

The story of bioCEED or how to grow a SoTL culture from scratch

Paper presented in track 5 at the

EAIR 38th Annual Forum in Birmingham, United Kingdom

31 August till 3 September 2016

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Key words

Quality, Curriculum design and development, Leadership, Higher education
policy/development, Strategic planning,

Abstract

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There has been a gradual change over time towards an increased focus on the collegial and cultural aspects of teaching and learning. According to this perspective, quality emerges not within the individual, but within communities of teachers and students. Developing a quality culture requires a *cultural shift* supported by training and development activities to ensure that the teachers, as a collegium, have the *knowledge* and *will* to develop and change towards learner-centred teaching. Building a scholarly and collegial teaching culture, using the research culture as a model, was a first priority of Centre of Excellence in Biology Education (bioCEED). This paper discusses how a shift towards such a collegial Scholarly Teaching and Learning (SoTL) culture can come about, using the story of bioCEED as a case.

Presentation

The story of bioCEED or how to grow a SoTL culture from scratch

Introduction

There is a strong tradition for both educational development work and educational quality assurance to focus on the individual; the individual teacher's practice, the individual course content and structure, the individual student's success. It follows from this perspective that educational quality enhancement also emerges through the individual, through providing the individual teacher with educational training and development opportunities, and through giving individual students training in study skills. However, there has been a gradual change over time towards an increased focus on the collegial and cultural aspects of teaching and learning. According to this perspective, educational quality emerges not within the individual but within communities of teachers and students. This shift in focus also requires a shift in institutional strategies; educational development and quality enhancement cannot be achieved simply by providing individuals with new teaching skills and tools, and testing and assessing individual performance, it requires working towards a collegial culture and practice of teaching and learning.

University teaching staff typically have two very different roles to fill in their working life – they are teachers and at the same time researchers. Even though contained by the same individuals, the two roles are characterised by very different academic cultures, and, interestingly, the academic teaching and research cultures are also remarkably different. The research culture, on one hand, is characterized by continuous scientific and methodological development, documentation, collaboration, sharing, and innovation, but also by scientific discussion, debate, critique and peer-review. The teacher culture, on the other hand, is typically a relatively lonely practice based more on personal experience and perceived 'talent' than on the adoption and development of documented methods and practices. Teachers have fewer opportunities for sharing and little collegial collaboration and support; documentation is scarce and there is a tendency to conserve traditional teaching methods.

Many strengths of the research culture can be adopted in the teaching culture, which would benefit from becoming more hypothesis-driven, evidence-based, and peer-reviewed. This realisation is a key feature of the Scholarship of Teaching and Learning (SoTL) movement, which argues that university teachers should approach their teaching much in the same way as they approach their research (Boyer 1990).

But how does such a shift towards a collegial Scholarly Teaching and Learning culture come about? What are the critical factors? This paper discusses these issues, using the story of bioCEED Centre of Excellence in Biology Education, as a case.

Background

In 2010, the Norwegian Agency for Quality Assurance in Education (NOKUT), on request from The Norwegian Ministry of Education and Research, established a program for Centres of Excellence (CoE) in Education (Dahl Keller et al. 2015). The programme is a parallel to the existing Centres of Excellence schemes in research and innovation and aims to promote excellence in R&D-based education. Status as a Centre of Excellence in Education is awarded to academic communities in higher education that demonstrate excellent quality and innovative practices in education.

The Department of Biology at the University of Bergen was a typically research-focused university department, with research and educational programmes spanning a wide range of both basic and applied biological sciences. In 2011, educational quality, development and leadership were made a strategic priority (BIO 2011). This new strategic priority and was the outcome of systematic work to revise and modernize the BSc and MSc programmes to be better aligned with on-going research and scientific development within biology. The new strategy set high ambitions for the department's students and education, including a declared goal to become Centre of Excellence in Education.

In 2013, when the first full, open bid for Centres of Excellence in Education was announced, the University of Bergen (UiB), the University Centre in Svalbard (UNIS) and the Institute of Marine Research (IMR), developed the centre plan for bioCEED - Centre of Excellence in Biology Education.

Two biology departments – one large (UiB) and one small (UNIS), in cooperation with educational researchers (UiB) and Norway's largest research institute within the marine sciences (IMR), teamed up to create biology educations that were excellent both in the scientific content and teaching and learning methods. bioCEED's aim is to 'educate tomorrow's biologists by creating biology educations that connect scientific knowledge, practical skills and societal applications and by bringing the strengths of the research culture into the educational practice'.

bioCEED was awarded status as a Centre of Excellence in Education from April 2014, with funding from NOKUT for five years, with five more years of funding pending the mid-way evaluation.

An important bioCEED strategy is to move away from the teacher-centred tradition that still dominates in higher education, towards learner-centred education. Although these general ideas date back several decades they still do not seem to have penetrated the way university students are taught. bioCEED approached this by acknowledging that a programme-wide transition to learner-centred educations requires more than a (voluntary) change in individual teacher's practice – it requires a department-wide *cultural shift* supported by training and development activities to ensure that the teachers, as a collegium, have both the *knowledge* and the *will* to actively develop and change their teaching. The development of a scholarly and collegial teaching culture, using the research culture as a model, was therefore a priority in the early phase of bioCEED.

Developing a Scholarship of Teaching and Learning (SoTL) culture

Although educational quality is clearly important both for individuals, institutions, and governments, there is a general lack of incentives to effectively stimulate quality enhancement. The incentives that do exist are generally quantitative and student-focused (e.g., pass/fail rates, student satisfaction, job prospects). These incentive systems show a remarkable lack of focus on the collegial and cultural aspects of teaching and educational development. This is paralleled in the educational development work, which also typically focuses on improving individual teacher's qualifications and skills, combining compulsory training and minimal standards with voluntary additional opportunities.

bioCEED approach was to start with the cultural development, based on the conviction that lasting and programme-wide educational development can only be achieved through growing a knowledge-based institutional teaching and learning culture, and that the only credible way of doing this is by adapting a scholarly development approach (Boyer 1990).

bioCEED was heavily inspired by Graham Gibbs' framework and the collegial educational development culture at the Faculty of Engineering at Lund University. Gibbs' framework presents a set of activities to be addressed and integrated in an institutional strategy to develop the university's whole teaching and learning (Gibbs 2009). Gibbs explicitly lists a number of both individual, collegial and institutional aspects that needs developing, including individual teachers' practice, communities of practice, teacher motivation, learning environments,

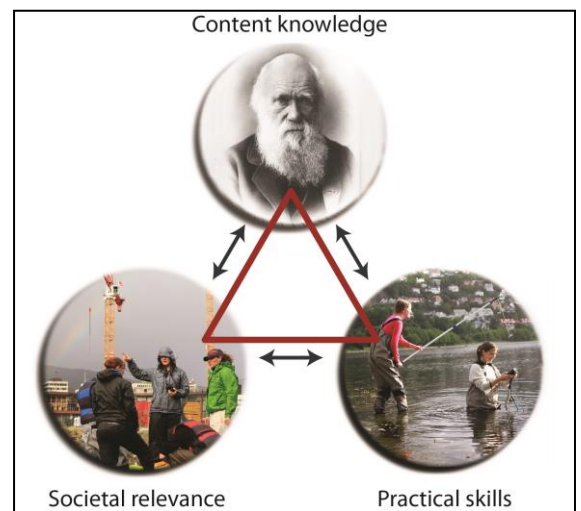


Figure 1. The bioCEED triangle illustrates how the role of biology and biologists in society can be seen as a (growing) triangle in the interface between content knowledge and biological theory (represented by Charles Darwin), the practical skills that biologists can provide (represented by students sampling fish from the sea) and the needs of society (represented by a meeting between industry and planning representatives). bioCEED is built on the realization that the rapid developments in the role of biology and biologists in society place new demands, not only to the content of biology education, but also to how we educate tomorrow's biologists.

students' practice, quality assurance, educational leadership, and institutional strategies.

The Faculty of Engineering at Lund University in Sweden (LTH) is an example of a successful integrative institutional strategy based on Gibbs' ideas, integrating and aligning several of the activities identified by Gibbs' framework in a co-ordinated institutional strategy (Andersson and Warfvinge 2012). LTH has a strong tradition of strategic educational development and is very active within the area of developing teaching and student learning. LTH's educational development work is based on the theories of Scholarship of Teaching and Learning (Boyer 1990) with a wide range of integrated activities including pedagogical courses, consulting, evaluations, research on teaching and learning, and arenas promoting pedagogical discussions such as seminars, newsletters, a biannual campus conference about teaching and learning. LTH also have a pedagogical reward-system "The Pedagogical Academy" (Andersson 2010, Roxå et al 2008).

With the work from Gibbs and Lund as a backbone, bioCEED has built and adapted its own contextual framework for developing teaching and learning through seven strategies with corresponding work packages and actions, aiming to:

1. Build a collegial learning culture among teachers
2. Develop learning environments that foster high-quality learning
3. Activate students in learning and educational development
4. Align quality assurance, evaluation, goals, practice
5. Strengthen and empower educational leadership
6. Spread of 'best practice'
7. Strengthen links between education and society

These seven strategies are closely linked and integrated with each other, with the teaching and learning activities at the two biology departments, and with the institution's work on educational quality.

bioCEED has built a quality partnership with the Academic Development Unit at LTH Lund, which contributes both in advisory roles and in the more daily educational development work at the centre. This partnership has been especially important in developing the collegial culture among teachers, where bioCEED has benefited from the experience and expertise that Lund has built over the last ten years.

Preliminary results and discussion

The bioCEED Survey 2015

In 2015, bioCEED conducted a large national survey of biology educations in Norway among students, teachers, educational support staff, and biologists in the work force (Hole et al, 2016). The bioCEED Survey was conducted as a baseline study of major tertiary-level biology education, mapping the experiences, attitudes and opinions at nine higher education institutions in Norway offering biology programs. The teacher survey was distributed to 486 biology teachers, and had a response rate of 48 percent. Most respondents had permanent faculty positions and taught both at BSc and MSc level, and half of the respondents had 15 years or more of teaching experience.

The results from the bioCEED teacher survey confirm the "accepted truth" in academia – research trumps teaching. Teachers report that they get little appreciation of teaching effort from institutional leadership, and that they consider effort and achievement in research to be better for their career than teaching. The survey also shows that teachers rarely discuss their role as teachers with colleagues.

However, the results also show that university biology teachers appreciate teaching and have confidence in their own abilities; they highly value feedback from their students and colleagues, and do develop their teaching. The picture is therefore not so grim - quality in teaching and learning clearly matter to university teachers, but there is need for leadership support, acknowledgment of quality work, and a scholarly teacher community.

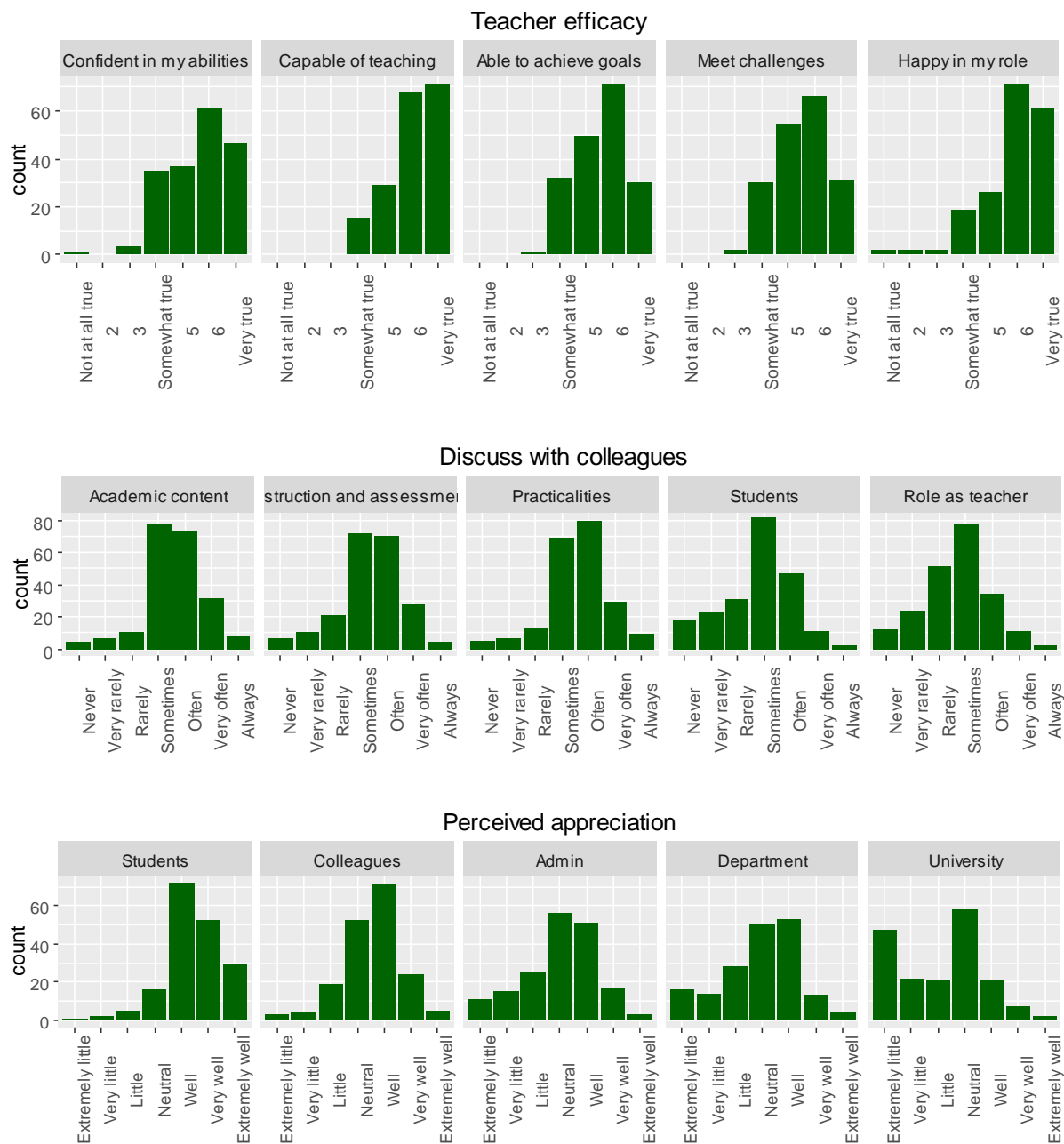


Figure 2 Selected results from the bioCEED Survey 2015 (Hole et al, 2016). **a) Teacher efficacy;** Teachers were asked to rate how true five statements was for them with respect to their role as a teacher. **b) Discuss with colleagues;** as an indicator of collaboration teachers were asked to which degree they discussed teaching-related topics with colleagues. **c) Perceived appreciation;** teachers were asked to which degree they felt their teaching effort was appreciated by different groups.

An emerging SoTL culture

The research culture has a strong standing in academia, and contains many of the building blocks needed in the teaching culture; collegiality, peer review, evidence-based practice and strong theoretical foundation. The idea that faculty should bring their research minds into their teaching has resonated well with the scientific staff. They are not expected to be performers or ‘stand-up’ teachers, but to approach their teaching in a scholarly and professional way. By using the research culture, faculty have the necessary tools to not only become better teachers individually, but also to become active and supportive members of a teaching and learning community, with shared responsibility and a common language for discussing and sharing knowledge and experience.

bioCEED's work to promote a collegial teaching culture has concentrated on creating arenas where teachers collaboratively can develop their pedagogical knowledge and skills, and share and discuss teaching and learning. Teachers are encouraged to participate in collegial activities on teaching and learning; like teachers' retreats, seminar series and workshops. Documenting and reflecting on teaching practice is implemented as part of the quality assurance of courses, and bioCEED supports teachers and educational staff in developing their teaching and learning reflection and practice.

The cooperation with the Academic Development Unit at LTH Lund University has been strengthened through appointing an adjunct associate professor in bioCEED and a member of the bioCEED advisory board. A Collegial Project Course based on the course developed in Lund (Andersson and Roxå, 2014) is now offered to teachers at the bioCEED partner institutions. The course is focused on discussing, reading and writing about pedagogical issues, especially those related to teaching and learning inside the group's domain of teaching responsibilities. It pursues opportunities for peer review of teaching, collaborative reading of educational literature, and an extensive use of teaching and learning narratives originating from authentic teaching situations.

The collegium at bioCEED includes the whole range of positions working with educational development. This includes not only teachers and students, but also leadership, pedagogical experts, teacher assistants, and technical and administrative educational support staff. Building pedagogical competence in the teacher community is essential, but bioCEED has also offered pedagogical training to PhD-students, technical and administrative staff. Research and development projects often include staff from different positions.

There has been a marked change in the teacher community culture. Where before there was a tendency to emphasize the importance of research, often on the expense of teaching, there is now a considerable strengthened focus on developing quality teaching and learning. Education, teaching and learning is now a topic for discussion in all fora - from institutional strategy seminars to lunch breaks. Teachers have developed a common language for discussing teaching and learning, and actively seek literature and documentation to support their teaching practice. This shift can also be seen in the actual teaching practice. Several courses has revised course plans to achieve a more alignment between teaching, assessment and learning outcomes. Student active teaching methods are being used more extensively, and digital tools are being used and developed by teachers and students.

In the two first years of operation, approximately 77% of faculty teaching staff at the Department of Biology participated in various bioCEED activities and projects towards educational development. At the smaller biology department at UNIS, the participation among teaching staff is close to 100%. The majority of teachers participate in Teacher retreats with workshops and discussions on developing teaching and learning. Approximately 40% of teachers are involved in educational research or development projects, often initiated by the teachers themselves in cooperation with bioCEED. The projects range from small developmental project within specific courses to larger research and development projects over several years covering several programmes. All projects involve student surveys, interviews or other types of student feedback and involvement.

Prior to bioCEED, such activities were rarely undertaken, if at all. There have always been some enthusiasts with a will to develop their teaching, but these activities were rarely documented or spread. Likewise, leaders have always emphasized the importance of quality in education, but this rarely resulted in any lasting change in teaching or teacher culture.

To strengthen educational leadership the Department of Biology at UiB appointed a Head of Education in 2011, with considerable decision-making authority and power to allocate resources. When bioCEED was established the Head of Education became part of the Steering group in the Centre as leader of the work package on teacher culture. As a joint effort between the department and bioCEED, educational support has been strengthened with several positions and skills development of existing staff. Similar actions have been taken at UNIS to strengthen leadership and teaching support. The educational leaders have a key role in spearheading new development. The aim to change the way we think about, and go about, teaching and learning needs strong leadership with ambition, clear goals, incentives and requirements put to the teacher community.

By including all positions of educational staff in activities, projects and development, the team working with education, teaching and learning has grown. Whatever professional conflicts or gaps might have existed between the scientific staff and the administration and support staff, are diminished, and everyone's contribution and competence are acknowledged. bioCEED has emphasized that only a joint effort will result in excellent quality and continued development. The teaching collegium is inclusive and there is a sense of a common goal in creating excellent education. Students are actively engaged in the classroom, but also through representation in decision making fora and development projects.

The local level (the teacher community) is the key to achieve change and developing a SoTL culture. But without accompanying change at the institutional, and national, level, this shift will not be successful. If teaching is seen as a second rate activity compared to research, professors will soon shift their efforts to the activity that results in acknowledgement and career enhancement. If quality assurance systems do not include quality development, there will be little improvement of teaching and learning. If teachers do not document and share their experiences, there will be no spreading of best practice and learning from each other.

The centre has worked with the leadership of University of Bergen to promote and enhance the status of teaching. bioCEED, again inspired by LTH and their Pedagogical Academy (Mårtensson et al. 2011; Olsson & Roxå 2013), was essential in developing UiBs newly established *Excellent Teaching Practitioner* (ETP) programme. The title *Excellent Teaching Practitioner* is awarded to teachers that have shown that they have worked systematically to improve and develop their teaching practice, and that have shown a collegial and scholarly attitude and approach towards their colleagues, students and institution. ETP status will lead to a rise in salary and EPT teachers will form UiBs Pedagogical Academy. The ETP programme signals to the outside world that UiB acknowledge quality teaching and emphasize student learning. But maybe more importantly; it heightens the status of educational development and teaching. To become an *Excellent Teaching Practitioner*, teachers must write a fairly extensive application with reflections on teaching and learning, supported by examples and documentation from their teaching practice (teaching portfolio).

Nationally, bioCEED has been an advocate for a collegial teacher culture and a SoTL approach on several arenas; like conferences, workshops, and seminars on quality in higher education. bioCEED's team of educational experts has contributed in the political debate on higher education and are frequently asked to participate in advisory functions when new policies are discussed and developed. On initiative of bioCEED a National Forum for Educational Leadership in Biology has been established to support cooperation between educational leaders on biology on a national basis.

The bioCEED effect

The status as a Centre of Excellence in Education has been essential to develop a culture of Scholarship of Teaching and Learning. The centre created a hub for competence, involvement, knowledge and innovation by bringing together people from different backgrounds and areas. This again became an incubator for ideas and projects and catalysed the process of developing SoTL in the teaching community. The financial resources and the people affiliated with the centre allowed us to work on many arenas, areas and activities at the same time, creating change and facilitating development at a faster pace than what is normally the case within academic environments. bioCEEDs activities are summarized on the Annual reports (bioCEED 2014 and 2015).

bioCEED is an educational research and development unit initiated at the local level. The vision and centre plan of bioCEED was developed mainly by biologist to develop biology education. Work package and projects leaders are almost exclusively biology faculty. The theory and methods that form the basis of the centre plan comes from educational and pedagogical science, put in a biology education context. There is strong support from the leadership at our institutions locally, and NOKUT nationally, but the fact that bioCEED grew out of the biology community gives teachers and education support staff a feeling of ownership and commitment to bioCEED projects. This is an essential factor for the success of the centre, and a key to building a lasting quality culture.

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