28

Intended Learning outcome and course descriptions from a student's point of view – How are they perceived by the students?

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Introduction and project description

Constructive alignment is an important tool to ensure and maintain high quality teaching and to facilitate student learning. One major task to achieve constructive alignment is to align the **Intended Learning Outcome (ILO)** with Teaching-Learning-Activities and the assessment to evaluate if the ILOs have been achieved.

It is therefore of great importance that course descriptions meet the requirements for constructive alignment. This includes a detailed description of the course content and the ILOs. Especially ILOs stated in the course description can function as guidelines and help students to find suitable courses for their study program. It can also help them to find courses that meet the student's interests and help them to develop a portfolio of knowledge and techniques that might be valuable for their future career. The most obvious function of ILOs is of course the immediate description of what exactly they are going to learn or what knowledge students can expect to acquire during the course. Nevertheless, one has to keep in mind that there might be differences between mandatory courses and courses that can be freely chosen by the students. This might also depend on how advanced students are in their study program.

Therefore, it is of high importance to evaluate if ILOs are actually helpful for students and how students perceive ILOs and constructive alignment. The student's point of view is of high importance to evaluate the current state of constructive alignment and facilitate further development of constructive alignment.

The project

Many course descriptions at University of Copenhagen (KU) are already updated to meet the requirements for constructive alignment. The guidelines for course descriptions at KU require the statement of clear ILOs in three different fields: *Knowledge, Skills and Competences*. Though many course descriptions meet the requirements students might not be aware of their existence or how to make use of the ILOs for their learning success. This project should therefore give some insight into how students perceive course descriptions and ILOs and if they are of help to them. Some of the questions are based on the *Learning Experience Inventory* described in (Biggs & Tang 2011, pp. 285-286). Three major questions were used as guidelines:

1. How are ILOs in course descriptions perceived by students?
2. Are ILOs of help to the students to choose courses?
3. Do clear ILOs in a given course description help students to achieve these?

Two courses have been chosen for this to reflect upon the current state of course descriptions and might give rise to potential improvements for the future. The courses differed in a few points as one was a mandatory course in the Bachelor program for 3^{rd} year students in Biology-Biotechnology while the other course targets students in a range of Master programs: Food science, Food Technology, Human Nutrition and Gastronomy & Health (mandatory not in all study programs).

Methods

The courses

1. A BSc course “Experimental Molecular Biology”. Course participants were asked to fill in questionnaires after the first half of the course (9 weeks, 39 participants, 35 questionnaires) which finishes with a written exam as assessment and at the end of the course (18 weeks, 23 questionnaires).
2. A MSc course on “Bioactive components and Human Health”. Students were asked to fill in the questionnaires after the third lecture of the course (24 participants).

Questionnaires

Questionnaires were prepared to evaluate the student's awareness about course descriptions and ILOs in general and how helpful they consider them in general and for the specific course. In addition, the questionnaire for the Bachelor course contained a second part focusing on the student's self-evaluation based on the ILOs found in the course description. They were asked if and to which degree they already have achieved the ILOs stated in the course description. Here, thirteen ILOs from all three areas (*Knowledge, Skills and Competences*) were chosen. The last part of the questionnaire focused on the question if the students have learned what was described in the ILOs. The second part of the questionnaire was handed out to the students again after the second half of the course to evaluate if there had been changes in the student's learning outcome. Do ILOs help students to choose a specific course? Do they achieve the intended learning outcome? How are the ILOs perceived? This course provided a high complexity in ILOs and overall structure as it goes over two blocks. Questionnaires were handed out to the BSc students after the first nine weeks and at the end of the course. MSc students were asked to fill in the questionnaire after the first three lectures of the course.

Results

Course descriptions are considered helpful and read by most students

In general, students are aware of course descriptions and know how to access them. Nevertheless, there was a higher percentage of Master students (MSc) reading them compared to Bachelor students (BSc) with 95% and 68%, respectively. The number for Bachelor students increases to 84% if the neither/nor answer is taken into account. The students were also overall quite happy with the quality of the course description (66% and 70% of MSc and BSc students, respectively). Though there were some critics about the quality and being not up-to-date as can be seen by the following statements: "I am unhappy that they [*the course descriptions*] are not specific enough", "Course descriptions are too old".

Both individual course descriptions mostly got positive feedback from the students that had read the individual descriptions (which was 75% in the Bachelor course and all students for the Master course). The Master

course description got a higher satisfaction rate. This could be partly due to a much higher complexity of the Bachelor course which runs over two blocks and thus a longer course description.

Master students are more familiar with ILOs and how to use them

The majority of the participating students are familiar with the concept of the Intended Learning Outcome with 55% and 73% for BSc and MSc students, respectively. The value for the BSc students increased to 74% in the second questionnaire. Both groups answered with a similar percentage that they use the ILOs to choose a course that fit their interests (45.5%, (56% 2^{nd} questionnaire) for BSc and 43.5% for MSc). Remarkably, Master students answered more often that they actually consider ILOs as helpful for exam preparation (14.7% (13% 2^{nd}) for BSc and 54.5% for MSc). An additional question in the Master course questionnaire also pointed out that stating ILOs helps focusing on the relevant information taught (65% agreed) while at the same time not distracting from other interesting facts or information (65%).

Student self-evaluation of acquired knowledge

The second part of the questionnaires for the Bachelor course focused more closely on the actual ILOs specified in the course description. Here, the students were asked to evaluate how much of the ILOs they thought they already had acquired after the first half of the course. This was re-evaluated at the end of the course. The questions were identical in both questionnaires about the specific ILOs and contained ILOs that are mainly taught in the first or second half of the course or throughout the whole course. This made it possible to evaluate if there was increased learning throughout the course and to identify potential problems with ILOs and alignment with teaching activities.

In general, the results indicated that the students increased their learning outcome throughout the course with higher understanding at the end of the course. Almost all questions were answered positively at the end of the course which indicates that additional knowledge was acquired in the second half of the course. Nevertheless, there was some discrepancy between what was taught on the first half of the course and the student's answer about what they had learned. Two ILOs were indicative for this as they are mainly taught in the second part of the course. More than 50% answered

that they had already learned "Understand the basic idea of how to plan and carry out project-oriented experimental work from problem definition to final report" and 31% stated that they had learned the "Formulation of scientific questions and hypotheses". Both are taught specifically in the second part where the students apply knowledge and techniques from the first part of the course. Still, about 23% had answered both questions with "Not taught yet" in the first questionnaire while both questions got 100% "yes" in the second evaluation. There were only two of the chosen ILOs in the questionnaire that got a "not taught" in the second questionnaire (both with 4.3% = answer of 1 student). One of them covering the ethical principles of scientific investigations was more troublesome as 26% of the students stated that they did not learn this.

Apart from this the results from the ILOs showed that most students were rather confident with their learning achievements. The majority of the students made a mark at "I agree" (up to 77%) or even at "I strongly agree" (up to 37%) for the achievement of most of the other ILOs. This was also reflected by the answers for the last set of questions covering the satisfaction with the learning outcome and expectations for the second part of the course. Here, 73% answered that they were happy with the learning outcome from the first part of the course. Another 24% were undecided. 75% stated that the course was as expected. And 94% of the students were confident that they would learn the other ILOs during the second part of the course. In contrast to this 54% stated that the missing ILOs had been taught during the second part of the course while 9% disagreed and 37% were undecided. Nevertheless, all students stated that they were happy with their learning outcome.

Discussion

This project was conducted to get an insight into how students perceive course descriptions and if they consider them as helpful. In a similar way the usefulness of ILOs was evaluated on two courses taught at the Faculty of Science.

Course descriptions as tools for choosing courses

The results showed that most students at the University of Copenhagen are aware of the existence of course descriptions and that they can help

them to find suitable courses for their study program. Especially Master students seem to use course descriptions for orientation and to find suitable courses for their study program. This might be partly related to a higher degree of freedom of choice for Master students in comparison to Bachelor programs. Nevertheless, there still are a number of students not aware of course descriptions or just ignoring/not reading them for unknown reasons. Especially for the Bachelor course this was a bit surprising as the course description was handed out to the students together with other course materials at the beginning of the course. In the future it might be necessary to point out the relevance of the course description for a potentially better learning success outcome.

ILOs – perception difference between BSc and MSc students

The results on ILOs in both questionnaires showed that the majority of students know about ILOs though more Master students were more aware of ILOs than Bachelor students. Master students also seem to have a greater understanding of how to use ILOs for their learning outcome in general. This might be related to the fact that they are more advanced in their studies and have greater experience in how to use the available resource for successful learning. This might be reflected in the higher number of Master students thinking that ILOs are helpful for exam preparations which might be a result of experience with previous courses. Here, it would be helpful to know if this is a general learning process on the structure of course description and ILOs and how to decipher them or if this is just a coincidence based on the different study programs.

BSc student's perception of their own learning mostly in agreement with ILOs

In general, there was a good alignment between the intended and the achieved learning outcome. This is based on the student's own perception but is also partly reflected by the results from the written assessment and the oral exam at the end of the course. Most of the ILOs that had been taught during the first half of the course were answered positively in the first questionnaire. And ILOs mainly taught during the second part of the course were achieved in the second half of the course. Nevertheless, there is of course always a discrepancy between a self-evaluation and the outcome of a formal assessment when the level of understanding is evaluated. Here,

deep learning can be better differentiated from superficial learning. Such a discrepancy might be indicated by the fact that some students already after the first half of the course positively answered two ILOs that were mainly taught during the second half of the course. Another measure was the outcome from the written exam after the first part and the oral exam at the end of the course. Here, a wide range of grades was covered indicating that deep learning was not always achieved (Personal communication with the course responsible).

Conclusion and outlook

In summary it can be said that the questionnaires highlight that students are aware of two the tools course description and ILOs. They are considered as useful for learning and choosing course from students who know about them. Nevertheless, it might be necessary to increase awareness and point out how students can exploit them for improving their learning outcome.

The presented work could become the starting point for an "action research spiral" (Kember & Kelly 1993, Biggs & Tang 2011) which consists of four stages: "reflect-plan-apply-evaluate". The current stage for the evaluated Bachelor course would be the transition from "reflection" to "planning". Of course, it would be always difficult to implement changes that change the basic structure of a course. Nevertheless, it would be possible to implement changes on a smaller scale such as single lectures, experiments in practical lab exercises and similar teaching activities that do not change the overall nature of a course. Everything else needs careful consideration and longer planning also because course descriptions have to be submitted to KU administration 1 year before a course starts. Though this might hamper fast action after evaluation and reflection it still is possible to implement changes to improve constructive alignment and to facilitate deep learning to increase the student's learning outcome.

All contributions to this volume can be found at:

http://www.ind.ku.dk/publikationer/up_projekter/2014-7/

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