

## **Implementation and evaluation of longer (> 3 hours) collaborative and case-based interactive learning exercises**

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### **Introduction**

This assignment focus on constructive alignment and the inverted classroom approach.

In constructive aligned teaching the focus is on maximum consistency between intended learning outcomes (ILOs), teaching learning activities (TLAs) and the assessment tasks. The focus is on how students are to learn, rather than on what topics the teacher is to teach, hence, ILOs specifies not only what is to be learned, the topic, but how it is to be learned (Biggs & Tang 2011). Bloom's Taxonomy (from knowledge → comprehension → application → analysis → synthesis → evaluation) and skills in the cognitive domain of Bloom (remember → understand → apply → analyse → evaluate → create) is often applied in constructive aligned teaching.

Inverting the classroom (Bates & Galloway 2012, Lage et al. 2000), or the 'flipped classroom approach' (Butt 2013), means that events that have traditionally taken place inside the classroom now take place outside the classroom and vice versa. Hence, the delivery of material (to remember and understand) is moved outside the class room and the formal class time is used to undertake collaborative and interactive activities relevant to that material. The use of multimedia and Internet is often integrated in the inverted class room approaches to support the delivery of material (e.g. by recorded lectures etc.).

This project will not apply a full inverted or flipped class room approach, which foremost has been applied to introduction and basic courses

(Bates & Galloway 2012, Lage et al. 2000). The project takes its departure in an interdisciplinary 7.5 ECTS master course which include app. 12 guest-lectures from different disciplines and also from practice (for a short presentation of the master course see table 27.1). Hence, the traditional lecture approach remains the main teaching-learning activity, but collaborative and interactive activities will be tested as a weekly activity inspired by experiences from the flipped class room approaches.

### **Project objectives**

This project will seek to develop, test, and evaluate longer (> 3 hours) collaborative and case-based interactive learning exercises. The following hypotheses will be tested based on students' oral evaluation comments:

Hypothesis 1: The introduction of the exercises will enhance deep learning.

Hypothesis 2: The introduction of the exercises will improve constructive alignment

### **Methodology**

In the following, the new exercises will be described followed by a short description of how the material (in the form of student feedback) was collected to support this study.

### **Description of the new exercises**

The objective of the exercises was to improve constructive alignment in the course. Hence, in line with constructivist theory of learning, students were to use their own activity to construct their knowledge (Biggs & Tang 2011), and at the same time the exercises should improve alignment of the ILOs with the summative assessment (i.e. the final synopsis exam where students are supposed to apply analytical frameworks to a self-selected case). An additionally objective was to provide the teacher with continuous feedback from the students concerning level of understanding and comprehension thereby giving the teacher improved insight into the learning process.

ILOs	TLAs	Summative assessment
<p>The course has two overall goals:</p> <ol style="list-style-type: none"> <li>1. to make the students aware of their personal biases in relation to landscape values;</li> <li>2. and to enable them to identify, analyze and compare the meanings of nature of different stakeholders in order to generate appropriate solutions to problems and/or conflicts in the countryside.</li> </ol> <p>Knowledge: Present examples of different theories and methodologies for analyzing meanings of nature and describe and compare their content.</p> <p>Skills: Ability to select and use methods and theories for analyses and comparison of nature perception in concrete cases.</p> <p>Competences: Ability to present and discuss similarities and differences of nature perception based on theories and empery</p>	<p>24 lectures (½ guest lectures)</p> <p>Teacher provided reading list (to be read before class)</p> <p>Most lectures included short plenum and group discussions</p> <p>Excursions (1½ day)</p> <p>Student presentations</p>	<p>Synopsis exam (written + oral)</p> <p>Hand in of a short individual written synopsis on self-selected topic (max 13,000 character)</p> <p>Oral power-point presentation of synopsis</p> <p>Oral discussion with examiner and external examiner.</p>

**Table 27.1.** Short presentation of the Nature Perception course with focus on constructive alignment. The course is offered to students from the master programmes of: Nature Management (as a semi-compulsory course), Landscape Architecture and Agronomy. This year 10 students from DK and 22 students from other countries (SP, BU, NL, FI, IC, US, UK, CAN, and AUS) were enrolled. The students hold different bachelor degrees (e.g. from Biology, Geography, Landscape Architecture, Environmental Science, Agronomy, Naturel Resource Management, Forestry Engineering). The 7.5 ECTS point course is running in block 2 (final exam dates 20th, 21th, and 22th of January 2014).

The exercises can be characterized as collaborative case-based TLAs. Following the argumentation by Krogh et al. (2013), case-based teaching improve the students' structure of their knowledge, increase their communicative competences, and enhance their ability to apply a holistic approach integrating both theory and practice. All these competences are important parts of the individual final summative synopsis exam.

The exercises were made up of the following components:

- Case-based learning
- Problem-based learning
- Collaborative-based learning (group work)
- Group presentation and peer/teacher-assessment

In total three exercises were developed targeting three different case-based problems (attitudes to emptying a lake/river restoration; visitor man-

agement in a protected DK area; and red deer management in UK). The exercise objectives were clearly presented by the teacher together with course ILOs and the idea behind the final summative assessment. It was explained that the exercises were introduced at the course in order to prepare for the final individual summative assessment.

The exercises were based on collaborative learning. Groups were constituted by the teacher (3-5 students in each group) with emphasis on different compositions of students each time. The groups had 2-4 hours to conduct the analyses and prepare a power point presentation of their findings. The exercises differed by type of empery. The first exercise was based on material provided by an external guest lecture, the second exercise were based on excerpts from interviews made available by the teacher, while the third exercise was based on the students own material produced by help of world wide web searches. The exercises focused on identification of differences in key stakeholders' nature perception by the use of different analytical/theoretical frameworks in each exercise.

The exercises followed the three phases in case-based teaching as described by Krogh et al. (2013): In phase 1, students worked individually with the provided material (15-25 minutes), followed by phase 2 with collaborative group discussions and preparation of the findings (2-3 hours), and finally, phase 3 were made up of a case seminar with group power point presentations of findings and feedback from peer-students (peer assessment) and the teacher (10-15 minutes/group, 1 hour in total).

### **Evaluation of exercises**

An oral evaluation followed each exercise providing data for this assignment. Student feedback was collected as a series of statements and comments by the teacher.

The overall course evaluation was made up of an oral evaluation and a written evaluation. The outcome of the written evaluation was not available at the time of writing, but the oral comments from the course evaluation will be included. In the oral evaluation the students were asked to write down one negative and one positive comment about the course on two post-it notes. The notes were thereby grouped based on similarity on the black board, and the outcome was discussed in plenum with the students (see figure 27.1).



**Fig. 27.1.** Grouping of student feedback on black board.

## Results

First, the evaluation comments based on the three exercises will be presented, and then, the course evaluation comments will be presented with an emphasis on the objectives of this assignment.

The student oral evaluation comments based on the three exercises were both positive and negative. In table 27.2 the positive comments are grouped according to “improvement of constructive alignment”, “links between case-based teaching and deeper learning” and “benefits of collaborative learning”. The negative comments were either focused on the “form” (process of the exercise) or the “content” (the case or subject) of the exercises.

Many positive comments were made (and a lot of nodding) to the usefulness of the exercise in terms of learning, e.g., “*when I use it [the frameworks] it becomes clearer*”. Particular the collaborative set-up of the exercises were highlighted as a contributor to deep learning. The discussions with peers seems to support “*deeper understanding*” and to be “*beneficial for understanding*”, and finally, making the frameworks less theoretical. In terms of constructive alignment, the exercises seemed to complement lec-

Positive comments			Negative comments	
<i>Improvement of constructive alignment</i>	<i>Links between case-based teaching and learning</i>	<i>Benefits of collaborative learning</i>	<i>Form</i>	<i>Content</i>
“Fixing the concepts to the lectures”  “I got a better overview of the frameworks”	“Very useful, until now we have learned a lot of superficial stuff (i.e.: theories, concepts foremost based on lectures)”  “When I use it [the frameworks] it becomes clearer”  “We are in need for more practical inputs, i.e. less theory and more practice examples”  “We are in need for grasping, need for cases”	“The discussions in the group was beneficial for understanding”  “It’s interesting to work in groups, it enables you to obtain a deeper understanding”  “Beneficial and good with the discussions in the groups – the frameworks become less theoretical”	“Two hours [of group discussion] too much” [disagreement between students]  “Set up a debate, a discussion between groups”  “We need more critical feedback from the teacher”  “We could have had more out of it – if we had read the other groups’ interviews [case material]”	“The frameworks were too similar – when you had decided on one framework the others were easy to fit in”  “Too much focus on animals – what about e.g. a land use type instead?”

**Table 27.2.** Selected exercise evaluation comments by the students.

tures by providing “*a better overview of frameworks*” and by “*fixing the concepts to the lectures*”.

The negative comments were rather constructive, meaning that they did not question the presence of the exercises, but instead were focused on improving the form and the content of the exercises. Comments were made about the difficulties of being opponents to the other student groups’ presentations (i.e. peer assessment), because of poor student preparation: “*We could have had more out of it – if we had read the other interviews*”. The interview material had been provided before class on Absalon, but the peer assessment part of the exercises had not been stressed clear enough from the teacher (or the students didn’t prioritize this). Hence, this part of the exercise should be improved next year. The teacher role in the assessment of the presentations was also criticized by expressing a need of more critical teacher feedback. Naturally, this will be improved next year due to more teacher experience of how students will approach and solve the different cases. This also points to another challenge of this class being that many of the students comes with a clear science background, and this is the first social science oriented course where they are approached by exercises with no clear answers in terms of correct and wrong – but with emphasis on poor and strong argumentation and documentation. A discussion was initiated on this with the students, but this turned out to be a balance act, since it seemed

like some students were left with an impression that ‘everything goes’. An alternative form of the peer assessment was suggested by a student, with emphases on a form of panel discussion: “*Set up a debate, a discussion between groups*”. Other students commented that this approach might put more emphasis on the arguments instead of the frameworks.

The severity (difficulty level) was also commented as being low, i.e., too much time for group discussions and too easy (to apply the frameworks). But these comments were not agreed upon among all students, pointing to the teaching challenge of setting the most appropriate difficulty level.

The final oral course evaluation also produced interesting material of student perception of the long exercises compare to the other course TLAs. Many students focused on collaborative and case-based teaching activities including the long exercises in their final positive evaluation comments (11/27). Other positive comments were highlighting the relevance of the course (7), the guest lectures (3), the summative assessment form (2), the lectures (2), and the excursions (2).

Four negative evaluation comments also embraced exercises (and case and group-work in general) by stressing simply that the course did not include enough of this form of TLA, other negative comments were centered on a big and difficult curriculum (5), the lack of link between science, practice and conflict management (4), too long teaching days (2), the lectures (2), the guest lectures (2), and excursion (1).

These positive and negative highlights of the different TLAs were all interesting. Not only in terms of the number of similar comments, e.g. the high number of students expressing a need for more case-based exercises and collaborative discussions, but also in terms of importance of applying different TLAs in a course in order to comply with students different learning styles. This will be discussed in more details below.

## **Discussion and conclusions**

The objective of this study was to improve deep learning and constructive alignment by including three new long collaborative and case-based exercises. Based on the students oral evaluation comments the exercises seemed to be successful in terms of learning, i.e. the students expressed an increased understanding of the subject. In terms of constructive alignment, it can be argued that this course used to be foremost based on traditional lectures and guest lectures (although many lectures incorporate small short 5-20 minutes

collaborative or plenum discussion exercises). Hence, following Blooms revised taxonomy (Biggs & Tang 2011) it can be argued that the dominating TLA used to support ILOs of *remembering and understanding*, although the course ILOs were mostly focused on appropriate selection and use (that is *applying*) different frameworks (see table 27.1). The new long collaborative and case-based exercises were introduced to improve constructive alignment by putting more emphasis on *application* and *analysis*, followed by *synthesis* and *evaluation*. Some of the student comments support that this was actually the case (some students expressed an improved overview and improved understanding of lectures based on the exercises). However, at the time of writing the course is not completed. Hence, it will be interesting to see if the increased understanding will affect the outcome of the final summative assessment. Further, it will be interesting to see how the exercises will be evaluated in the final written overall course evaluation.

Finally, it is relevant to remember that not all students are collaborative and cooperative learners, e.g. some learn best via lecturing others can be characterized as experiential learners with emphasis on conducting experiments, or by self-directed studies for the independent learners (Lage et al. 2000). Hence, it is essential to apply a variety of teaching methods in class to comply with students' different learning styles (Lage et al. 2000). Based on this assumption, a full flipped class room approach with full focus on collaborative and case-based discussion exercises will not be applied in this course. Lecturing will still be an important part of the teaching methods, but alternative teaching activities will be tested in the coming years (e.g. peer-assessment, peer-supervision, and implementation of IT and interactive flipped class room activities outside class hours) and the lectures will be improved to be more in line with the course ILO. This will include transformation of one-way lectures to interactive conversations focused on e.g. similarities and differences of frameworks; by applying student reviews of lectures in the end; and to make sure that as many as possible student activities are incorporated in the lecture.

All contributions to this volume can be found at:

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