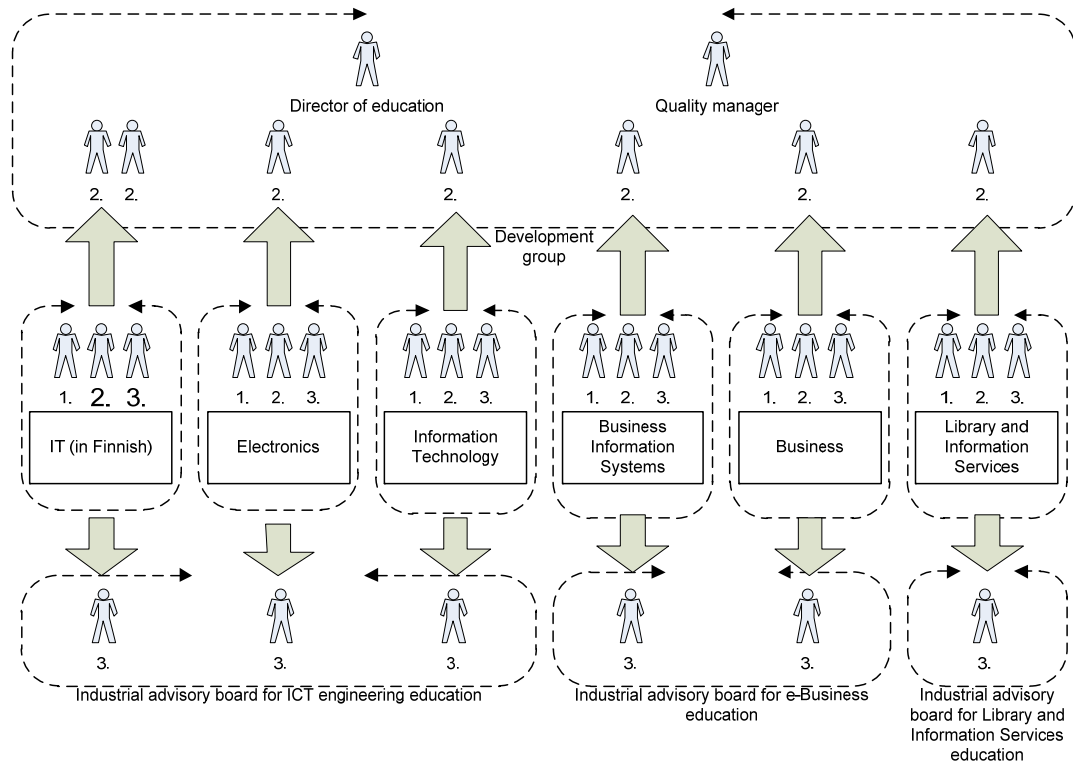


Figure 1. Student engagement model.

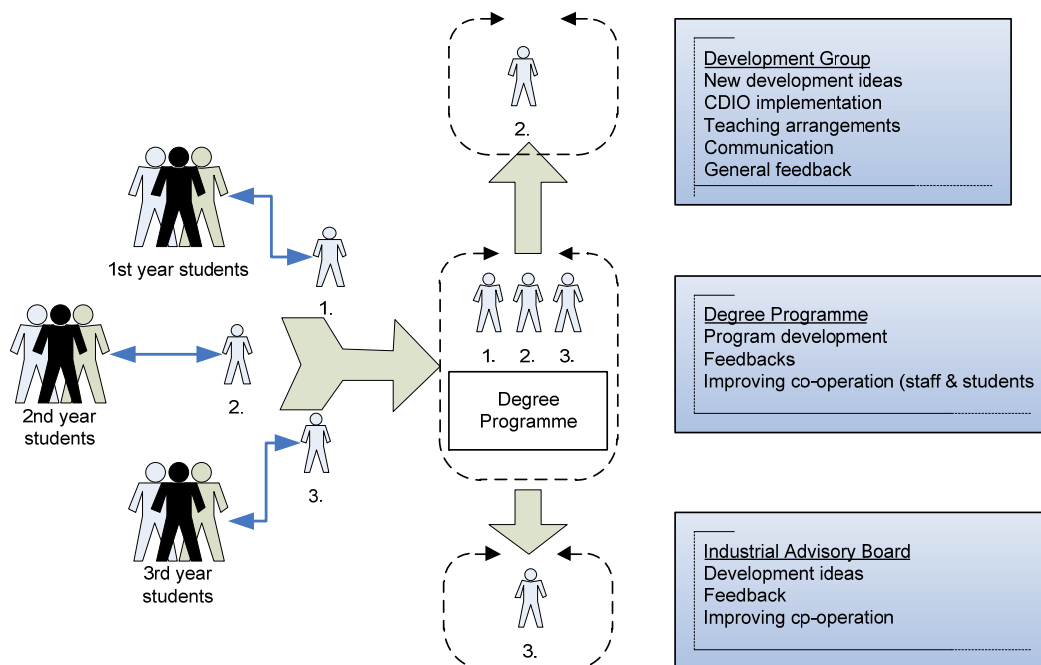


Figure 2. Students' role in different years.

Student representatives can collect Credits by attending the course called Quality assurance and development. Most of the student representatives join the course, but there some students

that do not follow the course plan at all. The course is divided into two study modules: Organization and influence possibilities (3 Cr) and Active work for improvement (2 Cr). The objectives and contents of the course modules are given in Figures 3 and 4.

<b>Study module</b>	Organization and influence possibilities
<b>Credits</b>	3.00
<b>Objectives</b>	After having completed the course, the student can: <ul style="list-style-type: none"> <li>• describe the influence of laws, decrees and other orders on universities of applied sciences in Finland</li> <li>• describe the quality assurance in Finnish higher education</li> <li>• participate and develop the student's own degree program</li> <li>• describe the procedures of quality assurance in the student's own faculty and degree program</li> <li>• describe the quality system of Turku university of applied sciences</li> <li>• act as a link between students and teachers</li> </ul>
<b>Contents</b>	<ol style="list-style-type: none"> <li>1. Getting to know the organization <ul style="list-style-type: none"> <li>• Responsibilities and duties in Turku university of applied sciences, faculty and degree program levels (decision-making organization, times and places for meetings, minutes, whose responsibility is to call the meeting, storage and availability of documents)</li> <li>• Meeting habits of student's own degree program (times, places, minutes, memos, storage and availability of documents)</li> <li>• Laws, decrees and other orders relating to universities of applied sciences</li> </ul> </li> <li>2. Quality assurance system <ul style="list-style-type: none"> <li>• Processes, especially those relating to students</li> <li>• Messi Intranet</li> <li>• Quality assurance system of student's degree program and faculty</li> </ul> </li> <li>3. Influence in the organization <ul style="list-style-type: none"> <li>• Meetings of the degree program</li> <li>• Reporting to other students</li> <li>• Participate in developing the degree program</li> <li>• Working in collaboration group of the faculty</li> </ul> </li> </ol>
<b>Assessment</b>	Passed / Failed

Figure 3. Organization and influence possibilities.

<b>Study module</b>	Active work for improvement
<b>Credits</b>	2.00
<b>Objectives</b>	After having completed the course, the student can: <ul style="list-style-type: none"> <li>• organize feedback collection</li> <li>• draw improvement and development ideas from feedback</li> <li>• express opinions and ideas connected to improvement work in a constructive way</li> <li>• audit a process in the degree program</li> </ul>
<b>Contents</b>	<ol style="list-style-type: none"> <li>1. Improving feedback systems and processes</li> <li>2. Participating meetings</li> <li>3. Participating conferences or other events aiming developing education</li> <li>4. Planning an audit process</li> </ol>
<b>Assessment</b>	Passed / Failed

Figure 4. Active work for improvement.

### 3. The research

This research used qualitative methods and is a descriptive case study. The study describes actions taken in the Faculty of Telecommunication and e-Business at the Turku University of Applied Sciences for engaging students in the development of education and quality assurance work. In general, a case study aims for in-depth understanding of the context of the phenomenon [10]. Furthermore, a descriptive case study presents a complete description of a phenomenon within its context [11]. A case study is well-suited to capturing the knowledge of practitioners and to document the experiences of practice [12]. This paper follows interpretative tradition of the case research. It means that there is no objective reality, which can be discovered by researchers and replicated by others [13, 14]. The main research question is “How student representatives are engaged in education development and quality assurance in the case organization?”.

The Turku University of Applied Sciences is one of the largest of its kind in Finland with almost 9000 students and 37 Degree Programs. The University is organized in six faculties that promote multidisciplinary learning such as the Faculty of Telecommunication and e-Business, which represents four different fields of education: technology, business, natural sciences and culture. Our main goal is to work in close co-operation with our region and to answer to the requirements of the working life. The faculty of Telecommunication and e-Business operates in two cities and has seven different degree programs (Table 1). We educate Masters and Bachelors in Engineering and in Business Administration. The Bachelor of Engineering is a four year degree with 240 ECTS and Bachelor of Business Administration is a three and half year degree with 210 ECTS. The Master of Engineering program is a 60 credits program and the Master of Business Administration is a 90 credits program. Entry requirement to Master studies is a Bachelor-degree and at least three years of work experience after the Bachelor degree. The faculty has approximately 1500 students of which roughly 550 study in Salo campus and 950 in Turku campus.

Table 1: Degree programs in Telecommunication and e-Business.

Degree Program	Credits ECTS	Discipline	Students
Technological Competence Management	60	Engineering	60
Business Information Systems	90	Information Systems	20
Information Technology - English - Finnish	240	Engineering	600
Electronics	240	Engineering	270
Business Information Technology	210	Information Systems	170
Business and Administration	210	Business	200
Library and Information Services	210	Information Services	70

In a typical case study research multiple data collection methods are used [12]. This involves combining different techniques such as observation and document and text analysis [14]. Participant-observation was the main data collection method in this research. It means that the researchers may have a variety of roles within the case study situation and really participate in the events being studied [15]. In this research, the roles of the researchers included a) chair of the development group b) member of the development group, c) dean of the faculty, d) the member of the degree program. The participant-observation has happened from the introduction of the engagement model until end of April 2011. Besides the participant-observation data was also gathered from existing documents which included student reports and meeting minutes.

## 4. Results

This section describes how student representatives are connected to the development of education and quality assurance work in the Faculty of Telecommunication and e-Business.

### 4.1. Orientation to quality work and participation in quality work

Freshman representatives start working in the development group in January after they have finished their first semester in the faculty of Telecommunication and e-Business. Basic rules, rights and responsibilities, as well as degree regulations of Turku University of Applied Sciences have been introduced to them by tutor teachers. In the development group the representatives' first task is to study the quality systems of Turku University of Applied Sciences and the faculty of Telecommunication and e-Business and make notes about doubtful or questionable items in the student diary. These items are commented in the diary by the faculty's quality expert and some of the items are discussed together in the development group's monthly meetings.

Student representatives have helped in collecting data for national audit of Turku University of Applied Sciences in 2009. Many of them also were interviewed during the audit. In the quality system of Turku University of Applied Sciences, some older student representatives participate in inner process audits not only as interviewees but also as interviewers and members of audit groups.

### 4.2. Recommendations and development ideas to teachers

Students in the development group have raised and discussed various aspects of education and organizing of studies. Some examples and student ideas are introduced below.

#### a. Assessment

- Students want clear rules and criteria for assessment.
- Students want to know the assessment methods and the weights in grading, for example:
  - Test 1 20 %
  - Test 2 20%
  - Learning diary 30 %
  - Homework 20%
  - Active participation during the lectures 10%
- Teachers of one subject (for example Mathematics) should have the same assessment rules which they have planned together.
- Reasoning behind the learning outcomes, chosen assessment methods and weights in the grading system should be better explained to students.
- Assessment could be done during the course with various methods and students could answer in the final exam only to questions where they need to prove their knowledge and skills when they have not succeeded in giving evidence enough during the course.
- Students want both oral and written feedback.
- Students should have possibilities to show their knowledge and skills during a course several times and the grade should not be determined only by an exam or reports in the end of the course.

#### b. Implementation plans

- The implementation plan of a course should be published at the latest when enrolling on the course is starting. The implementation plan gives advice about enrollment (the way and time).
- The implementation plan gives the lecture times and places.
- The learning outcomes should be given in the implementation plan as well as assessment criteria and methods. The dates and places of exams and reports etc. are given.

- It should be written in the implementation plan what learning material is used and studied during the course, what material should be bought or borrowed and what material is given in electrical form.
  - The implementation plan states the language of instructions and lectures during the course.
  - The teaching and learning methods as well as preceding courses are explained in the implementation plan.
- c. Timetable
- Student representatives made their own suggestions for timetables. The suggestions were discussed in the development group with student representatives. As a result, a new model for timetables will be started to use in September 2012. The new model includes the idea that a student has a given study place, time and subject from eight in the morning to four in the afternoon every day during a study year and a study year is divided into five seven week periods.
- d. Guide texts and curriculum texts
- Student representatives have given valuable feedback about guide texts meant for new students who are thinking about applying for degree programs in the faculty of Telecommunication and e-Business. Student representatives have also given feedback about description texts in curricula.
- e. Courses
- Student representatives have suggested courses for optional studies. For example in Spring 2011 an optional German course started after representatives' suggestion.

### **4.3. Participating in development of teacher's work and curriculum**

Student representatives have also participated in seminars and educational events meant for teachers. Afterwards they have been able to co-operate with teachers for example in improving the curricula.

#### **a. 2009 Fall CDIO collaborators' Conference 5.10.-7.10.2009**

Student representatives attended the conference. Their task was to make notes of interesting teaching methods. The results were discussed and for example the idea about collecting feedback by using post-it notes was found very interesting by many students. This method has been used later and especially with the help of student representatives. The volunteering student representatives have collected the feedback post-it notes from their fellow students and written a compilation report for the teacher and students for further processing. This has been a remarkable help for teachers and the method also adds transparency in developing teaching and assessment methods as well as all co-operation in teaching-learning process.

#### **b. Learning outcomes**

In February 2010 all teachers in the faculty of Telecommunication and e-Business attended a training afternoon in order to learn how to write the learning outcomes to their course descriptions. Also student representatives participated in training. Afterwards the teachers wrote learning outcomes to their course descriptions for the curriculum 2011-2015. Two teachers and two student representatives read all new learning outcomes and gave feedback to teachers. The co-operation with the students was very revealing. Students were much more critical than teachers. It could be a useful idea to ask student feedback about course descriptions in curriculum every now and then. It is also good to remember that curriculum is written for students and they should understand every word in it.

#### c. Assessment

Turku University of Applied Sciences is going to use new criteria for assessment and all teachers and some student representatives participated in a seminar about assessment in January 2011. The idea is that teachers will write in their implementation plans assessment methods and criteria connected to the learning outcomes. Students have promised to cooperate in this work. The work begins in April 2011 when teachers write together in small teams criteria to some common courses. Student representatives are going to take part in this work and continue co-operation with teachers in assessment criteria work.

#### **4.4. Feedback**

##### a. Feedback day

At least once a year every degree program manager calls students and the whole personnel of the degree program to a meeting where students' feedback is discussed. It is not possible that all students participate in this meeting but at least the representatives are present. Before this meeting, the so called feedback day, student representatives have collected his/her classmates' opinions. Every student is encouraged to give his/her feedback. The representatives summarize all feedback. The tutor teacher, degree program manager and student representatives have a development discussion and go through and discuss the representatives' list of feedback. Some problems can be solved in this small meeting and some feedback is left for the feedback day. The tutor teacher writes a memo from this development discussion and it is published to all students of the group. After the degree program manager has had all development discussions and knows all feedback from groups he organizes the feedback day with common discussion. A memo is written and it is published to all students and personnel of the faculty.

##### b. Student barometer's open answers

Once a year all students in Turku University of Applied Sciences are able to give feedback by answering to an electronic questionnaire. There are also so called open answers where a student can write an essay answer about his/her personal opinions. Student representatives analyze the open answers and present the results of their analysis in degree program meetings. The analysis is also published in written form to all students and personnel of the faculty.

##### c. Feedback for teachers about courses

Student representatives are encouraged to help teachers in collecting feedback about courses. This is done for example by collecting feedback after a lecture on post-it-notes. Students write their feedback and leave the notes to the student representative who then compiles a summary report for the teacher. It is then easy for the teacher to take the feedback into consideration.

#### **4.5. Participating in meetings**

Student representatives participate in degree program meetings. There is always student's turn to speak on the agenda. Of course students are also allowed to participate in discussion in connection with every item.

Every degree program has an industrial advisory board. There are board meetings four times a year. One student representative participates in the meetings.

#### **5. Discussion**

We are in the beginning of implementing the student engagement model. This academic year is the second year that we are using the student engagement model. Still, the three-level engagement of students seems to operate quite well and students are committed to working with the development of education and quality assurance. Students' understanding of quality



assurance has increased and communication with their groups is more accurate now. Students have also joined in several development tasks – their assistance in improving competence definitions and assessment criteria has been valuable. We should make our teachers more aware of this great amount of valuable labour force. They could utilize their students much more in developing their courses, material, methods and assessment. Luckily, some teachers already have found the benefit of students' engagement. Student representatives for example help in improving the PBL (Problem Based Learning) model in the Degree programme in Information Technology. In this particular case, they collect feedback from ninety students, compile a summary report and present it to teachers in development meetings where the new actions and changes are planned and decided.

The co-operation in the development group has initiated several development ideas. The development group has also provided us a common forum to discuss and test our development ideas. For example the new timetable model was processed in the development group many times before the final version was ready. In addition, new courses have been offered after discussions and analysis.

The student engagement model has strengthened our feedback cycle as well. Students have helped analyzing the feedback and have produced summaries of the feedback. In addition, they have collected feedback in single courses and have helped the teachers with their feedback management. Maybe the most valuable point of this feedback processing is that students have now realized that the feedback is really processed and corrective actions are taken when necessary. Earlier students complained that the feedback does not lead anywhere, but now it is valuable to give constructive feedback and see that it has some effects as well.

Our model has had lot of positive comments from the management of our university and from the students union. Especially the student union is very satisfied with model and hopes that the model could be diffused to whole university. At the moment, the model is presented to other faculties and they are starting their own versions of the student engagement model in the future.

The student engagement model is quite well in line with the researches and models presented earlier in this paper. Our work has focused on meeting the student experiences as was suggested in the researches. The student integration model focused on student's motivation, academic performance, academic integration and social integration [5]. Our student engagement model is not directly working with these issues, but the ideology behind our model is that the processes and actions have effects on these issues.

## 6. Conclusions

Our experiences from this model are very positive. The overall dialogue between the faculty members and students has increased and improved. In addition, together with the students we have identified several areas where we can do things better. Furthermore, a number of development initiatives have been started based on the increased student engagement. We are ready to encourage other universities to engage their students in development and quality assurance actions.

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