Academic development through a collective approach – introducing peer observation of teaching in a multidisciplinary faculty

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ABSTRACT: Peer observation of teaching is seen as a significant feature of professional development in higher education, aiming to improve teaching and learning. This qualitative case study explores how peer observation can be introduced at a multidisciplinary faculty with STEM and business educations, identifying opportunities and challenges experienced when colleagues participate in peer observation. A peer observation project was launched as part of implementing the faculty strategy to enhance educational quality and led by the vice-dean of education at the faculty. A stepwise protocol focusing on planning, classroom management and self-reflection was used to help organize the cooperation. Twelve academics participated, all were observed during teaching, and all acted as an observer. Semi-structured interviews with four participants and a summary from the closing meeting of the project, showed that peer observation enhanced the educational discourse with their significant colleagues and enabled to accentuate teaching as a collective approach. The findings of this study indicate the potential of peer observation of teaching. Experience was gained on how education leaders can approach the task of introducing peer observation of teaching as a practice in a multidisciplinary faculty, overcoming barriers to participation such as lack of time and fear of being observed, and enabling a real step away from teaching as a private enterprise towards teaching as a collective approach for faculty development.

1   INTRODUCTION

Peer observation of teaching provides an opportunity to share responsibilities for improving teaching practices and student learning outcomes through a reflective process among colleagues (Spencer, 2014). It can be defined as a reciprocal process where colleagues consensually observe each other's teaching and provide different forms of feedback to encourage awareness and enhance individual teaching practice (Hammersley-Fletcher & Orsmond, 2004; Sullivan et al. 2012). Feedback is given orally and / or written, and a standard protocol or form can be used to guide the work. Gosling (2002) describes three different models of peer observation of teaching: an evaluative model, a developmental model, and a peer review model. All models involve educators being observed during their teaching by a colleague (senior staff, an educational developer, or a fellow teacher), who provides feedback on their performance. This feedback is used to reflect on their performance and to discuss how to improve their teaching. *The evaluation model* is hierarchical with a senior staff acting as the observer, aiming to identify underperformance, confirm probation, appraisal, quality assurance and assessment. *The developmental model* is based on an expert / educational developer acting as the observer, intending to demonstrate competence and / or improve teaching competencies. In the third model, the so-called *peer review model,* colleagues observe each other aiming to engage in discussions about teaching with self and mutual reflection. *The evaluation model* described by Gosling (2002) gives connotations of judgement, while the other two models focus on mutual improvement of teaching through dialogue and self-reflection with peer observation as an opener to discussions on teaching through shared experiences. There is a vast range of different models of peer observation in the research literature.

1.1 Peer observation of teaching as part of professional development

Working with peer observation of teaching has become a significant feature of professional development in higher education because of its many benefits including deeper reflection on teaching and awareness of student learning experiences (e.g. Bernstein 2008; Barnard et al. 2011). Teachers that participate in peer observation feel less isolated as teachers, good teaching practices are affirmed, and confidence is built (e.g. Bell & Cooper 2013; Hendry et al., 2014; Bell & Mladenovic, 2015).

Despite the many well documented benefits of peer observation, implementation is slowed down by several barriers and the challenge of fully embedding peer observation in universities remains unresolved (Wingrove et al., 2018). Lack of time and the threatening nature of peer observation are considered primary barriers to participate (e.g. Lomas & Nicholls, 2005). When not conducted under supportive conditions, academics may perceive peer observation as time-consuming, invasive and even of limited benefit (e.g. Hammersley-Fletcher & Orsmond, 2005; Lomas & Nicholls, 2005). Timely questions are how to mitigate barriers affecting participation in peer observation, convince teachers to take part and put this to use for educational development? Is there a successful recipe to how peer observation of teaching can be introduced as a collective approach to enhance teaching in a university department or faculty? Should it be based on a top-down initiative rooted in a strategy of the faculty or university - or can it happen through a bottom-up initiative from the teachers themselves?

Key issues in the debate associated with peer observation are complex and include evaluative mechanism versus the collaborative experience, imposed versus voluntary practice, and managerial versus collegiate process (Caroll & O´Loughlin, 2014). Wingrove et al. (2018) recommend that peer observation of teaching is embedded through a developmental process which fosters professional cultures of collegiality, trust and respect. Bell & Thomson (2018) identified three different approaches to stimulate the use of peer observation at a research-intensive university: focus on the benefits of peer observation, focus on collegiality and communication between teachers, and focus on teachers' autonomy. A major study from Australia and England reports a positive and lasting commitment to peer mentoring through credible, respectful and collegial educational leadership (Wingrove et al., 2018).

Lomas & Kinchin (2006) evaluated the introduction of a peer observation of teaching at a university in UK, demonstrating the importance of considering organizational culture of the different departments and being aware of the anxieties and concerns of the academic staff. After deciding to initiate a formal program of peer observation with heads of departments responsible, teaching staff were required to participate. External pressure was provided by the UK Quality Assurance Agency - an independent body that aims to safeguard standards and improve the quality of UK higher education, and the teachers were offered dedicated seminar series and paperwork from the central level at the university. Following this, most of the teachers were observed by a peer during the academic year. The study showed that departments took ownership of the process through tailoring peer observation protocols to match departmental needs (Lomas & Kinchin, 2006).

1.2 Research questions

A clear leadership framework and an institutional culture that values teachers´ reflection and awareness to improve teaching is seen as critical success factors to implementing and embedding collegial work with peer observation of teaching in universities (Wingrove et al., 2015; Maasø & Gram, 2021). Furthermore, a top-down and bottom-up initiative together works better when it comes to establishing peer observation of teaching as a long-term collective approach for academic development, as compared to only bottom-up initiatives from the teachers themselves (Bell & Cooper, 2013; Bell & Mladenovic, 2014; Nash et al., 2014). In this current case study, we explore how reciprocal peer observation of teaching can be introduced at a multidiscipline university faculty with STEM and business educations in Norway. The basic pedagogical training program at the university already includes work with peer observation of teaching. New and younger employees are introduced to peer observation when they take this course, but few seem to implement and use peer observation of teaching on regular basis after the basic pedagogical program. In the Faculty strategy for teaching and learning, peer observation of teaching was underlined as important for educational development. Following up on the strategic plan, a peer observation project was launched. The term "peer observation of teaching" was in this project understood as a process of professional development through peer observation of one or more teaching practices, and the opportunity to reflect on those teaching practices orally with a written report to

summarize and document the work. The goal of the project was to enhance teaching as a collective practice, by focusing on critical reflection and significant conversations between colleagues on teaching practice. For this study, we explore the following research question: What opportunities and challenges are identified when colleagues participate in peer observation of teaching in order to enhance a collegial culture of teaching? Collegial culture of teaching is in this context understood as a working environment where teachers share their experiences and knowledge about teaching. In addition, they challenge and support each other as colleagues to develop teaching.

2   METHODS

2.1   Institutional context and setting of the study

The faculty in this study offers multidisciplinary and professional educational programs in both STEM and business educations, with approximately 500 employees and 3000 students. An appointed committee of teachers and students suggested peer observation of teaching as an important measure to enhance teaching and learning. This was included as a focus area in the faculty strategy. Following up on the strategic plan, the Faculty Board decided in their annual plan that a committee should be appointed to develop a system to introduce peer observation of teaching. The board recommended that the committee should include an academic developer from the Center for Teaching, Learning and Technology at the university, and that the work should be led by the Vice Dean of Education at the faculty. The committee was appointed with representatives from the three departments (both natural and social science disciplines) in addition to the academic developer and the Vice Dean.

The committee studied how other faculties at the university had approached working with peer observation of teaching and how this was conducted as part of the *Program for Basic Pedagogical Competence* at the university. The group discussed the strengths and weaknesses of the three models of peer observation developed by Gosling (2002) and recommended that "*the peer review model*" with colleagues working together with peer observation of teaching should be introduced at the faculty. They suggested that the project should include teachers from first-year courses in the different departments. Furthermore, teachers to be included in the project were to be selected by heads of departments. The committee suggested that the peer observation should be conducted in pairs across departments representing different disciplines, to help focus discussions on the teaching and not so much on the content. They also argued that such collaborations, working across department lines with different teaching cultures, could be fruitful with respect to learning from each other and getting to know each other better, hence strengthening the bond between the departments in the faculty. The committee advised that the project should start with a kick-off meeting for all participants and end with a summary meeting to share experiences from the work. Furthermore, participants should all write reflection notes that were to be shared. Participation in the project should be voluntary, but the committee suggested that peer observation of teaching should be obligatory for all teachers at the faculty in the future.

2.2   Project outline

The outlined project was accepted and supported by the leadership at the faculty and heads of departments. Teachers were asked to participate by their heads of departments. Thirteen academics were asked to participate, and twelve agreed to do so. Some of the participants in the project had previous experience with peer observation of teaching, but not all. Participants were introduced to the project and to peer observation as a method through an introductory workshop by the Vice Dean and the academic developer. During the semester they all met with the academic developer and project leader on a regular basis for updates and follow-up support. At the end of the project, they summarized their experiences in a closing meeting. A shared, structured form (*Table 1*) helped organize the cooperation, focusing on planning, preparation, classroom management and reflection.

2.3   The peer observation protocol

Teams comprising two teachers from different disciplines and departments were put together to enhance the discussion on pedagogy and didactics. The pairing was not totally random, instead we tried to match colleagues that we meant would be compatible and work well together. First-year courses were chosen as these were introduction courses with many students. Work with peer observation of teaching included mainly lectures, but also flipped classroom work and seminars.

Table 1. Form used to guide the work with peer observation of teaching in this current project. This form is adopted from the course in basic pedagogical competence at the Center for Teaching, Learning and Technology, UiT The Arctic University of Norway.

Part 1 – Preparation / first meeting (to be filled in by the teacher ahead of the teaching session and given to the observer)

Name of the teacher:	Name of the observer:	Date:
Course:	Number of students:	Activity: (lecture, seminar, etc)
Objectives for the session:	Length of teaching session:	Length of observation:

What is the intended learning outcome from the teaching session? (is it clear, realistic, possible to reach?):

Describe your overall plan for the teaching session:

Describe your role and your responsibility towards your students during this teaching session:

What areas would you like feedback on from the observer?

Which particular aspects of your teaching would you like to develop further?

Part 2 – Observation (to be filled in by the observer)

Note: These are possible, but not obligatory, topics for feedback.

	What went well:	Areas that can be improved:
Intended learning outcomes – were these clearly explained / outlined:		
Teaching method:		
Content: (professionalism, use of examples, adapted level)		
Student participation:		
Use of tools / resources: (PowerPoint, black/white board, video etc.)		
Communication: (clarity, tempo, variation, repetitions, summarizing)		

Evaluate the teaching session regarding the areas that you agreed to focus your feedback on:

Comments, advises and recommendations:

Part 3 – Own evaluation (to be filled in by the teacher after the feedback in Step 2)

Overall evaluation: (based on your own reflection and feedback from the observer)

Suggested areas that you can consider (relevant to both the teacher and the observer):

Preparation and planning

- Organizing the teaching session (opening/beginning, ending the session, structure)
- Preparations (content, notes, planning of activities)
- Learning outcomes for the session (clear, realistic, possible to reach)
- Time use (including time for activities)
- The suitability of the location / room used for teaching

General aspects of the teaching

- The teaching format (lecture, seminar etc.)
- Resource use / teaching material (amount, type, efficiency)
- Student activities (participation, attention/focus, notes etc.)
- Adaptations (e.g. for students with handicaps)
- Learning activities (e.g. group work, presentations, IKT-based activities, etc.)
- Personal appearance and teaching style

Feedback and evaluation

In the classroom:

- Strategies for questions asked (number, type, waiting time, feedback from teacher)
- How to get feedback/responses from your students during or after your teaching session (oral or written feedback)
- How do you give feedback to your students during or after the session (oral or written feedback?

The protocol and the accompanying form (*Table 1*) helped organize the cooperation, focusing on planning, preparation, classroom management and reflection. The form is designed as an intuitive tool that can be easily used by the collaborating pair and does not require assistance except a short introduction to the method. This protocol has many similarities with the protocol REFLECT (*Redesigning Education for Learning through Evidence and Collaborative Teaching*) recently developed for STEM faculty reflection by Dillon et al. (2020).

The structure of the peer observation interaction employed in this study was conducted according to *Table 1*, as summarized below.

Step 1 (self-reflection): The teacher who is to be observed fills in *Part 1 of the form*. This step is important for self-reflection, and the teacher may choose to focus on one or just a few dimensions of the teaching, to get a more detailed and formative feedback from the observer. This is information to the observer about the context for the peer observation.

Step 2 (pre-observation meeting): The peer observation pair meets ahead of the teaching session to discuss the teacher's plans and what dimension the teacher would like the observer to focus on in the peer feedback using *Part 1 of the form*. This pre-observation meeting is important to discuss the process and build trust between the two colleagues (Grimm et al. 2014; Dillon et al. 2020).

Step 3 (peer observation): The observer fills in *Part 2 of the form* taking note of what went well and what could be improved. It is also important to be aware of the specific feedback regarding dimensions that the teacher wanted the observer to focus on.

Step 4 (post-observation meeting): The pair meets to discuss the written feedback from the observer, and to digest and process the findings.

Step 5 (self-assessment): After having received both written and oral feedback from the observer, the teacher fills in *Part 3 of the form* based on the teacher´s own reflection over the feedback given, as a self-assessment.

2.4   Empirical material

The research data in this qualitative study includes semi-structured interviews conducted with four of the participants, who held positions as university teachers. These four were asked to participate, due to their different backgrounds regarding both teaching experience and discipline. The data collection processing personal data was approved by the Data Protection Services (nsd.no) in Norway (Permit number 60115). Semi-structured interviews were conducted in person by an academic developer who had not met the participants during the project. The interviews focused on the following questions:

- *What was your opinion about peer observation of teaching when the project started?*
- *You were placed together with a colleague from another disciplinary background than yourself, which advantages and disadvantages did this have?*
- *What did you discuss after the observation of teaching?*
- *Can you identify anything from the completed peer observation project that had led to changes in your teaching?*
- *Do you have any ideas about how peer observation can be further developed in your department to get greater impact for the quality of teaching?*

The interviews lasted 30-45 minutes, they were audio taped and then transcribed. As supplementary data, we included the participants' verbal feedback on what they had experienced through the peer

observation project. This feedback was given at the closing meeting, and it was summarized in a note and discussed by those involved in the project.

A content analysis method derived from Flick (2002) was applied for analyzing the interviews and the summary from the closing meeting of the project. Analysis alternated between reading the transcripts, categorizing them, and reading relevant literature in an iterative process to allow issues and experiences be identified and categorized. The focus in the analysis was on the participants' reported learning from taking part in the peer observation project: How did they experience peer observation of teaching according to their own professional development? Did it have any influence on their teaching practice?

3 RESULTS AND FINDINGS

The main findings from this qualitative study show that the participants were pleased with their attempts to conduct peer observation; even though several had been rather doubtful to participate at the beginning of the project. Those who hesitated had not previously participated in peer observation and some saw it as a top-down initiative from the leadership. They were concerned that this could be a development towards a more performance-based culture, putting new pressures on academics. However, they chose to participate because they were loyal to the faculty or their department. Others were skeptical because they considered the information-booklet they got in the beginning of the project about peer observation to be badly written. Paradoxically, the information made it difficult to understand the method of peer observation, which was rather unencouraging for those who had not tried out peer observation before. At the end of the project, participants reported that conducting peer observation of teaching was a break-off from the "private practice" that they were used to, where fellow teachers never had observed their teaching or commented on it. The general view was that this initiative was a departure from an established practice and therefore demanding, but they still found it rewarding: *"Teaching is somewhat vulnerable and private, so I have to admit it was demanding. I felt exposed. So, well - I had to get over it. ...Now I speak warmly about it."*

In the following presentation of the findings from this study, we elaborate on what the participants emphasized as important in the way the peer observation project was organized and what they considered as the main learning output from participating in peer observation. This allows a discussion of the opportunities and challenges with peer observation aiming to enhance a collegial culture of teaching.

3.1 Trust is fundamental in peer observation of teaching

The participants underlined that peer observation of teaching depends on good collaboration with a person that you find reliable and feel safe around – someone you can trust: *"I am very concerned about being a good teacher and prioritize this part of the job. Therefore, my attitude was positive, but I had to go a few rounds with myself before letting someone in. This is a great paradox as I am an experienced lecturer. ... But my colleague and I hit the right tone and we might do it again voluntary."* Another teacher stated that: *"I found it very useful that the guy I cooperated with was not too close to my own subject, but still he is a person that I have known for a while. This is necessary for being honest to each other, trust is a keyword. I mean, we are used to operate in our small private teaching sphere without any interference."*

3.2 Collaboration across disciplines

Working with a peer from a different department generated positive comments: *"I was not caught up in details, rather more focused on what she did in class."* Another teacher said: *"He could look at my teaching with an outside glance and that was an advantage. I do of course cooperate with my colleagues at the department, but an outsider commenting was a plus."* This does not totally omit peer observation of teaching among colleagues at the same department. As one said: *"I think it is best that you are not related to the content of the teaching, you will look more at the pedagogics instead of considering subject content. However, I never did any peer observation of teaching with colleagues from my own department; and it might turn out very positive."*

3.3 From a private enterprise to community property?

The participants emphasized that opening up and letting an observer into their teaching gave them a feeling of opening up a "private room" after working quite alone with teaching: *"I have been working*

for many years as a teacher completely without any interference. We have worked 30 years as lecturers without anyone evaluating what we have done except the students." Two of the interviewees emphasized that they have missed the opportunity to discuss problems and challenges in their teaching with colleagues: "*It is simply what I have missed, when I have a problem in a lecture, with whom can I discuss? It would have been nice to have - perhaps every third year – peer observations, so you can bring in ordinary situations from teaching that might be challenging or difficult or something, and then get the opportunity to discuss it with colleagues.*"

Even with a somewhat reluctant start, the project showed peer observation to be useful and inspiring to the teachers who participated, especially to those that had been doubtful in the beginning. This includes both getting inspiration from observing a colleague and having feedback from a "critical friend". For the majority it was the first time a peer had commented on their teaching. The project on peer observation resulted in many discussions about teaching and learning activities and student-learning strategies and seemed to enhance the pedagogical discourse also at the faculty level.

3.4   Significance for development of their teaching practice

During the interviews the teachers were asked if they could identify and give examples of feedback from the peer observation that had led to changes in their own teaching. They were also asked whether they had any ideas about how peer observation could be further developed in their department to impact the quality of teaching. During their work with peer observation one of the teachers had received feedback regarding the use of Power Point slides in the lecture that he gave. He concluded that his use of slides was much too extensive and that he would not organize a summary lecture like this again. He wanted instead to put more weight on student participation focusing on a few key overall topics and not try to go through the whole curriculum in detail during one lecture: "*We have 16 lectures in this course, and I have tried summarize too much, to cover almost everything and put it into a power point presentation. Now, I will instead invite the students to remember and focus on the important parts of the curriculum. So I will maybe select four major, overall topics..... problem oriented topics… and try to invite the students into this process ... to engage in more dialogue with the students, more activity*".

Similarly, one of the other teachers interviewed concluded that he would never again organize his seminars as he used to do before he participated in peer observation of teaching: "*I talked too much… I see now that the seminars need to be more on the premises of the students. And in a small seminar with few students, I give the ones who are easily engaged too much attention, forgetting the ones who are quiet…*".

One of the teachers stated that he did not gain so much out of the work with peer observation. The only thing he got was a confirmation that he did well: «*My observer was kind of impressed by how clearly I lectured and how focused my students were. It was kind of a 'hallelujah'. All was good and there was nothing that he could put his finger on*". This teacher felt that he missed important questions that could open up for reflection during his work with peer observation: "*Reflections on why you make the choices that you make – and then have a discussion around this. This is, I believe, what I imagined that this peer observation was supposed to be. That he – when he said that I had done such a good job presenting a very clear lecture - could have asked "why did you do it like this?" – and then we could have had a discussion around this – and I could have explained – and then maybe continue to discuss whether it could have been done differently… or something like that. Or when he used power points – and I asked: "why did you chose to use power points?" He had not reflected so much about that.*"

One of the teachers explained that the work with peer observation had made him more aware of his role as a teacher: "*It is hard to identify any concrete examples that I act or behave different. But what is different is that now, when I have a teaching session the next day, I think through it. I think in a different way about how I want the session to be, how I want the dialogue between the students and me to be.*"

4   DISCUSSION

This study focuses on identifying opportunities and challenges arising when colleagues participate in peer observation of teaching aiming to enhance collegial communities around teaching. Findings are in line with previous publications showing that peer observation supports the development of a collegial culture within departments and universities (e.g. Bell 2011; Martin & Double 1998).

4.1 From teaching as a private enterprise to a collective approach

Lecturing can be quite isolating and lonely (Georgiou et al. 2017), and university teaching is often described as a solitary business (Handal 1999; Roxå & Mårtensson 2004; Gizir & Simsek 2005). As Shulman (1993, p.6) puts it: "*We close the classroom door and experience pedagogical solitude, whereas in our life as scholars, we are members of active communities*". For some of the participants in this current project, this was the first time that they had someone observing them during teaching and someone to discuss their teaching with.

Most academic teachers rely on a small number of significant others for conversations about teaching (Roxå & Mårtensson 2009). These conversations are characterized by their intellectual intrigue, with mutual trust as a key factor, and they often take place in privacy where no one else can listen (Roxå & Mårtensson 2009). Similarly, the teachers in this current project expressed that mutual trust was crucial for the collaboration. Hence when teamed with someone they felt comfortable with and trusted – peer observation and discussions about their teaching felt rewarding and inspiring.

Being visited by a "critical friend" in their classroom felt intimidating for some of the participants in the project, even though they had worked with teaching for many years. However, the peer observation contributed to valuable discussions, both between the observing pairs and among the participants in the project during our common meetings.

4.2 Collaboration across disciplines helped focus discussions on pedagogics

In a handbook about how to support institutions in developing and embedding effective practices on peer work with teaching in Australian Higher Education, Harris et al. (2008) recognize that conceptions and disciplinary perspectives are inherent characteristics and features during the exchange of ideas in peer work with teaching. The typical focus in peer observation of teaching is teaching in a classroom or an auditorium. Staff from different disciplines will bring different perspectives and offer a possibility to focus on the "teaching-related" rather than the "content-related" areas of the teaching, while staff within the same discipline may offer more disciplinary insight. Hence, multidisciplinary work with peer observation can favour constructive and critical feedback and reduce the focus on the contents taught. It can also make the peer work more collaborative and balanced, favoring attention to students´ engagement and learning (Torres et al., 2016). Within this current project, the pairs were academics from different specialist teaching areas or discipline fields. Some of them experienced teachers within their discipline and some quite new to teaching, but with basic pedagogical competence from the obligatory course at the university. All participants were paired with someone that they felt comfortable working with. Both the interviews and the summary from the concluding meeting showed that collaboration across disciplines was considered as a plus as it made it easier to focus on the pedagogics.

4.3 From event to practice

The feedback practice in peer observation of teaching can be a strong element in enhancing the educational discourse locally. Although some of the teachers in this project initially hesitated to participate, attitudes changed as work progressed. This finding is based on the oral feedback given during the regular meetings with all participants throughout the project. Interviews after the completion of their work with peer observation also showed that they found the work both rewarding and inspiring. Some of them also expressed a wish that the work with peer observation should continue at the faculty in an organized form. The question is how '*pop up*' projects on peer observation can be made as a permanent practice for wider professional development, so that informed discussions about teaching and learning become part of the *ongoing* local community work. Heron & Head (2019) consider the role as middle manager to be important for successful implementation of peer observation at the departmental level, with a potential to disseminate good practice and share learning. In some departments, this requires a considerable shift in the prevailing discourse around the purpose and potential of peer observation - from an administrative quality control event to become a learning tool for professional development. Our experience is that the participants from this project also acted and continued to act as "ambassadors" for peer observation, talking about their positive experiences and advertising for the practice. A recent anonymous survey at the faculty shows that 42% of the teaching staff (116 respondents in total) would like to work with peer observation to increase their pedagogical competence (Finstad et al., 2020).

4.4   Peer observation of teaching in relation to peer review of teaching

The term "peer observation of teaching" is often used interchangeable with the term "peer review of teaching" in the literature (Scott el al., 2000; Esterhazy et al. 2021). The purpose of both practices is to provide constructive feedback to colleagues aiming to enhance teaching and promote students' learning. However, the pedagogical level of the feedback, discussions and reflections will vary depending on the participants and their definition of what «good teaching» is. In this project, one of the participants found the received feedback less satisfying and requested a deeper learning from the peer observation work. This was a teacher who had previous experience with peer observation and wanted to develop it further. A more accurate definition of these models for peer work with teaching can provide a broader understanding on how collegial approaches for developing teaching can be organized.

In this current qualitative case study, peer observation of teaching is understood as mutual collegial observation of teaching in a specific teaching situation and giving / receiving constructive feedback on this situation. In traditional feedback models like this, there is an underlying assumption that the peer has a position to make judgement about what is done well and what can be improved (Gosling, 2014). When preparing for peer observation there is usually focus on how to give feedback sensitively, but still the underlying power of the observer remains there. However, many teachers involved in peer observation report that they have gained increased confidence in their teaching through feedback and discussions with their colleagues, and they also emphasise that their awareness of their role as teacher have become stronger (Hatzipanagos & Lygo-Baker, 2006; Hendry et al., 2014). This is also in line with the results from our study. For those teachers who are new to teaching, we can assume that this is important for their development as teachers.

For the more experienced teachers, peer observation of teaching can be lifted to a higher level by including educational research and theories. Thus, the peer work might become more critical and systematic. Gosling (2014) points at a model for development of teaching, using the concept "collaborative review of teaching", where all participants learn the process of talking to each other about a chosen topic related to students' learning or a teaching problem. This topic or problem is understood as a research problem that is needed to be investigated. By focusing on a model for review of teaching based on a systematic and critical approach using educational research and theory (Tight, 2015), a non-judgmental dialogue where teachers reflect on their established practice and underpinning values can be facilitated (Gosling 2014).

One of the participants in the current project underlined that a deeper reflection about the underlying assumptions in the teaching practice was missing as part of the peer observation dialogue conducted, that would require more knowledge about pedagogics. By including theories and research to improve teaching and learning as part of the collaborative review, peer observation of teaching can be identified with and conducted as a peer review of teaching in the spirit of Scholarship of Teaching and Learning (SoTL) (Lomas & Nicholls, 2005; Thomas et al. 2014; Fletcher, 2018). SoTL is developed when teachers' work becomes public, peer-reviewed and critiqued, and in addition exchanged with other members of the professional communities so that they can build on each other's work (Shulman 2000). However, gained learning from peer observation of teaching is normally confined only to the observing pairs and not opened to the members of the academic community. These different models for peer work provide feedback to colleagues aiming to develop their teaching for promoting students' learning. As mentioned, a more accurate definition of these models can give a broader understanding of the differences in these models – outlined in Table 2.

Esterhazy et al. (2021) has reviewed the empirical findings from 48 qualitative studies and proposed the term "*collegial faculty development*" to include both peer observation of teaching, peer review of teaching and other practices that supports faculty in developing their teaching quality through peer work with their colleagues. Their framework conceptualizes main elements of collegial faculty development and show how individual, relational and contextual factors shape the unfolding of the collegial faculty development. Among contextual factors, institutional leadership and the organization of peer work across disciplines were key aspects in this current study. Typical relation factors are discussed in our study including trust and mutual respect. As discussed above and outlined in Table 2, work with peer observation of teaching may help teachers collect new pedagogical experiences and develop new ideas on what good teaching entails, shaping their engagement for further peer work (individual factors).

Table 2. Peer observation and peer review of teaching are collective approaches to teaching leading to increased pedagogical awareness and competence.

	Peer observation of teaching	**Peer review of teaching**
Content	An isolated classroom teaching or student mentoring situation, the collaborating pair decides what to focus on in the feedback	Includes all aspects of work with teaching and learning (peer review of a manuscript, a research grant application, a teaching portfolio, a study program or course, conference lectures etc.)
Purpose	Reflection and awareness to improve teaching	Scientific evaluation based on the principles of Scholarship of Teaching and Learning (SoTL)
Form	Teacher observed by colleague Conversation, a written report Constructive feedback shared between the collaborating pair Reciprocal process / critical friend	Skilled / knowledgeable teacher as a reviewer Written or oral feedback / evaluation Robust, critical, higher degree of reflection
Product	Increased awareness Increased pedagogical competence	Increased awareness Increased pedagogical competence
Level	Obligatory part of the basic pedagogical training at the university	SoTL, expert / merited level

5   CONCLUSIONS

Despite the somewhat limited amount of data collected, this project has gained valuable experience and knowledge on how peer cooperation can be introduced at a multidisciplinary faculty. The project was founded on a bottom-up initiative by teachers and students suggesting that peer observation of teaching be implemented in the faculty strategy to develop and enhance teaching. The strategy was followed up by a focused project led by the Vice Dean of education in collaboration with academic developers and supported by the heads of institutes and the faculty leadership. Findings from this study indicate the potential of peer observation, paring colleagues from different disciplines, to help academics focus on teaching and learning. Working with peer observation through a stepwise, formative process that identifies areas of teaching and learning, promoted and enhanced education discourse, pedagogical awareness, reflection and professional development. The peer work also allowed an important step away from teaching as a private enterprise to teaching as a collective approach. Peer review of teaching implies an even broader perspective on the process of development of teaching and learning between colleagues and can be seen as a further step for professionalization of teaching in STEM education.

6   ACKNOWLEDGEMENTS

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