

Towards constructive alignment of the interdisciplinary land use and natural resource management course

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Introduction

For the past three years I have been part of the team of lecturers of the MSc course, “Interdisciplinary Land Use and Natural Resource Management” (ILUNRM). In an earlier essay as part of the university pedagogic course (*Adjunktpædagogikum*), I have attempted an assessment of the level of constructive alignment (cf. Biggs & Tang 2007) of the ILUNRM course. The assessment points towards significant room for improvement in relation to aligning intended learning outcomes (ILOs), training and learning activities (TLAs) and assessment tasks (ATs), cf. Hansen (2012). The present paper attempts to address more specifically how the course could be further constructively aligned to facilitate deep learning, i.e. how to improve the constructive alignment of the ILUNRM course. The specific objectives of the study are to: (i) to consider what ILOs developed in the Structure of the Observed Learning Outcome (SOLO) taxonomy may look like; (ii) to discuss revisions to the TLAs vis-à-vis the suggested ILOs; and finally (iii) to discuss how the assessment tasks could be revised. Apart from own experiences from the course, the study draws on the students’ evaluation of the course, and views of the teaching team. I hope that the report can provide the background for continued discussions in the lecturing team for further development of the ILUNRM course.

Background

ILUNRM is a 15 ECTS M.Sc. course at the Faculty of Science. It is implemented in one block (Block 3), i.e. the students do not have other courses in that block. The course is followed by more than sixty students each year from a host of MSc programmes at University of Copenhagen (UCPH) and Roskilde University (RUC), including Agricultural Development (UCPH), Sustainable Tropical Forestry (UCPH), Anthropology (UCPH), Geography (UCPH), Geography (RUC) and International Development Studies (RUC). It follows that the students have very diverse disciplinary backgrounds (both natural and social sciences). Moreover, the students are a culturally diverse group with more than fifteen nationalities represented in the 2012 course.

The course is problem-based in the sense that the students, in groups, work on real-life assignments in a natural resource and developing country context. This year (2012), the students worked on assignments in Kenya and Malaysia. I participated in the Kenya trip, where students divided into four groups studied water issues, crop production systems, energy and fire wood issues and livestock production, respectively; each group working in the setting of a specific village. In the field, the students work with students from a local university; this year in the Kenya case, students from the University of Nairobi.

The course structure currently involves a 3.5 weeks preparatory phase in Denmark with lectures and exercises where students work on a synopsis that describes the problem and how they will address it. This is followed by two weeks of supervised field work and data collection in a developing country. Upon return from the field, there is a supervised data analysis and report writing phase of three weeks. The assessment is an individual oral examination with point of departure in the report.

Methods and material

The study draws on my personal experiences and reflections from being a lecturer on the course. Second, I have included students' evaluations of the course. Third, I have tried to incorporate the views and ideas of other members of the lecturing team. With regard to the students' evaluation, the 2012 course was only evaluated by a few students due to some technical problems with Absalon (the course homepage) at the time of evaluation.

I have therefore included the evaluation of the 2011 course as well. I did not lecture in the 2011 course, but it was very similar to the 2012 course, and hence the evaluation is believed not to differ significantly from what would have been the case should the 2012 evaluation worked as expected. In the evaluation, I have mainly made use of the qualitative part; and present results as a number of selected quotes. The evaluation is a mix of English and Danish. For clarity, I have chosen to present the quotes in Danish in their original form rather than to attempt to translate them. As for the views of fellow lecturers, a half-day workshop was implemented in the team of lectures (six participants), where I presented an assessment of course ILOs, TLAs and ATs as an introduction for a discussion. The workshop took place on 7 May, 2012. Fellow lecturers have been invited to comment on the analysis and ideas presented in this report. Nevertheless, the present essay obviously presents my personal views and ideas, which may not necessarily (fully) accord with the other members of the lecturing team.

Results and discussion

Intended Learning Outcomes

I have analysed the intended learning outcomes (ILOs) of the course in my previous essay (Hansen 2012). There I concluded that (i) the verbs used in the current seven ILOs are not in accordance with the SOLO taxonomy; (ii) the used verbs refer – probably against their intension - to lower levels in the hierarchy of verbs (uni-structural and multi-structural); and (iii) stipulated topics are unspecific, e.g. central concepts and terms within development and natural resource management (ILO no. 1).

The team of lecturers agreed to the need for a revision of the ILOs in line with the concerns raised above. Moreover, it was acknowledged that the ILOs need to feature more prominently in the course. At present the ILOs are hardly presented to the students and the ILOs are only partly guiding the Training and Learning Activities (TLAs) and the Assessment Tasks (ATs), cf. below. It is noted that none of the students reflected specifically on the ILOs in their evaluations.

In relation to the ILOs, the lecturing team discussed the central elements of the course. The following keywords capture this discussion:

- Inter-disciplinarity
- Problem-based

- Methods and analysis
- Working in groups
- Intercultural collaboration

Figure 18.1 proposes a set of revised ILOs. This is considered as a first, preliminary set of ILOs for further consideration and discussion by the lecturing team. A few remarks on the proposed ILOs: we have attempted to use only verbs from the SOLO taxonomy. Second, there is a progression from multi-structural (ILO no. 1) to extended abstract (ILOs no. 6 and 7). Third, we have attempted to address all the keywords discussed above. Note that we have not attempted to structure the ILOs according to knowledge, skills and competences as used to be a requirement for course descriptions at the former Faculty of Life Sciences at University of Copenhagen. Whether this requirement will be maintained by the new Faculty of Science remains to be seen. I do not consider such a classification useful, since in my view the three categories overlap.

No	ILOs – After completing the course, the students should be able to:
1	<i>Describe</i> and <i>discuss</i> key field data collection methods (both natural and social science methods)
2	<i>Integrate</i> own knowledge, skills and competences into interdisciplinary problem-oriented group work
3	<i>Construct</i> a research plan for investigating a real-life natural resource “problem”
4	<i>Apply</i> selected methods in the field
5	<i>Analyse</i> and <i>report</i> on collected field data
6	<i>Reflect</i> on research plan, choice of methods and reliability of collected data
7	<i>Generalize</i> and <i>reflect</i> on results observed/obtained at the case level to broader issues of sustainability, livelihood, natural resource management and development

Fig. 18.1. Proposed, revised ILOs for ILUNRM.

Training and Learning Activities

In 2011, 68 % of the students and in 2012, 88 % agreed more or less or completely that the TLAs support the ILOs. Likewise, 83 % of students in 2011 and 76 % in 2012 more or less or completely agreed that the course was good. Students in particular are pleased with:

“Trying out methods; comparing them and their use; learning about intercultural communication; team work; exposing students to the reality of research.” (2012)

“Fantastisk kursus. Kæmpe force at arbejde sammen med folk med anden baggrund, enormt lærerigt at trække på andres kompetencer til at supplere egne, samtidig med, at man tvinges til at blive mere klar over sig selv og sine kompetencer ift andre og hvad man fagligt og personligt kan bidrage med. Det medfører ofte at måtte argumentere for sit synspunkt, i stedet for at det er et givet udgangspunkt! Og helt fantastisk at lave research i en virkelig kontekst, samtidig med at man bor og arbejder intensivt sammen med sin gruppe” (2011).

The course makes use of the following TLAs:

- Lectures
- Exercises
- Student-led presentations
- Supervised group assignment, which may be sub-divided in
- Synopsis
- Field work/data collection
- Analysis and report writing

Lectures

“Forelæsningerne var alt for komprimerede og overfladiske. De der handlede om velkendt stof var ren gentagelse; dem der handlede om ukendt stof var for hurtige og overfladiske til at jeg kunne følge med. Ingen af delene er specielt hensigtsmæssigt” (2011).

This quote summarizes in a sense the challenge this course faces in accommodating students from diverse backgrounds. The lectures are of two kinds: Lectures on methods (introductions to methods which are subsequently the subject of exercises) and thematic lectures. The challenge is most pronounced in relation to the thematic lectures. Some of these are of a general nature, e.g. the thematic lectures on land tenure, governance, gender and conflicts, and sustainability, which beg questions as to their specific relevance. Likewise, these are topics where the prior knowledge of the students varies from nothing to highly detailed.

There appears to be a general agreement among the lecturers that there is a need to reconsider (some of) the thematic lectures. The way forward could include turning some of them into introductory lectures and develop exercises linked to the lectures. This model could be applied in relation, for example, to the lectures on sustainable livelihoods and rural economies, sustainability, and nutrient flows in farming systems. Moreover, there is a

need to develop introductory lectures on how to work in groups and on interdisciplinarity. This is also reflected in the students' evaluations, e.g.:

“Idet kurset baserer sig på gruppearbejde mellem danske og udenlandske studerende mener jeg, der burde have været mere fokus på processen i at arbejde i grupper. Alle de udenlandske studerende i min gruppe har aldrig før arbejdet i grupper, hvilket har givet anledning til nogle interne misforståelser, men medfører endvidere at der gentagende er tvivl blandt dem om, hvilke krav der stilles, hvordan forskellige ting skal håndteres etc. Således mener jeg, at man bør sætte folk i grupper hurtigst muligt, som det også gøres nu, og derfra bruge langt mere tid på (og være langt mere tydelig omkring og opmærksom på) at beskrive og forklare hvad gruppearbejdet indebærer i hver enkelt del af opgave perioden” (2011).

“Jeg synes at den største udfordring har været at samarbejde tværfagligt, hvor en introduktion til forskellige forskningstraditioner og videnskabsteoretiske retninger kunne have været en klar fordel. I min gruppe var det en stor udfordring at få en fælles forståelse for vores forskning, men det undrer jo ikke når de naturvidenskabelige studerende ikke har en indsigt i forskellene på de forskellige forskningstraditioner” (2011)

Exercises

The 2012 courses included a few more exercises than in previous years, and more options for students to choose between different exercises based on interest. The lecturers agree that this worked well, and is a direction that should be further pursued. The evaluations also point in this direction:

“Generelt vægtedes de naturvidenskabelige metoder meget højere end de kvalitative metoder. Er det muligt at ændre på det? Eksempelvis var der sat 7 timer af til at lære to naturvidenskabelige metoder efter eget valg og 3 timer til at lære 3 kvalitative metoder” (2012)

“More practical exercises on PRA methods would have been needed. The two methods tried out were good, but also raised a lot of questions which could've been addressed through additional exercises or at least sufficient time for questions and answers” (2011)

Some ideas for additional exercises are discussed above in the section on lectures. In addition, based on the 2012 reports and expressed wishes from the students, the addition of exercises on data analysis and presentation could be considered.

Student presentations

The student presentations are generally not favoured by the students as illustrated by the following two quotes:

“De mange studenterfremlæggelser var muligvis ikke så nødvendige. Meget lidt tilslutning og ikke rigtig tid til at arbejde på (forholdsvis) ligegyldige fremlæggelser frem for synopsis” (2012)

“Too many oral presentations without other purposes than to do it for the sake of it. When we are busy writing synopsis and fieldwork, it could feel like waste of time doing presentations that the teachers even couldn't stay awake for” (2011).

The lecturers acknowledge this criticism, including the poor quality and level of attendance of at least some of the student presentations. There is thus a need to reconsider the use of student presentations, including a possible reduction in the number, revision of topics and replacing some of them with lectures (in country groups) prepared by the lecturers.

Supervised group assignment – synopsis

Under the current course organization, the students spend approximately 3.5 weeks preparing a synopsis for their group assignment alongside the lecturers and exercises discussed above. It could be advisable to condense this part of the course somewhat in order to have more time for the data analysis and report writing. In practical terms this means that the students should submit their synopsis at the end of the third week.

“There is a lot of time spent on the synopsis which has to get changed anyway, once the students arrive in the host country. It helps to go through a thought process but in the end it seems to be a lot of time wasted on ‘what if’ questions, rather than facts. Introducing some leading articles on the subject would help more to bring everybody on the same line.” (2011)

In relation to the synopsis and the student comment above, the team of lecturers has also discussed the nature and quality of the problem that is presented to the students and which forms the backbone of the students' work on the synopsis. As stated above, it is generally agreed that the course is problem-based and should take its point of departure in a concrete problem on the ground. Currently, there are some differences concerning how

specific is the problem presented to the students, partly due to differences among the countries and partner universities that the course collaborates with. The lecturers generally agree that a specific problem formulation – in contrast to a broadly defined problem area – would facilitate the students' work on the synopsis, as would background information as elaborated and detailed as possible. Both aspects point towards the need to spend more time in the field with the partner universities to prepare problem formulations and material. This said, the identified problem should obviously still be defined in a way that requires a multi-disciplinary approach using both natural and social science theories and methods.

Challenges arising because students from our partner universities have different tasks, synopsis, or even no synopses, which clearly frustrates the Danish students and the collaboration, can probably never be completely eliminated. As a minimum, we need to prepare the students better on this issue.

Supervised group assignment – field work and data collection

This part of the course generally receives favourable evaluations:

“The project provided an opportunity to try out various data collection methods which will be useful both for thesis work and also later in life. It also gave much needed general field work experience and an opportunity to work not only in a group with different people, but a multi-disciplined one. Helped in learning the importance of group dynamics” (2011).

It is important that the students get sufficient time in the field to collect the required data; 10-12 days at the minimum, and are not disturbed by too many requirements for presentations and official gatherings during this phase. Moreover, it is important to consider the group size during the field work; over a certain threshold, say ten or around that figure, the size of the group constitutes a problem, and group dynamics are compromised.

Supervised group assignment – report writing

Both student' evaluations and lecturers point towards the need for more time for report writing. The shortening of the introduction phase (synopsis) would allow this. Moreover, it appears that there is a need to for us lecturers

to inform them in greater detail about the requirements of the reports. This should be combined with supervision on the report structure, immediately after the return from the field.

Assessment Tasks

The course description stipulates the assessment as (i) assessment of field report, and (ii) individual oral examination in synopsis, field report and course curriculum; each of the two components weighing 50%. However, the de facto assessment concerns primarily the report, and current assessment practice only to some extent assesses the curriculum of the course. This is a serious concern in relation to the learning process. Moreover, it can turn into a technical or administrative problem in case of students' complaints over assessment results, since disagreement between actual assessment practice and course description would be a problem. The team of lecturers agrees that there is a need to broaden the examination and consequently to downplay the importance of the report. The report should be the point of departure for an examination that assesses (i) theory; (ii) methods and data analysis; and (iii) reflection and perspectives (including inter-disciplinarity). The proposed ILOs are believed to support this direction. Further, we could develop rubrics with assessment criteria for each ILO as suggested by Biggs & Tang (2007). However, that appears to be complicated, and it is considered more feasible, at least for now, to maintain a more qualitative and overall assessment. Finally, we have discussed how to include the students' contribution to the group and the group assignment in the assessment, cf. ILO no. 2. An individual reflective diary that is submitted together with the group report could be an option in this regard, but my immediate reaction is that it is too time consuming for the students to handle along other requirements.

Conclusion and way forward

The current analysis, based on a review of students' evaluations, discussions in the team of lecturers and personal reflections, suggests that the ILUNRM course is not (fully) constructively aligned, and that students' learning could be enhanced through revisions of ILOs, TLAs, and ATs. The discussions among the team of lecturers suggest that there is agreement on

the general direction of revision, which is an important prerequisite for any change. It is suggested that changes be implemented in a step-by-step manner, starting with revisions to the lecture plan and the curriculum or contents of individual lectures and exercises. Upon further discussions in the team of lecturers, a subsequent step could be a revised course description. Considering the process of approval in the Study Board, this would in any case be a longer process, and probably not something that can be ready for the next implementation of the course in February 2013. In terms of key challenges in moving forward on course revisions, I would point at two: (i) lack of continuity within the team of lecturers (50 % annual turnover) and (ii) fitting the course into the curriculum of our Southern partner universities. However, both are considered as givens and outside the immediate control of the Danish lecturers.

All contributions to this volume can be found at:

http://www.ind.ku.dk/publikationer/up_projekter/2012-5/

The bibliography can be found at:

http://www.ind.ku.dk/publikationer/up_projekter/kapitler/2012_vol5_bibliography.pdf/