

Exploring the teaching environment in a higher education geoscience programme

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ABSTRACT: This paper explores the teaching environment among the teaching staff in the geoscience programme at UiT The Arctic University of Norway. The findings in this paper are based on a large baseline study conducted in 2018. This paper operationalises the teaching culture by analysing the teachers' ideas, collaborations, and attitudes towards teaching. In-depth interviews with selected teachers provide insights into the individual teacher's conceptions of teaching and teaching experience in the department. The study focusses on how the teaching environment is constructed and perceived in the department. Teachers' tacit or implied notions influence the teaching environment, and we explore how this becomes visible, at one specific department. Combining survey data and interviews provides insights into the structures and culture in the department. We show that a supportive teaching environment has been established at the department. The teachers often discuss teaching and alignment of courses. However, most of the discussions are limited to small sub-disciplinary groups within the department. This creates a barrier for discussing teaching and alignment of courses across the curriculum. The analysis also shows that the teachers receive little feedback on their teaching. The paper further discusses how the department can use the existing structures to improve the teaching environment, the culture for feedback and alignment of courses in the programme.

Keywords: higher education; geoscience; teaching culture

1 INTRODUCTION

The teaching environment among the teaching staff in the geoscience programme at UiT The Arctic University of Norway is researched through a baseline study conducted in 2018. The baseline study first defines parameters for creating a baseline for quality in the study programme. The study maps out the curriculum, the teaching and learning environment in the bachelor programme. The overall aim is to explore the teaching and learning culture among staff and students and provide input for future development of the programme (Martens & Malm, 2019).

In this paper we focus on the teaching environment and wish to go beyond what the students or teachers do in the classroom, and widen the perspective. Lee (2007) argues that the academic department is a critical unit of analysis in higher education and demonstrates how the different aspects of departmental culture can be ascribed to the institutional and disciplinary cultures. She also shows that the institution plays a more influential role than the discipline in determining the departmental culture, which makes it relevant to explore the local culture at each institution. This is important in relation to teaching development and the teaching environment because "...the findings here show that institutions can successfully shape (or reshape) departmental opinions about students. Professors' commitment to creating a diverse college environment, commitment to research, and collegiality is also within the greater control of the immediate college or university." (Lee, 2007 p. 53)

Exploring the departmental culture thus provides an opportunity to discover the potential for, and the challenges to improvement. The departmental culture governs the behaviour of staff and students through norms, tacit knowledge, and implied notions about how research and teaching is performed (Merton, 1973; Gerholm, 1990; Brew, 2001; Ulriksen, 2009). The cultural values are transmitted to the individual scientist, reinforced by the culture, and are in varying degrees internalized by the individual scientist (Merton, 1973). The explicit (i.e. openly stated) part of the culture is easily accessible, however, the culture also comprises tacit knowledge or conceptions that influence the members of the culture. One way of approaching tacit knowledge is to explore the structures that govern the departmental culture. In this study we have chosen to focus on how teachers discuss and collaborate in teaching as a way of operationalizing tacit knowledge in the department. The results of

the analysis will inform the department on how to strengthen the teaching environment and through this improve teaching in the study programme.

2 METHOD

The baseline study includes an online questionnaire for researchers, teachers, administrative and technical staff and students. The survey explores topics such as the future of geoscience, teaching, collaboration, feedback, and contact with industry. For this paper we use the results from the teacher questionnaire with answers from 20 teachers, including 5 Ph.D. students.

To operationalize the teaching culture we have chosen a set of questions on how the teachers discuss teaching. The purpose of the questions is to investigate how the teachers work together and support each other in the teaching. The teachers also answered a set of questions on how the group of teachers approach the ongoing teaching development at the department. A third element in the teaching culture is feedback, and we have asked who the teachers get feedback from and how often, and what forms of feedback they find useful for their teaching.

The baseline survey includes 45 questions for teachers, but for this paper we have chosen to focus on a few questions shown in table 1. The full survey and data set is published in Martens and Malm (2019).

Table 1. Selected survey questions and scales. Adapted from Martens & Malm, 2019.

Questions and scale	Items
<p>Question T18: How often do you ask the following people for advice or assistance when planning teaching?</p> <p>Scale: 1. Never 2. Very rarely 3. Rarely 4. Sometimes 5. Often 6. Very often 7. Continuously 8. Not applicable</p>	<ol style="list-style-type: none"> 1. Academic staff 2. Students 3. Administrative/technical staff at the department 4. Management at the department 5. IT department 6. Others
<p>Question T19: How often do you and your colleagues discuss the following topics related to teaching?</p> <p>Scale: 1. Never 2. Very rarely 3. Rarely 4. Sometimes 5. Often 6. Very often 7. Continuously 8. Not applicable</p>	<ol style="list-style-type: none"> 1. The academic content 2. Instruction and assessment methods 3. Practical organization 4. Students 5. My own role / experiences as a teacher
<p>Question T20: Please indicate to what extent you agree with the following statements</p> <p>Scale: 1. Strongly disagree 2. - 3. - 4. Neutral 5. - 6. - 7. Strongly agree 8. Not applicable</p>	<ol style="list-style-type: none"> 1. My colleagues are open for new ideas with regards to teaching 2. My colleagues support me when I want to develop my teaching 3. My colleagues understand the problems I experience with regards to teaching 4. I do not discuss my teaching with colleagues
<p>Question T25: How often do you receive feedback on your teaching from the following groups?</p> <p>Scale: 1. Never 2. Very rarely 3. Rarely 4. Sometimes 5. Often 6. Very often 7. Continuously 8. Not applicable</p>	<ol style="list-style-type: none"> 1. Students 2. Academic staff 3. Administrative/technical staff 4. Department leadership 5. University leadership

<p>Question T26: To what extent do you find the following forms of feedback to be useful for your teaching?</p> <p>Scale: 1. Extremely little 2. - 3. - 4. Neutral 5. - 6. - 7. Extremely well 8. Not applicable</p>	<ol style="list-style-type: none"> 1. Written evaluations from students (course evaluations) 2. Informal feed-back from students 3. Teaching awards 2. Guidance conversation with colleagues at the university 3. Guidance conversation with university educational expert 4. That a colleague is present while you teach and afterwards gives you feedback (peer review) 5. Follow-up from department leaders
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In addition, in-depth interviews with selected teachers have been conducted to provide insights into the individual teacher's conceptions of teaching, how they see their course (-s) in relation to the study programme, and their perception of the teaching environment at the department. In total, six teachers with main teaching responsibilities in the bachelor programme were interviewed. The interviews are used as a supplement to the analysis in this paper.

3 FINDINGS

The analysis of the survey shows that the teachers to a high degree discuss teaching, and many reply that they regularly or often have a dialogue with others about teaching. The content of the teaching and assessment, are the topics discussed the most, as well as the practical organization of the teaching. The teachers often discuss their own role as a teacher.

The teachers answered a set of questions about how they as a group approach new ideas in teaching, and the ongoing teaching development. The answers show that the teachers to a large extent experience that other teachers understand them and the challenges they experience in teaching. The teachers find that others are open to new ideas in teaching and that they get support if they wish to develop their courses. Overall, the answers from the questionnaire indicate that there is a high degree of dialogue between the teachers about both teaching and their role as teachers.

The analysis of the teachers' possibilities of receiving feedback shows that the teachers receive very little feedback on their teaching. Teachers receive some feedback from students. Only a few respond that they sometimes receive feedback from colleagues. Teachers rarely or never receive feedback on their teaching from the department's management. The teachers experience that feedback from students is the most useful form of feedback. Both written and oral feedback scores high, with an overweight on informal oral feedback. Feedback in the form of conversations with colleagues or an educational expert is also perceived as useful forms of feedback.

The analysis of the interviews shows that the individual teacher's experiences with collaboration around teaching are in agreement with the results from the survey. However, the interviews also reveal that the teachers primarily discuss teaching with the colleagues they teach together with. If they discuss teaching across the curriculum it is often with regards to courses that are taught by the same research group or belong to the same sub-discipline. That is, the teachers discuss the alignment of courses that build on each other within one specific sub-discipline of geoscience, but to a lesser degree the alignment of courses belonging to different sub-disciplines within geoscience.

These results provide us with a peek into the teaching culture at the department. Tacit knowledge is transferred through interaction and we see that the teachers often discuss and collaborate in their teaching practices, which indicate a sound teaching environment with possibilities of receiving support. However, the interactions are to a high degree confined within the sub-disciplines, suggesting the presence of a barrier for the knowledge flow in the department.

These insights allow us to explore how the alignment of courses across the curriculum can be improved through a change in the teaching culture. The department has the opportunity to use these insights to influence the way teachers discuss, collaborate, give and receive feedback.

4 DISCUSSION AND IMPLICATIONS

Knowing that the institution has a bigger influence on the departmental culture than disciplinary differences (Lee, 2007) provides a strong incentive for the department to actively develop the teaching environment. The findings from this paper point to a few areas where the department can focus future efforts.

The results from the baseline study indicate that a supportive teaching environment among the teachers at the department has been established. In the interviews the teachers bring up the challenges of not having enough time to prepare and develop their teaching, but overall they enjoy teaching and the interaction with students. The discussions and collaborations between the teachers in smaller, sub-disciplinary groups seem to be supportive and constructive. The department can develop the teaching environment further by tapping into these already existing structures. Widening the discussion across the sub-disciplinary groups, or creating a more structured discussion around teaching involving the full curriculum could be ways forward.

One crucial point is developing structures for teachers to give and receive more feedback in the context of teaching, both from students and colleagues. Feedback provides impetus for change and development, and the teachers can gain more knowledge about the scientific content and teaching methods of others. This would also help strengthen the alignment of courses across the curriculum.

5 NOTES

This study received funding from Result at UiT The Arctic University of Norway through The program for teaching quality in 2017 (result.uit.no).

The baseline survey also includes the geoscience programmes at the universities of Bergen and Oslo, and at the University Centre in Svalbard. The aim is to map the status and the future needs of geoscience education in Norway (more data available at iearth.no).

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