



Senter for  
framifrå  
utdanning



senter for fremragende utdanning i biologi

# Annual report 2016



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## ABSTRACT

The bioCEED Centre for Excellence in Biology Education is now well established with a range of educational research and development project in full operation. bioCEED activities are progressing according to the Centre Plan and Budget, with only minor deviations. We hence do not see the need for any major adjustments or changes in 2017.

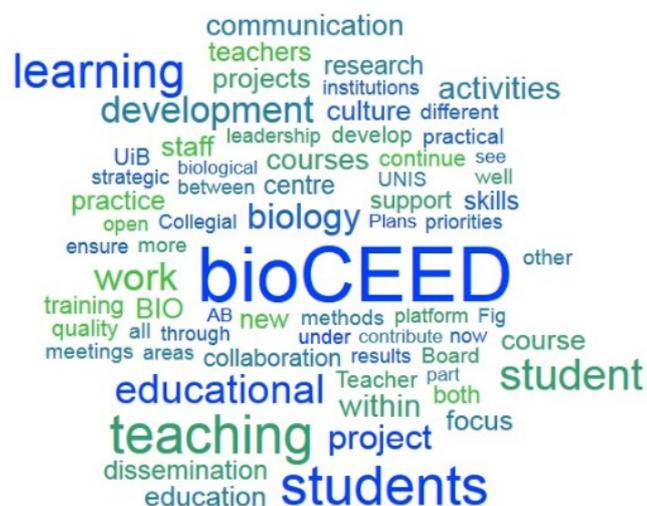
During 2016, we have reorganized our work packages under our four main areas; teacher culture, innovative teaching, practical training, and dissemination. This reorganisation was in response to input from our Advisory Board, which challenged us to improve visibility, and increase transferability of our projects and outcomes. For internal organisational purposes, we have kept the work packages (Fig. 6), however, with a designated leader, as a backbone for coordinating our activities.

We have continued high activity within all main strategic focal areas and key projects, increased our efforts within international collaboration and dissemination, and initiated several new projects at centre level, at the partner institutions, with our fellow SFU Matric, and in collaboration with international partners.

The strong institutional support from the board and leadership at UIB and UNIS is continuing. We have been actively involved in educational strategy processes at both institutions, and have been active, vocal and influential in the national educational policy debate.

The bioCEED economy is sound. In addition to the 4000 KNOK NOKUT allocation, we have secured 9300 KNOK in own contributions, and a further 7500 KNOK in other external project funding (see Accounting and Externally funded projects).

Activities in 2017 will largely follow the original project plan, supplemented by new and relevant projects that support and develop the ongoing work in the centre (details presented under each focus area). The interim evaluation of the centre presents a good opportunity to summarize our outputs and impact, and consolidate future plans and priorities.



## bioCEED AT A GLANCE

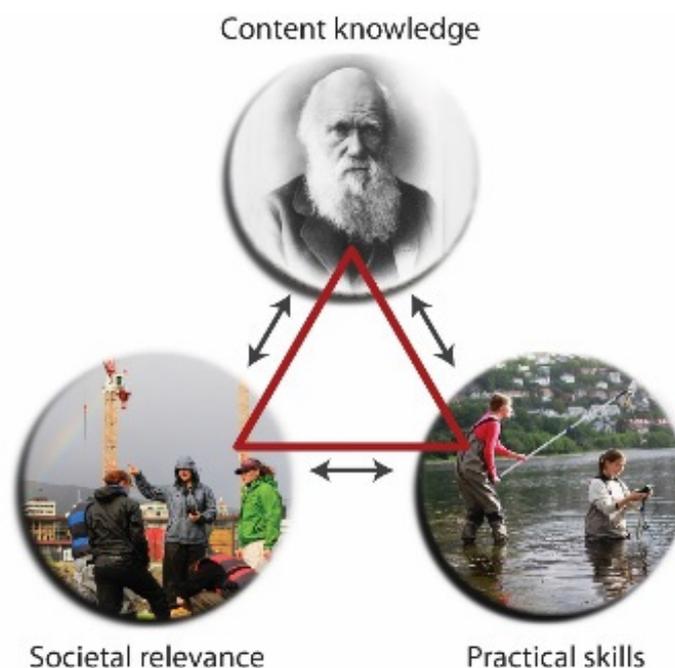
The bioCEED Centre of Excellence in Biology Education is built on the vision that biology, and the biologist, emerges in the interplay between biological theory, the practical applications of biological knowledge, and the relevance of biological theory and practical knowledge for society (Fig. 1).

Biology has its foundation in, arguably, one of the best-known scientific theories in the world, a theory that many have strong opinions about. As evolutionary theory grows and develops, so does its sphere of influence. The practices of biology also have a wide and increasing range of applications: as biologists we understand and assess biodiversity, breed crops and livestock, manufacture vaccines and cure disease, splice genes, calculate global carbon budgets, and understand human behaviour. Biological theory as well as biology's practices contribute to its societal relevance.

Biology education has always had a strong theoretical core, and we generally have a strong focus on training our students in relevant practical skills. In contrast, university programmes in biology have often ignored the societal relevance in implications of biology.

In bioCEED, we believe that the biological triangle should have implications; not only for *what* we teach, but for *how* our students are trained. Often, biologists are found on both sides of the table in difficult societal and ethical debates, and we need educations that can prepare our students for difficult and demanding roles in tomorrow's science and society. Towards this end, we will:

- ♣ **Make use of the whole biological triangle in biology education**
- ♣ **Focus on the students, and what benefits their learning**
- ♣ **Exploit the research culture to grow a scholarly culture of teaching and learning**



**Fig 1. The 'domain of biology' as defined by the interactions between the development of scientific content knowledge (theory, factual knowledge), the practices within biology itself, and society's applications of and needs for this knowledge and these skills.**

## HIGHLIGHTS FROM 2016

For bioCEED, this has been an active and rewarding year. We are now well established and in normal operation as a centre, and we are seeing the emergence of several important outputs. We would like to draw particular attention to these 2016 highlights:

- ♻️ Our ‘community approach’ to educational development is bearing fruit – and we are seeing the emergence of a true ‘community of practice’ among our teaching and teaching support staff.
  - This cultural shift is expressed as a transformation of the way we approach, and talk about, our teaching. We are now debating teaching and learning more, and importantly; these debates are consistently better informed, but also more critical and nuanced.
  - This emerging community of practice also manifests itself in a positive, energized, ‘everything is possible’ attitude to educational development. The path from a problem is identified via coming up with ideas for solving it, to testing and implementation is sometimes very short!
  - At the institutional level, the implementation of a reward system for Excellent Teaching Practitioners (ETP) at UiB, is a major milestone. Using this in our educational development and assessing the impacts on individuals and communities will yield new insights.
  
- ♻️ The launch of the [bioST@TS](#) platform with videos, tutorials, and other resources is a major milestone for development of innovative teaching. bioST@TS will be an ‘engine’ in our educational development; facilitating alignment of skills training across the curriculum, and a resource for implementing and researching new teaching methods. The platform also presents an opportunity for external collaboration and development projects.
  
- ♻️ bioCEED is visible, both as a centre for educational development, and as a contributor and a player in the higher education policy debate. In true collegial spirit, this visibility is the result of engagement and contributions from many staff and students. We are also making visible impact, influencing educational policy and development at our institutions, in Norway, and in our field.
  
- ♻️ We are communicating! In 2016, we started the monthly bioCEED newsletter that covers big and small bioCEED activities, results and happenings. The Newsletter is an effective channel to share bioCEED news with collaborators and other interested parties, but also has an important function in the local communication by giving visibility to large and small projects and activities going on.

***“I think bioCEED have inspired many educators to change their teaching methodology. I also think some of these inspired educators have realized (me included) that testing out new methodology can be easy in theory, but rather difficult in practice. So to all of you out there trying to improve but feeling you are hitting the wall: Well, you are not. You do a great job bringing us forward. We will never improve if we do not dare to step out of the comfort zone”***

**Teacher feedback to bioCEED**

## LESSONS LEARNED AND CHALLENGES AHEAD

Although we are satisfied with the centre's outputs and impact locally, institutionally and nationally, we have also identified some lessons learned and challenges where there is room for us to improve:

### 📌 **bioCEED for all - involvement, resistance, and inclusion**

- The bioCEED core team is a strong and active community, with the capacity to engage a larger teaching community. Still, we must also be aware that we are (still) not able to involve and include "all", and we must stay conscious that some staff might feel unconnected with bioCEED, or that they are resisting the changes we impose and the directions we give.
- Our students and staff are exposed to the research and development work of bioCEED, and might sometimes feel this "scrutiny" is invading and challenging. The high ambitions and expectations that come with being associated with a Centre for Excellence could be experienced as stressful and impose (too) high expectations on the individual teacher or student.
- Although everything we do, we do to improve student learning, many students at our institutions are not aware of bioCEED. This could be seen as an image problem.
- It is crucial that those that are willing to develop and change teaching feel they have enough support and resources (mainly time). bioCEED must provide support, and also promote the importance of this work towards the local leadership.

bioCEED must be as including as possible, provide sufficient support, value constructive criticism and alternative views, and meet resistance and skepticism in an open way.

### 📌 **bioCEED as partner and part of institutions - anchoring, resilience, and clarification**

- We experience that bioCEED depends on collaboration with the partner institution leadership (both local and institutional). When there is change in leadership, bioCEED must take action to ensure continued support and anchoring within our institutions.
- It is crucial to have a clear agreement and understanding of what is the centres activities and commitments, and what is the department/institutions activities and commitments.
- To ensure consolidation and agreement there must be regular contact, meetings, discussion and updates between partners, and between bioCEED and the partner institutions.
- Smaller units (e.g. AB UNIS) will in many cases be able to implement new initiatives quickly; however, they are also more vulnerable to changes (in staff, resources etc.). This should be considered and planned for if possible.
- We should increase collaboration between SFUs, as there is considerable potential in joint projects and activities.

### 📌 **bioCEED focus - *like butter scraped over too much bread*<sup>1</sup>?**

- It can be challenging to limit activity. The project portfolio should be manageable in terms of both resources, scope of topics and relevance to the Centre plans. The dissemination should focus on communicating outputs and results to the relevant audience. bioCEED has become more conscious of these issues in 2016, but we could still get better at this.

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<sup>1</sup> Bilbo Baggins, Lord of the Rings

## PRIORITIES FOR 2017 AND BEYOND

Activities in 2017 will largely follow the original project plan, supplemented by new and relevant projects that support and develop the ongoing work in the centre (details presented under each focus area). The interim evaluation of the centre presents a good opportunity to summarize our outputs and impact, and consolidate future plans and priorities.

### **Teacher culture**

Teacher culture and development of Scholarship of Teaching and Learning (SoTL) practice among our teachers will continue to be a priority for bioCEED. We will continue and develop our collegial activities, and support and contribute to ongoing processes and new initiatives locally, institutionally and nationally to support a SoTL-culture and practice. bioCEED will be an advocate for teaching reward systems with SoTL-based criteria, for developing effective and supportive educational leadership and other measures that support and strengthen culture for quality in higher education.

### **Innovative teaching and Practical training**

Educating biologists with competence in the full domain of biology (Fig.1) require development of both the individual courses and programmes, and cross-cutting initiatives that ensure alignment and skills training. bioCEED will continue to develop, run, and support projects on student active learning, alternative assessment, and skills training. bioSKILLS provide a platform for aligning skills training in biology education, and developing this platform further will be a main priority for bioCEED in 2017. We will encourage teachers and students to initiate small and large bottom-up projects for change and development, focusing on student learning.

Ensuring societal relevance and sector contact in our educations will continue to be a priority. Central to this is the work practice courses (internships) offered to biology students, and various arenas for exchange and communication with end users and biologists in the work force (e.g. Career Day and practice host meetings).

Student involvement is ensured through student representatives, dialogue meetings and student driven projects within the bioCEED project portfolio.

### **Dissemination and outreach**

bioCEED will seek to communicate the outcomes of our core activities and strategies both through scholarly channels, and by engaging in the public debate. We will strengthen our role as a coordinator for collaboration, and continue to ensure effective and relevant internal communication.

## STRATEGIC FOCUS AREAS

### Teacher culture

At the core of bioCEED's work is the realization that education, and educational quality, is a collegial responsibility. While each individual student is fundamentally responsible for his or her own learning, and while each individual teacher is also fundamentally responsible for the content and quality of the courses they teach, the overall responsibility must be shared in a collegial way. Furthermore, students and teachers are not the only 'players' in the educational 'game', technical and administrative staff, course assistants, educational developers, and the departmental and institutional leadership are all part of the partnership that together shape the content and quality, both in terms of the subject matter and pedagogy, of our courses and programs.

Under the strategic focus area Teacher culture, bioCEED's work to promote a scholarly and collegial teaching culture started with efforts to explain why and how such a culture will benefit education, educational quality and the individual teachers (Fig.2). The next step was creating arenas where teaching staff collaboratively can develop their pedagogical knowledge and skills, and share and discuss teaching and learning. Such arenas now include teachers' retreats, seminar series and workshops. While we started with a focus on the university teachers, these arenas and processes are now gradually expanding to include the broader teaching partnership, in that administrative and technical staff, and student representatives, also participate.

A key strategy is to ensure that the ongoing development of teaching practice also includes a strengthened focus on high-quality documentation and reflection around course content and pedagogy. This involves making constructive use of the quality assurance system: We should not just 'tick the box' in terms of having conducted the required steps, we should actually use the quality insurance systems constructively in our educations. The Collegial Project Course takes this one step further, and offers the teaching staff opportunities to research, report, and even publish on specific topics of interest to teaching and learning within our course and programs.

bioCEED also works to strengthen educational leadership and build organisational structures that support a scholarly teaching culture, and gives visibility and recognition to quality teaching, both locally, nationally, and internationally.

#### **Collegial activities and promoting Scholarship of Teaching and Learning**

Established bioCEED activities like educational seminars and colloquia (see Appendix), the annual Teacher's Retreat at BIO<sup>2</sup> and the Learning Forum at UNIS<sup>3</sup> have been running smoothly. The 2015/2016 academic year marked the onset of the Collegial Project Course in Biology, developed and taught by our collaborators at Centre for Engineering Education, LTH, Lund. The 18 teachers and

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<sup>2</sup> <http://bioceednews.b.uib.no/2017/01/01/teachers-retreat-bio-2016/>

<sup>3</sup> <http://bioceednews.b.uib.no/2016/11/30/the-yearly-learning-forum-at-unis-concludes-with-many-new-insights-and-learning/>

## The two academic cultures:

### Researcher

- Research groups
- Social – built on trust
- Collaborate to exploit complementary strengths
- Continuous development – knowledge transfer
- The scientific method
- Share findings – open
- Write, document, publish
- Peer review
- Follow the literature
- Make use of new methods, new technology


### Teacher

- Alone in front of the class...
- Distribute tasks – loneliness
- Everyone does everything
- ‘Flip over & start again’
- ‘Experience’
- Own experience – closed
- All documentation personal
- Student evaluations
- Trained when appointed (at best)
- Conserve methods: the lecture!


  
[www.uib.no](http://www.uib.no)

Fig 2. The ‘two academic cultures’ perspective on how and why to implement a Scholarship of Teaching and Learning perspective in research-centered university departments has become a bioCEED trademark.

educational support staff who participated in the first course have written project reports, and several have also submitted papers to the annual national [STEM teaching conference](#). The projects explore on topics like field teaching, numeracy and writing skills in biology education, workload calculation, and online resources. The results from these projects are now used by the departments to improve courses and study programmes. The 2016/2017 Collegial Project Course is underway, this time with participants from other science departments at UiB and UNIS.

bioCEED actively encourages and supports the participation and contribution from our students and teaching staff at educational conferences and workshops within Norway and abroad, which has contributed to the sharing of experiences within the broader teacher culture field with other institutions. A major achievement in 2016 was our successful bid to host the 2018 International Society for the Scholarship of Teaching and Learning Conference (ISSOTL) Conference in Bergen. In our bid, we suggested the topic “Towards a learning culture” where we propose to explore different meanings of “learning culture”: culture *for* learning, a culture *of* learners, a culture *that* learns, etc. The topic is in line with bioCEED goals and was very well received by the ISSOTL board:

*“Your proposal was very strong. It has a strong SOTL- and ISSOTL-profile, which we highly appreciate; it has a very appealing theme, and you have planned for good integration of students throughout. Congratulations to you and to us!”*

## **Educational leadership and institutional structures**

bioCEED has been an important contributor to the educational strategies locally at BIO and AB and at the institutional level, including institutional development and strategy work within educational quality, quality assurance, teacher development and working towards a new LMS platform at UNIS.

A major achievement in 2016 was the establishment of the first reward system for teaching in Norway, established at the Faculty of Mathematics and Natural Sciences, UiB. Teachers at this Faculty can now apply for the status [Excellent Teaching Practitioner \(ETP\)](#) and become part of the Faculty's Pedagogic Academy. The criteria for achieving the ETP status are based on the Scholarship of Teaching and Learning and include; a clear focus on student learning, a clear development over time, a scholarly approach to teaching and learning and a collegial attitude and practice. Although this is an institutional system at UiB, bioCEED has been a major contributor to the development and implementation of this reward system, and will be further involved in assessing applicants and evaluating the system.

Nationally, we have contributed actively in the debate and through various official channels to the [White Paper on Educational Quality](#), (e.g. through [Forskerforbundets](#) expert committee).

The National Forum for Educational Leaders in Biology Education, based on a bioCEED initiative, had its first regular meeting back-to-back with the national 'Biofagrådet' in March 2016.

### **Plans and priorities for 2017:**

- ♻ "bioCEED for all" – continue work to involve a majority of BIO and AB staff in small and large projects geared towards educational development and SoTL.
- ♻ Be actively involved in the ongoing revisions of Learning Outcome descriptions for our courses and programs, and ensure that these are used as part of quality development (spring 2017)
- ♻ Continue and expand activity on promoting SoTL and educational development through the established meeting places locally, nationally, and internationally.
- ♻ Plan and promote the ISSOTL Conference 2018.
- ♻ Contribute to the development of the national Forum for Educational Leaders in STEM.
- ♻ Contribute to establishing a SoTL Network at UiB, starting with a SoTL Seminar at UiB in February.
- ♻ Lead the working group to develop an action plan for educational quality at UiB (spring 2017).
- ♻ Establish teaching reward system (ETP) at UNIS.
- ♻ Develop SoTL-based teaching and learning courses for non-academic staff and PhDs/postdocs.

## Innovative teaching

Developing and testing new teaching and learning methods and technologies is at the core of the bioCEED student-centred educational development programme. As illustrated by the bioCEED triangle (Fig. 1), the broad scope and range of biology in science and society, and the variety of subjects studied within a biology degree, offers great potential as a 'lab' for testing out a variety of teaching and learning methods. Exploring these opportunities is the core of the strategic development area *Innovative teaching*. Our education and our educational development is research-based, meaning that we integrate biological research in our educational activities, and that our educational development is both based on, and contributes to, educational research.

Student motivation and educational outcomes are highly connected with using appropriate, student-active learning methods, and with having access to an appropriate learning environment. We are developing and testing a series of methods, tools, and skills to support learning. These range from specific new tools and learning methods within single courses, to more cross-cutting programme-wide initiatives. bioCEED aims to expand and develop the learning environment by effectively combining traditional approaches with novel field, lab, and digital approaches to support learning in biology education.

Activities in *Innovative teaching* are tightly linked to *Teacher culture and Practical Training*.

### PhD project – Lucas Jenó

#### **The antecedents and consequences of students' autonomous motivation**

Jenó investigates biology students' motivation and perception of the learning environment, and how this affects their academic achievement and learning. Jenó has recently published his first article on the effects of ArtsApp on students' achievement and motivation. Two of Jenó's articles will soon be submitted to scientific journals. Jenó has recently starting investigating gender issues in higher education with collaborators at the University of Minnesota, and teacher motivation with collaborators from USA and Canada. From 28 of August 2015 – 23 of October 2015, Jenó was a visiting scholar at the University of Rochester, New York, USA. Professor Edward L. Deci, the co-founder of the most empirical supported motivation theory, Self-Determination Theory, invited Jenó. This theoretical framework is guiding Jenó's work in his doctoral thesis. Jenó attended Professor Deci's seminar for PhD-students and Post-doctoral fellows on human motivation and emotions, as well as participating on SDT-lab meetings. Jenó received supervision on his PhD thesis and a meta-analysis, which is a collaboration with Professor Deci.

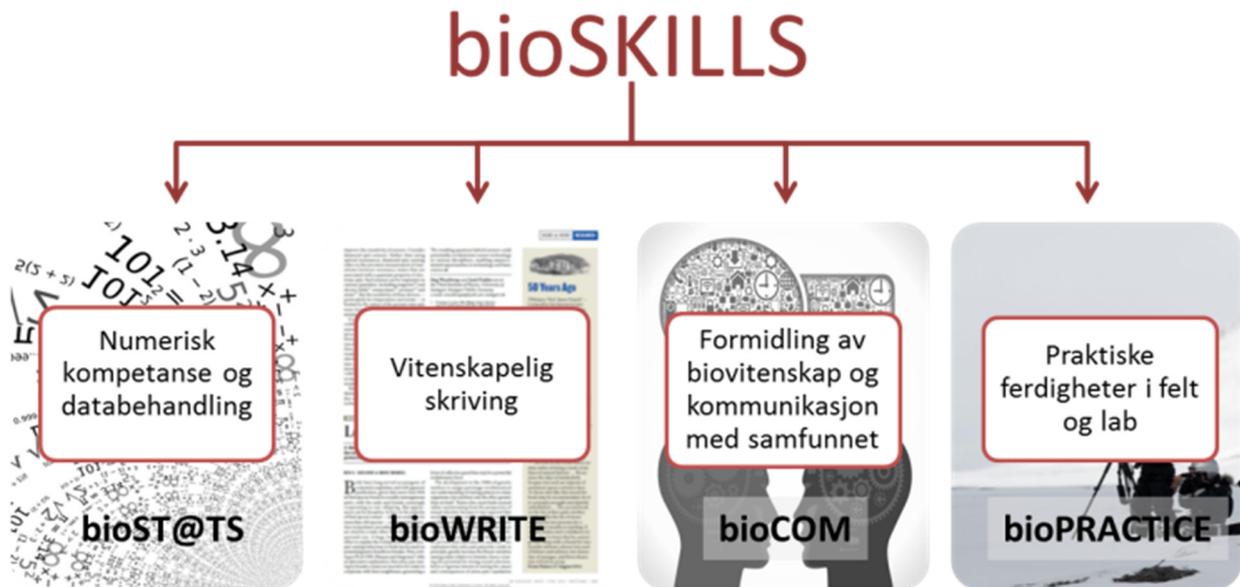


Fig 3. Conceptual diagram of the bioSKILLS platform.

### Cross-cutting initiatives

An overarching bioCEED aim is to better integrate skills training in our courses, and to better align this training throughout our educations (see the bioCEED triangle, Fig. 1).

**bioSKILLS** aims to develop transferrable skills across the biology curriculum by streamlining and linking teaching and learnings of skills throughout the curriculum. The project develops learning goals in numerical competence, dissemination, writing and practical skills in field and laboratory work at course and programme level, and builds a web-platform where teaching and learning tools supporting a number of cross-cutting themes and skill sets can be collected and accessed (Fig. 3).

The first module to be populated is [bioST@TS](#), which is designed to help students get a better grip on data handling and statistics in the context of biological studies. The aim is to provide students and teachers with useful tools and materials, adapted to students from the bachelor to PhD level. In 2016, a number of new learning resources and numerical tools were developed, and bioST@TS was launched on a new web platform. Video tutorials, produced in collaboration with SFU MatRIC, are published on [VideoSTATS](#). In collaboration with the [TE2LE](#) project, students have also produced video tutorials in biostatistics as an integral part of an arctic ecology and population biology course at UNIS. The [bioST@TS](#) platform is now well established, and used by teachers and students in several courses.

In 2016, the bioSKILLS team has started developing bioWRITE, with a focus on scientific writing skills. In several introductory biology courses various modules have been implemented that focuses on communication skills and scientific report writing.

The Teach to Learn ([TE2LE](#)) project aims stimulate student's creativity and develop their collaborative, communicative and pedagogical skills. Students create video tutorials to teach their peers key scientific concepts such as laboratory practices, field work methods, statistic, scientific writing and

Health Safety and Environment (HSE). TE2LE also expands the bioSKILLS platform by adding [bioCRUISE](#) and [bioLAB](#).

Many students struggle with their non-major courses, and in particular, biology students often struggle with understanding and applying mathematical and statistical concepts in a biological context. A bioCEED Teacher Course project (2016) mapped the teaching and learning of mathematics and statistics in BIO courses, and found very weak alignment between ILOs, teaching, and the teachers' expressed expectations. A joint project with SFU Matric is exploring opportunities for linking and aligning the mathematical and statistical content across courses (MAT/STAT and BIO) to supporting learning and understanding in both subjects.

The project **Together for better learning** (a co-operation between bioCEED, Faculty of psychology, Faculty of medicine and dentistry, Faculty of humanities at UiB and SFU CEMPE) continues. The aim of the project is to map students', teachers' and external partners' experiences, and to compare different practices in order to establish a better understanding of how and what students learn in and from practice.

### Testing tools and teaching methods

bioCEED encourage and support teachers in testing and implementing new teaching methods, such as for example team based learning<sup>4</sup>, flipped classroom<sup>5</sup>, the use of digital tools<sup>6</sup> and video production<sup>7</sup>. Implementing new pedagogies are not an end to itself, however, and we encourage our teachers to see the broader picture in developing their teaching, and to strive to achieve alignment between learning outcomes, curriculum, learning activities.

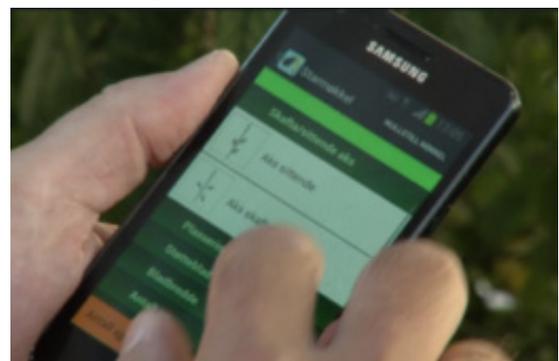
One such initiative is [ArtsApp](#), a digital tool for species identification, and a long-going bioCEED project. Species identification apps for more groups of

## App helps students learn plants

A recent bioCEED study found that biology students using an app to identify sedges get more correct identifications than students using the traditional textbook method.

The paper reports on an experiment with 70 biology students from the University of Bergen, which revealed that the students found identifying species more interesting and enjoyable when using a smartphone or tablet. The students also felt that they were more competent after using the app than when using the book. Being able to identify species is a key skill for biologists, but undergraduate students often find identifying species difficult and uninteresting. Our study shows that using modern technology could enhance students' interest and learning in ways that perhaps are not possible when using a textbook.

The app used to identify sedges is also a [bioCEED product](#). ArtsAPP was created when a biology student with information technology skills and a biology professor found that they had the same idea – to create an app for species identification. ArtsAPP became a project where students, professors, educational outreach and technical staff work together to create and test a tool that is useful both in university teaching, schools and for nature lovers.



Jeno L.M., Grytnes J.-A. Vandvik V. 2017. The effect of a mobile-application tool on biology students' motivation and achievement in species identification: A Self-Determination Theory perspective. *Computers & Education* 107: 1-12.  
dx.doi.org/10.1016/j.compedu.2016.12.011

<sup>4</sup> <http://www.uib.no/aktuelt/97250/vert-gode-gjennom-lagarbeid>

<sup>5</sup> <http://bioceednews.b.uib.no/2016/10/24/flipped-out-of-flipped-classrooms/>

<sup>6</sup> <http://www.forskerforum.no/p-nett-med-studentane/> <http://biostats.b.uib.no/>

<sup>7</sup> <http://bioceednews.b.uib.no/2016/11/25/teach-to-learn-is-at-78-north/> <http://bioceednews.b.uib.no/2017/01/09/teach-to-learn-went-on-cruise-during-the-course-bio325-ocean-science/>

organisms will be developed as a collaborative effort between students, teachers and partners within and outside the university<sup>8</sup>. PhD student Lucas Jenø researches questions of motivation, self-efficacy, and learning in biology linked to ArtsApp.

Associate Professor Il Sehoja Cotner (University of Minnesota) has initiated a project to map how biology faculty teach, and what characterizes their teaching<sup>9</sup>, using COPUS (Classroom Observation Protocol for Undergraduate STEM). The COPUS investigation is accompanied by a teacher survey on how teachers perceive their own teaching (Teaching Practices Inventory [TPI]), and a student survey on motivation, engagement and confidence. Preliminary results from BIO-courses show that biology teachers use a diversity of in-class techniques to engage their students. However, they tend to report most teaching as “lectures”. Postdoc Cissy Ballen (University of Minnesota) is mapping teaching methods and student participation in biology and comparative politics courses at UiB, and biology courses at UNIS will be included in spring 2017. Student participation, confidence, and gender aspects, in relation to teaching method and instructor behavior, are special focus areas in this study<sup>10</sup>.

### **Open student meetings and student seminars**

In collaboration with the student representatives in bioCEED and the student organisations, bioCEED arrange open student meetings and student seminars. This year also students from other departments participated within the meetings and seminars. The open student meetings aim to get the students’ opinions on the different aspects of bioCEED’s work, by discussing subjects such as what is good teaching, and different teaching and learning methods. The meetings and seminars are also used as forums (skill training seminars) for students to gain knowledge on specific subjects such as writing and reading skills or career options as a biologist.

The bioCEED’s student representatives coordinate student seminars<sup>11</sup>. An overview of topics in 2016 can be found in the Appendix.

Two of our students, Renate Alling (UNIS) and Marie Hauso (UiB), participated at the ISSOTL (Annual conference of the Society of Scholarship of Teaching and learning) 2016 in Los Angeles, USA, where

### **Master projects – Sara Madeleine Kristensen and Daniel Kristensen**

#### **Studying motivation and drop-out among first-year biology students**

Madeleine and Daniel are master students in pedagogy, and do their master project with bioCEED. They are investigating motivation and drop-out among first-year biology students, by using both quantitative and qualitative methods. The theoretical framework of their studies are the Self-Determination Theory. In addition to supervision and membership of the bioCEED research group, their master project receives financial support from NOKUT and bioCEED through Master Scholarships.

<sup>8</sup> Centre for Science Education, IMR and the Norwegian Biodiversity Information Centre

<sup>9</sup> <http://bioceednews.b.uib.no/2017/01/31/mapping-the-teaching-landscape-at-unis-and-uib/>

<sup>10</sup> <http://www.studvest.no/ja-kvinner-deltar-faktisk-mindre-enn-menn/>

<sup>11</sup> <http://bioceednews.b.uib.no/2016/11/30/which-qualities-do-biologists-need-in-their-future-professional-life/>  
<http://bioceednews.b.uib.no/2016/10/21/the-importance-of-bachelor-projects-a-student-bioceed-seminar-at-unis/>

Marie Hauso gave a talk on *Stories from a student perspective*<sup>12</sup>. Renate Alling shared the highlights from the conference with staff and students at a seminar at UNIS.

### Plans and priorities for 2017:

- ♣ **bioSKILLS** – build on the bioST@TS concept to include a wider range of transferable skills, including academic writing, dissemination, and practical skills in the lab and field.
  - bioWRITE will be a prioritized task in 2017 starting with bioREPORT, followed by bioCOM. bioPRACTICE will be developed in collaboration with the PRIME team (see *practical training*).
  - Develop tool-box for field-based education / field activities (bioFIELD)
  - **Communication and dissemination training** From 2017 BIO-student can take the course [BIO296](#) Dissemination project in biology. This course become part of a family of skills-training courses.
  - A new project on *Numerical Competence and Student-Active Research* funded by Olav Thon Foundation will further develop and extend the learning platform bioST@TS<sup>13</sup>. This includes collaboration with other biology educations, and with the SFU CCSE.
- ♣ **Mathematics and biology students.** Continue the collaborative projects with Matric, and further develop the project to include one PhD in mathematics didactics from UiB.
- ♣ A new, student coordinated project which will be up and running in the beginning of 2017 is **biORACLE**. This will be a low-threshold service where bachelor biology students will have the opportunity to come and seek help from students of higher educational levels, so-called "oracles". The service will be run by the main biORACLE board, led by bioCEED's two student representatives at BIO, a bioCEED employee and three other students. This board will coordinate the students who have agreed to attend as oracles. The goal is for biORACLE to be able to run continuously for many years while also expanding as a safe and frequently used help service, where bachelor students can come to ask any questions they might have. biORACLE is also meant to function as a communicator between students and lecturers, where frequent feedback of how the students perceives different biology courses can help improve the teaching of individual courses.
- ♣ Publish results from teaching and learning behaviour research (COPUS, TDI and student surveys).
- ♣ Continue to contribute into the work of a new **LMS** at UNIS and involving students actively in this process
- ♣ Continue work on developing, supporting and implanting student active learning and alternative assessment methods to increase student learning in individual courses.
- ♣ **Dialogue meetings with students.** Continue the open meetings and workshops with the students at BIO and AB.

<sup>12</sup> <http://bioceednews.b.uib.no/2016/10/31/travelogue-from-issotl-conference-2016-los-angeles/>

<sup>13</sup> <http://bioceednews.b.uib.no/2017/01/18/new-project-numerical-competence-and-student-active-research/>

## Practical training

One of the main hypotheses in bioCEED is that internships or placements in research, industry, and the public sector has a potential for strengthening student motivation and supporting learning, also in disciplinary subjects like biology (c.f., the bioCEED triangle, Fig. 1). A central goal is therefore to observe and assess to what extent development of practical skills and workplace integration contribute crucial components to the student's experience of becoming a biologist. Much of this activity is coordinated through the externally funded project [PRIME](#).

BIO started offering work internship-courses ([BIO298](#) and BIO198) for biology students in 2015. These courses supplemented an already-existing research project course ([BIO299](#) at BIO, [AB207](#) at AB), where students could conduct a small research projects under supervision. The BIO298 internship students work at least 140 hours at a workplace as biologist. In addition, the students meet with the teachers, write four open blog-posts about their internship (<http://biopraksis.b.uib.no>), submit one reflection essay to the course organizer and give an oral presentation about the internship. In all assignments, the students are asked to reflect on the learning that takes place during the internship and relate the knowledge learned at campus to the work performed at the workplace. Torstein Hole's PhD work researches learning in internship and practice. Based on feedback from the students and preliminary analyses of results, we are confident that the learning outcome is high and that other study programs may benefit from including internships. A novel aspect of this course is that student learning and development through the course are logged through blogs, and that these blogs are used as course deliverables and in the student assessment (can be read [here](#); most are in Norwegian).

In November 2016, PRIME and bioCEED arranged a workshop with the work practice hosts<sup>14</sup>. At the meeting, hosts expressed that they value the opportunity to host students, and they appreciate how work placements corresponds with the overall aims of bioCEED. They also emphasize that collaboration with bioCEED can benefit the workplace hosts. The practice host meeting input will followed up, and such meetings will be held annually to ensure further development and communication.

Another lower-key meeting place between students and workplaces is the annual career day. This is a student-driven activity that exposes the students to a broader range of career opportunities, and allows workplaces to promote themselves vs. potential employees. Recruiting companies to the career day has been challenging, however, and we should consider integration with other workplace collaboration initiatives. This should not be at the expense of student leadership, however.

The growing family of "skills-courses" will be further expanded by a new Dissemination project in Biology course ([BIO296](#)) running at BIO for the first time in spring 2017, and by starting up a work practice course at UNIS. Practical skills training has also been integrated in several other courses (both at AB and BIO) through a range of activities the described under *Innovative Teaching*. Sector contact is also expanded across the curriculum, e.g. in the form of seminars with end user participation (student seminars) and invited talks in large-enrolment courses like BIO100 as well as in more specialized courses.

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<sup>14</sup> <http://bioceednews.b.uib.no/2016/11/30/host-companybioceedprime-workshop-on-bio-298/>

## 🔗 PhD project – Torstein Nilsen Hole

### The role of practice learning in tertiary level biology education

This phd project focuses on two aspects of practical activity in biology: Learning in field excursions and in work placements. In 2016, Hole has worked on two papers that focus on both of these respectively and which are soon to be submitted. This includes an organizational ethnographic investigation into fieldwork and an analysis of student blogs from work placements. In 18<sup>th</sup> June to 28<sup>th</sup> of July, Hole was a visiting scholar at Griffith University, with host Stephen Billett. Billett is a leading researcher into workplace learning. During this stay, Hole worked on the conceptual framework regarding workplace learning. Hole has also started work as lead author on a third paper that includes work placement cases from musicianship, teacher training, medicine and fish biology to further investigate workplace learning.

## 🔗 Postdoc project – Anne Laure Simonelli

Anne-Laure Simonelli (PRIME) is interested in transferable skills, and especially how, when, and why students acquire such skills through diverse experiences they encounter as biology students. She focuses on collaboration, critical thinking, communication and creativity, and maps the development of these skills in different learning situations. Simonelli also implements “[Teach2Learn](#)” where BSc and MSc students create video tutorials to teach other students key scientific concepts (bioSKILLS) such as laboratory practices, fieldwork methods, statistic and scientific writing. The Teach2Learn project contributes to the bioCEED digital platforms with student-generated tutorials on different bioSKILLS. Further, Simonelli is an active partner within iSCOPE project, integrating Science of Oceans, Physics and Education.

Our experience, as well as data from our national survey (the bioCEED survey) and from the research we are conducting on the placement courses, shows that students, teachers and the workplaces all see the learning outcome and broader benefits of work placements for students. Therefore, bioCEED will contribute to further development and assessment of work practice as an integrated part of higher education.

### Plans and priorities for 2017:

Priorities in 2016 will be to follow up ongoing activities, and to communicate over bioCEED at sector-specific fora.

- 🔗 **Internships.** As part of PRIME, BIO and AB students will be offered relevant internships, and we will research the impact of these internships on student motivation and learning.
- 🔗 Continue Annual career Day as a student driven activity
- 🔗 Work practice host meetings will be held annually to ensure good communication between course leaders, students and work practice hosts
- 🔗 Continue to disseminate work practice in disciplinary education as a best-practice example to increase student motivation and connecting societal relevance and education.
- 🔗 Publish results from PRIME research

Fig 4. The work placement courses got press attention – here from the national-distribution business daily Dagens Næringsliv's section on talent development and education. February 19<sup>th</sup> 2016.

## Dissemination and outreach

Sharing, communicating, and interacting with different audiences within academia and beyond over scientific developments, results, and their societal implications are integral parts of the research culture. Transferring these aspects into the educational culture is an important aspect of the 'cultural shift' within education that bioCEED is trying to promote. Dissemination and outreach are thus important not only to promote bioCEED outputs, but also as a key part of the idea behind bioCEED.

During bioCEED's first years, our communication and dissemination strategy have shifted from an early-stage focus on informing the community within and beyond our institutions that we exist, and what our goals are, towards the current focus on communicating results and outputs, as well as on communicating their policy and societal implications<sup>15</sup>. These different dissemination modes have different target audiences, require different communication strategies, and use different media. In addition, there is internal communication within the consortium and our host department BIO and AB. Below, these different dissemination and outreach modes will be treated separately.

### Internal communication and sharing

For educational development efforts to have lasting impact within the departments, and for new and improved practices to spread, they must be shared among the staff. Sharing also enables colleagues to implement, test, critique, and build on each other's work. Sharing is a prerequisite for developing program-wide initiatives and alignment, which is the goal of bioSKILLS and related bioCEED initiatives within all our strategic focus areas. Finally, good internal communication ensures an 'open door' through which more staff and students can be intrigued, involved, and engaged.

Internally, bioCEED therefore wishes to promote open and inclusive communication and sharing among the BIO and AB staff, and also within our institutions.

We have several structures in place primarily geared at internal communication and inclusion. These are used in slightly different ways, and while all are open to external users, much of the communication through these channels are aimed at an internal audience:

- ♣ **bioCEED Newsletter, Twitter, Facebook , course blogs, and email** are used for information of presumed general interest, such as promoting upcoming events, announcing various opportunities, and sharing news about bioCEED projects, our students or staff, and our outputs and external impacts.
- ♣ **bioCEED Seminar Series** - a separate series is provided for staff and students to cater to their specific interests - used for sharing experiences and providing training.
- ♣ **bioCEED web pages** – are more static web pages with basic information about bioCEED
- ♣ **biSKILLS web pages** – are resources directly geared towards use in teaching, and are designed and developed to be useful and adaptable to the needs of teachers and students.

These are all open channels, and we take care to invite all our staff and our students as well as interested external collaborators regularly to participate and contribute.

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<sup>15</sup> i.e. we have gone through a shift from a primary focus on 'dissemination for awareness', via a stage that also includes 'dissemination for understanding', and are now also doing 'dissemination for action' (Hamsworth et al. 2000; <http://www.innovations.ac.uk/btg/resources/publications/dissemination.pdf>)

### **Dissemination for awareness – the role and existence of bioCEED and SFUs**

In the early phase of bioCEED, this was the primary focus of our dissemination and external communication. We presented the ideas behind bioCEED, and the SFU system, to research groups, departments and institutions across Norway. As the second SFU call drew close, we experienced a surge in invitations to present our ideas, and more specifically “How to get an SFU” in early 2016.

### **Dissemination for understanding – the outcomes of our strategic focal areas and projects**

During the course of 2016, we have deliberately shifted the focus of our communication towards the content and outcomes of bioCEEDs core – our strategic focus areas, development projects and specific actions within these. Our communication is becoming more varied, in that we now combine presentations, press coverage, and own contributions to the public debate, with scholarly outputs - such as presentations at both educational and biological conferences and scientific papers in the educational science literature. We are pleased that some of our work is attracting attention. Our approach to build a teacher culture based on the research culture (see Fig. 2) has received attention and led to invitations and keynotes in Norway as well as abroad. Implementation of work practice in a discipline-oriented subject has also received considerable attention and press coverage (see Fig. 4). Another highlight is the breadth of dissemination activities that are coming up. Over the past year, more than 25 bioCEED staff and students have presented our work externally in some form or another. An upcoming event that illustrates this is the 2017 Norwegian MNT conference, where bioCEED has 10 accepted contributions - making us the 4<sup>th</sup> largest contribution institution, surpassing many entire universities and colleges (Fig. 5). Finally, we are contributing to coordinate and develop collaboration with HigherEd developers and with biology educations within Norway. At the end of 2016, bioCEED is well established and profiled in the Norwegian HigherEd landscape, known for several our trademarks, but also for being lively, creative, and highly collaborative in our educational development.

### **Dissemination for action – contributing to policy and the public debate**

The past year has been an exciting year to be working within higher education development. In Norway, and abroad, quality in HigherEd is being debated, and new policies and excellence frameworks are being shaped. bioCEED have been vocal and active in the public debates. We have also been invited as contributors to strategies and policy documents at the departmental, institutional, and national level. A number of bioCEED core team members are contributing in policy processes, and we are active in the media. This bears fruit. To illustrate our profile on the educational scene; bioCEED is mentioned *eight times* in the white Paper on educational quality ([Meld.St. 16\(12016-2017\)](#)).

### **Plans and priorities for 2016 – Spread of best practice:**

- ♣ **bioCEED internal communication** - will be solidified and mainstreamed to become part of ‘everyday practice’ in our departments.
- ♣ **bioCEED external communication** - ‘Dissemination for understanding’ will be a priority, and we will seek to communicate the outcomes of our core activities and strategies both through scholarly channels both nationally and internationally, and vs. the media.
- ♣ **bioCEED as a coordinator** - We will seek to play an even more active role as a hub for collaboration over HigherEd development and with society.



## ORGANISATION AND MANAGEMENT

bioCEED is organized in Work Packages (WP, Fig. 4) where each WP addresses a corresponding strategy linked to the goals of the centre as described in the [application](#). WP leaders are responsible for following up the work within their work package, as well as ensure links and cooperation with other WPs. This organization was made to ensure that we keep focus on all important aspects, both within education *sensu stricto* (the students, teachers, curricula, learning environments, and the links between them) and within the larger educational and societal landscape within which our educations are embedded. The work package organisation has proved useful in maintaining activity and attention to the different, but clearly interlinked, aspects of educational development at bioCEED. However, the somewhat complex WP structure does not work well in disseminating our results and activities. The activities and results are therefore reported under our four main strategic focus areas: *Teacher culture*, *Innovative teaching*, *Practical training*, and *Dissemination and outreach*. Note that each of these strategic development areas incorporate work conducted under several Work Packages. In this section, we report more generally on project organisation, management, coordination, and collaboration (see Figure 5). The plans and progress according to the specific actions under each work package is listed the Appendices.

### **Organization and management**

bioCEED has a well-functioning and active **Steering committee**, consisting of the centre leaders, WP and project leaders, PhD candidates and postdoc, student representatives, and designated administrative and technical staff in Bergen and Longyearbyen. The group meets weekly to report on activities and projects, and to plan activities ahead. These meetings ensure effective communication, sharing, learning, and information flow across the consortium.

The bioCEED **Board**<sup>16</sup> oversees the centre activities, plans and reports, including budgets and accounting. In the spring 2017 board meeting, the board will also discuss the centre's strategy vs. the midterm evaluation.

The bioCEED **Advisory Board**<sup>17</sup> advises the centre on matters of strategic importance, including research and development priorities, organisation, and communication. The Advisory Board meeting at Svalbard in March 2016, included productive discussions with the bioCEED steering committee, as well as observing bioCEED activities (e.g. presentations from the Collegial Project Course). The resulting bioCEED Advisory Board report (April 2016) contains an assessment of the status and deliverables of the centre, and provides a set of recommendations. In particular, they recommend greater focus on visibility, impact, and dissemination. They also discuss how to measure and document success. The Advisory Board expresses a wish to be closely involved in future bioCEED developments. In response to this challenge, we have repackaged our activities under the four bioCEED strategic focus areas, which are now the core of our communication in all channels, including the web pages and the annual report. We have also identified specific topics and impacts that we prioritize documenting. Members of the Advisory Board have been invited to contribute to bioCEED activities (e.g. Teaching portfolio workshops).

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<sup>16</sup> <http://bioceed.b.uib.no/about-bioceed/centre-board/>

<sup>17</sup> <http://bioceed.b.uib.no/about-bioceed/advisory-board/>

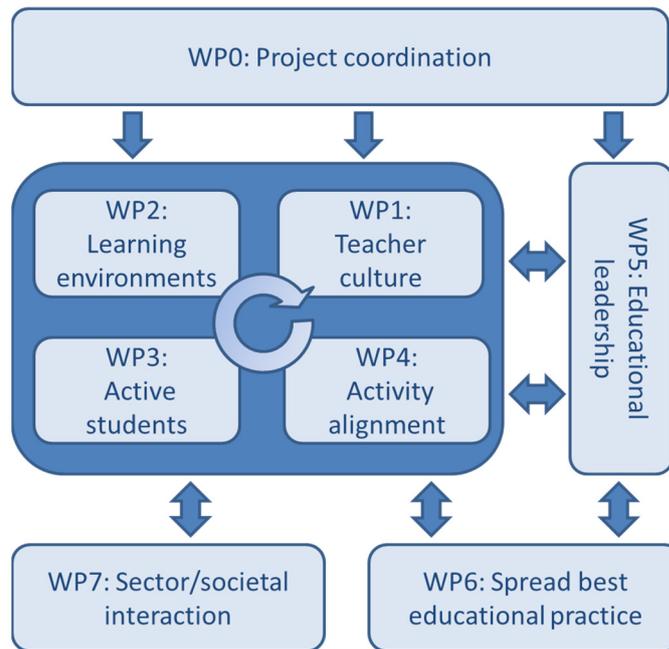


Fig 6. The organization of activities in bioCEED into work packages (WPs). The WPs are linked to the projects strategies, and represent different perspectives on education that each are important priorities in bioCEED. The four WPs within the blue central area represent important determinants of educational quality within educational activities themselves, *sensu stricto* whereas the outer WPs represent surrounding fields and processes that affect educational quality.

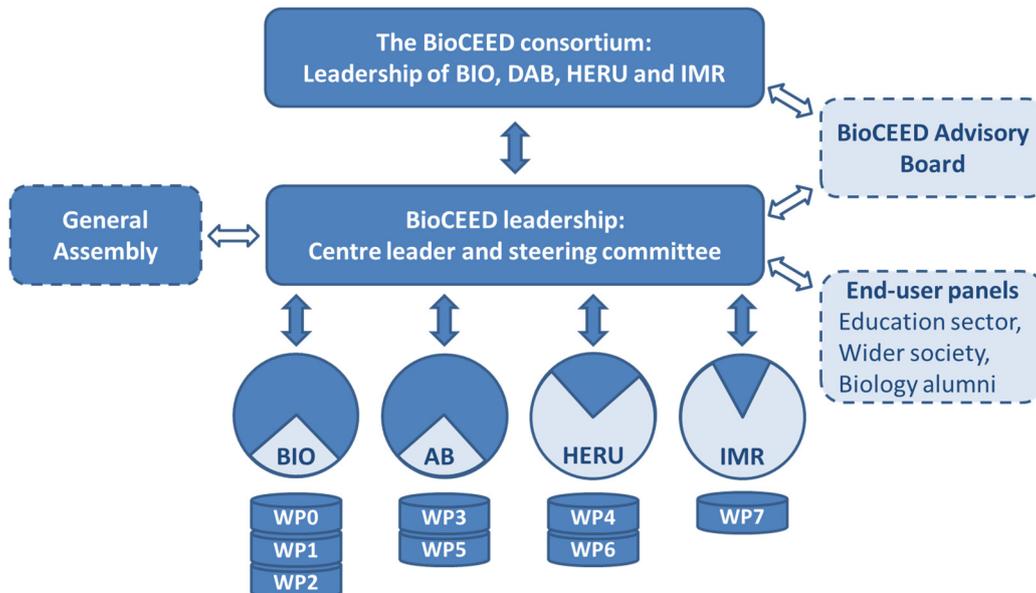


Figure 7. Project leadership, co-ordination, communication, and responsibilities. Governing (solid outline) and advisory (hatched outline) bodies are represented as rectangles, the educational activity at each of the partner institutions as circles, project work packages as stacked disks, and decision-making and advisory communication as filled and open arrows, respectively. Core bioCEED activities are indicated in dark blue, relationships to related activity at the partner institutions and with external bodies are indicated in light blue.

## Physical and virtual infrastructure

No major investments in physical infrastructure has been made in 2016. We have gotten better working places for students at BIO, and we are in communication with BIO and UiB over longer-term investments in modern learning rooms and facilities. Our international Adjunct Associate Professors are valuable resources towards this end, but this is long-term work and difficult to move forward.

We have revised and renewed our web pages, which are now structured according to the new strategic focal areas. The bioSKILLS platform, hosted on the UiB WordPress platform, is developed as a major resource available for staff and students both within bioCEED and beyond. The PRIME practice blogs are also openly available on a WordPress platform.

We continue to use using blogs, Twitter, and Facebook presence for communication both within the consortium, within HigherEd in Norway and internationally, and for public outreach. The students also have a bioCEED Snapchat.

## Student involvement

The student representatives participate in the daily management and leadership of bioCEED. They are represented at the bioCEED steering committee, and participate in ongoing projects and discussions. In particular, they are responsible for organising the open student meetings and for communicating student priorities and perspectives to the bioCEED leadership. The student representatives also contribute to bioCEED's outreach, by contributing to, and attending conferences, contributing to the Newsletter and participating in the local and public debate on education. In 2017, the student representatives have initiated the biORACLE project, where mature students will help younger students with various course-related questions. The students will also be responsible for selecting, designing and running student-driven project funded by scholarships from NOKUT.

### bioCEED Board

**Oddrun Samdal (Chair)**

UiB

**Børge Damsgård (Co-Chair)**

UNIS

**Sigurd Stefansson/Ørjan Totland**

BIO, UiB

**Astrid Tolo**

PED, UiB

**Geir Huse**

HI

**Tone Ulvatn/Mari V. Bjordal**

Student, UiB

**Alexandra Poje/Renate Alling**

Student, UNIS

### bioCEED Advisory Board

**Ivar Myklebust**

Norwegian Biodiversity Information Centre

**Trond Schumacher**

University of Oslo

**Gunnar Öquist**

Umeå University

**Mette Marianne Svenning**

University of Tromsø

**Anders Ahlberg**

Genombrottet, Lund University

**Doris Jorde**

Norwegian Centre for Science Education

**Jeremy Pritchard**

University of Birmingham

**Päivi Kinnunen.**

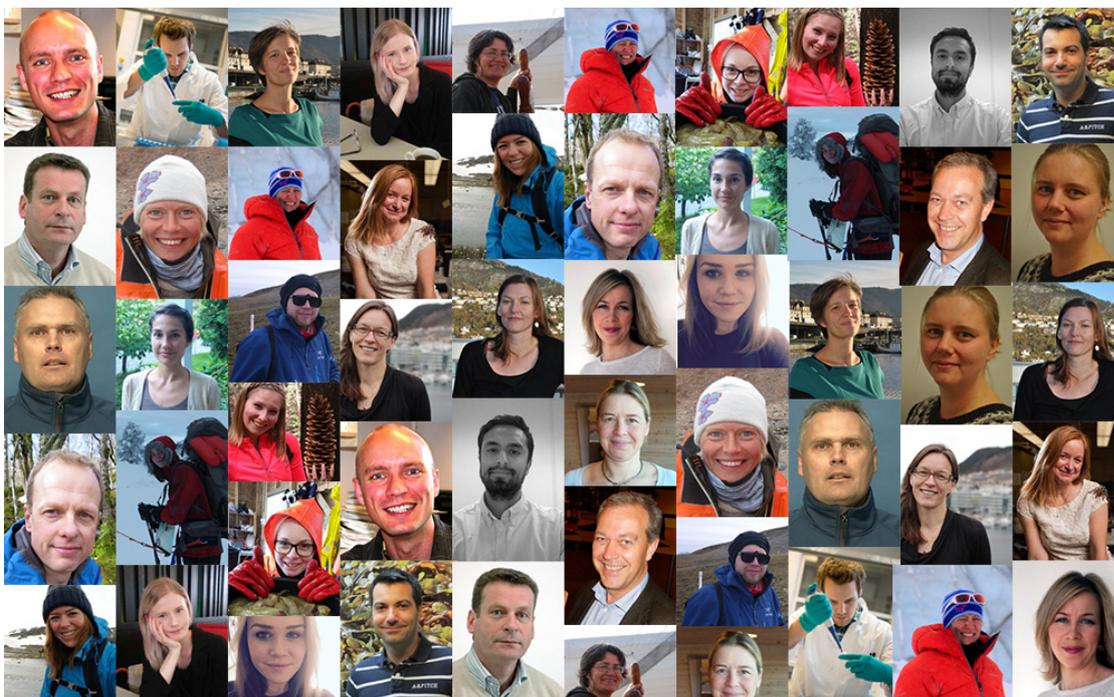
Aalto University

### International collaboration and exchange

- **University of Minnesota, USA.** With our adjunct associate professor Sehoja Cotner and her postdoc Cissy Ballen, we have initiated projects on teaching methods, gender issues and student and teacher attitudes.
- **Centre for Engineering Education, LTH, Lund, Sweden.** Our adjunct associate professor Roy Andersson teaches the Collegial Project Course offered through bioCEED. Along with his colleagues, he has contributed with expertise and experience in the process of establishing a reward system for teaching at UiB.
- **The RIVA Institute<sup>18</sup>** - A Global Conversation on Assessment, Evaluation, and Quality in Higher Education. bioCEED was invited to participate in the 2016 Riva Meeting at Virginia Tech, USA.
- **University of Rochester** - Paul Adachi and Edward L. Deci (– ArtsApp project under Innovative teaching). Research stay by PhD student Lucas Jenö.
- **Quest University, Georgia Southern University** - Mai Yasue, Jodie Langdon, and I-Chant Chiang (- Teacher Culture). Research stay by PhD student Lucas Jenö.

### Plans and priorities for 2016:

- ♣ The centre leadership and organisation will continue along the same general lines as in 2016.
- ♣ Ørjan Totland is taking over as Head of Education at BIO in addition to being Head of Department, and will replace Sigurd Stefansson in his roles in bioCEED.
- ♣ Midterm evaluation



<sup>18</sup> [http://assessment.vt.edu/The\\_Riva\\_Institute/2016\\_Schedule.html](http://assessment.vt.edu/The_Riva_Institute/2016_Schedule.html)


**bioCEED steering committee/core team**
**Vigdis Vandvik**

Centre leader, Professor,  
Department of Biology, UiB

**Sigurd Stefansson/Ørjan Totland**

WP leader (1), Professor,  
Head of Education  
Department of Biology, UiB

**Janne Søreide/Tove Gabrielsen**

WP leader (3), Ass. Professor,  
Arctic Biology, UNIS

**Øystein Varpe**

WP leader (5), Ass. Professor  
Arctic Biology, UNIS

**Torstein Nielsen Hole**

PhD candidate, bioCEED/PRIME

**Roy Andersson**

Ass. professor II, bioCEED,  
LTH, Lund University

**Sehoya Cotner**

Ass. Professor II, bioCEED,  
University of Minnesota

**Tone Ulvatn (until Aug 2016)**

**Mari Vold Bjordal/Ragnhild Gya**  
Student representative bioCEED  
BIO, UiB

**Jonathan Soulé**

Chief engineer, bioCEED  
Dept. of Biology, UiB

**Tina Dahl**

Teaching Executive officer  
Arctic Biology, UNIS

**Pernille Bronken Eidesen**

Deputy Centre leader, Ass. Professor  
Arctic Biology, UNIS

**Sigrunn Eliassen**

WP leader (2), Ass. Professor  
Department of Biology, UiB

**Arild Raaheim**

WP leader (4, 6), Professor  
Department of Education, UIB

**Gro van der Meeren**

WP leader (7),  
Institute of Marine Research

**Lucas Jenø**

PhD candidate, bioCEED

**Gaute Velle**

Project leader, PRIME  
Prof II BIO, UiB/Researcher, Uni Research

**Cissy Ballen**

Postdoc, associate researcher  
University of Minnesota

**Alexandra Poje/ Margot Nyeggen (until June 2016)**

**Nanna Devantier/Renate Marie Alling (until Dec 2016)**  
Student representative bioCEED,  
Arctic Biology, UNIS

**Anne Laure Simonelli**

Post doc, PRIME  
Dept. of Biology, UiB

**Oddfrid Førland**

Project coordinator, advisor, bioCEED  
Dept. of Biology, UiB

## APPENDICES

### The bioCEED community – internal seminars, meetings, courses

bioCEED seminar series		
Topic	Speaker(s)	2016
The future of Fisheries Education	Discussion group	25 Nov, UiB
Making (use of) videos in Teaching and Learning	Jonathan Soulé	26 Oct, UiB
Connecting the dots in a multidimensional course	Mads Forchhammer, UNIS	12 Oct, UNIS
Active learning improves diversity in undergraduate science	Cissy Ballen, University of Minnesota	07 Sep, UiB
Lunch seminar: Team-based Learning	T. Dahl & P. Bronken Eidesen	21 Apr, UNIS
Evaluering og kvalitetsutvikling	R. Andersson	14 Mar, UNIS
Quality assurance at BIO	Ø. Fiksen	14 Mar, UNIS
Colloquium: Field-based teaching	led by P. Bronken Eidesen & A. Vader	25 Jan, UNIS
Studentaktiv undervisning - erfaringer fra grunnleggende kurs i fysikk	Anders Malthe-Sørenssen, University of Oslo	20 Jan, UiB

bioCEED Teacher development activities		
Collegial Teaching and Learning in Biology	Bergen & Svalbard	Oct 2015 – June 2016
Collegial Teaching and Learning in STEM	Bergen & Svalbard	Oct 2016 – June 2017
Learning Forum	UNIS, Svalbard	Nov 2016
Teachers retreat	BIO, Bergen	30 Nov – 01 Dec
Workshop: How to write a well-structured Teaching Portfolio	MN-Faculty UiB	02 Dec

bioCEED Student meetings & seminars			
Topic	Where	Who	2016
Info about bioCEED	UNIS, Svalbard	T. Dahl	19 Jan
Student meeting – What transferrable skills do students need? bioST@TS presentation	BIO, UiB	S. Eliassen & J. Soule	17 Feb
Introduction of bioCEED and discussion about different teaching styles	UNIS, Svalbard	A. Poje & M. Nyeggen	24 Feb
Tips og motivasjon i eksamenstida!	BIO, UiB	L. Jenø & A. Raaheim	03 May
Career talks	UNIS, Svalbard	M. Nyeggen, A. Poje & P. Bronken Eidesen	09 May
Biologisk karrieredag / Career Day	BIO, UiB	Student Orgs. BIO	07 Apr
Biologer i strid – sosial fagdag (biologists presenting debated issues in Biology with following discussion)	BIO, UiB	Biologisk faguvalg	20 Apr
How to read an article How to write a scientific report	UNIS, Svalbard	R. Alling, N. Devantier, P. Bronken Eidesen & Ø. Varpe	05 Oct
ISSOTL, Los Angeles; International conference about teaching and learning.	UNIS, Svalbard	R. Alling	25 Oct
Conveying biological information to the general public	UNIS, Svalbard	Plenum discussion, R. Alling, N. Devantier & Ø. Varpe	05 Nov
Hvilke egenskaper trenger fremtidens biologer	BIO, UiB	M. V. Bjordal & R. Gya, Panel discussion with end users	15 Nov

The SFU family			
Title	Where	Contribution	2016
SFU-network meeting	Oslo	Workshop	07 March
SFU-network meeting	Oslo	Workshop	7 Nov
Mathematics in biology – collaboration with SFU Matric		Project collaboration	Jan - Dec

## Dissemination and outreach – bioCEED in the media

Monthly bioCEED Newsletter:	<a href="http://bioceednews.b.uib.no/">http://bioceednews.b.uib.no/</a>
bioCEED Web pages:	<a href="http://bioceed.b.uib.no/">http://bioceed.b.uib.no/</a>
Twitter:	@sfubioceed @VVandvik @OysteinVarpe @lucas_jeno @Frueidesen @bioCEED_JS @oddfriidforland
Facebook:	<a href="https://www.facebook.com/bioceed/">https://www.facebook.com/bioceed/</a>
Snapchat:	bioCEED on Snapchat
SFU Magazine	<a href="#">SFU Magazine</a>

See also our web archive for press: <http://bioceed.b.uib.no/category/outreach/all-media-articles/>

## Dissemination and outreach – bioCEED platforms

bioST@TS :	<a href="https://bioST@TS.b.uib.no/">https://bioST@TS.b.uib.no/</a>
bioPRACTICE student blogs:	<a href="http://biopraksis.b.uib.no/">http://biopraksis.b.uib.no/</a>
Teach2Learn:	<a href="http://teach2learn.b.uib.no/">http://teach2learn.b.uib.no/</a>

## Dissemination and outreach – bioCEED publications

### Op-Eds and articles in the media:

- Gya, R. (2017). [Det vi studenter trenger frå dere undervisere](#). *Khrono*
- Jeno, L. M., Raaheim, A., Vandvik, V. & Førland, O. (2017). [Belønning og økt status kan gi bedre forelesere](#). *Forskning.no*
- Raaheim, A. (2017). [Å trollbinde publikum er ikke nok](#). *Bergens Tidende*
- Raaheim, A. (2017). [Gode og dårlige undervisere](#). *Dagbladet*
- Raaheim, A., Vandvik, V., Jeno, L.M. & Førland, O. (2017). [God undervisning kommer ikke fra hjertet](#). *Studvest*
- Jeno, L. M., Raaheim, A., & Vandvik, V. (2016). Hvordan lese til eksamen? *Klassekampen*.
- Jeno, L. M., Raaheim, A., & Vandvik, V. (2016). [Hvordan du faktisk presterer under press](#). *Studvest*.
- Raaheim, A., Fiksen, Ø., Jeno, L. M. (2016). [Vi bør gjøre noe med undervisningen](#). *Bergens Tidende*.
- Raaheim, A., Fiksen, Ø., Jeno, L. M. (2016). [Mer enn forelesninger](#). *Forskerforum*, 48(4), 39.
- Hole, T. (2016). [Skal menn eller kvinner tie i forsamlinger?](#) *Studvest*.
- Vandvik, V. Førland, O., & Varpe, Ø. (2016). [En kultur for utdanningskvalitet](#). *Morgenbladet*.
- Hole, T & Velle, G. (2016) Ut i virkeligheten. *Klassekampen*.
- Jeno, L. M. (2015) [Vanskelig å komme i gang? Motivasjonstips til deg som er student](#). *Studvest*.

### **Scientific publications and conference papers:**

- Jeno, L. M., Grytnes, J-A., & Vandvik, V. (2017). The effect of a mobile-application tool on biology students' motivation and achievement in species identification: A Self-Determination Theory perspective. *Computers & Education*, 107, 1-12.
- Hole, T., Jeno, L. M., Holtermann, K., Raaheim, A., Velle, G., Simonelli, AL., & Vandvik, V. (2016). *bioCEED Survey 2015*. Retrieved from BORA – Bergen Open Research Archive: <https://bora.uib.no/handle/1956/11952>
- Førland, O.T.F., Vandvik, V., Anderssson, R. 2016. The story of bioCEED – or How to grow a SoTL culture from scratch. TALK & PAPER at *EAIR Forum 2016*, Birmingham, July 20<sup>th</sup>.
- Hole, T.N. (2015). Developing Collaboration as a Transferrable Skill in Biology Tertiary Education. *Literacy Information and Computer Education Journal*, 6(3), 1971-1975
- Jeno, L. M. (2015). Encouraging Active Learning in Higher Education: A Self-Determination Theory Perspective. *International Journal of Technology and Inclusive Education (IJTIE)*, 5(1), 716-721

### **Commissioned reports:**

- Hidle K., Bærheim A., Håvik B., Stoltz-Olsvik C., Randal F., Mæland J.S., Brekke K., Tveit R., Bjørnevik T.L., Vandvik V., & Johnsen Å. 2016. PRAKSIS I UTDANNINGENE VED UNIVERSITETET I BERGEN. *Report from a working group, Univeristy of Bergen, Norway.*
- Vandvik V., Engelsrud G., Engen D., & Evensen R. 2016. EKSPERTUTVALGETS UTKAST TIL INNSPILL. *Report from a working group on quality in higher education, Forskerforbundet, Oslo, Norge.*

## Dissemination and outreach – bioCEED at external events

### Participation at seminars, workshops, conferences, working groups, etc.

#### Dissemination for awareness – the role and existence of bioCEED and SFUs

Title	Occasion	Contribution	2016	Speaker
<i>How to become an SFU – information and inspiration</i>	UiB units applying for SFU-status	Talks, discussions	Several	bioCEED staff
<i>bioCEED - status and ongoing projects</i>	Learning Forum, UNIS	Talk	15 Nov	P. Bronken Eidsen
<i>Forskning innen SFU-en bioCEED</i>	Institutt for pedagogikk, UiB	Talk	Nov	A. Raaheim
<i>bioCEED</i>	CETLFunk International Network Meeting, Münster, Germany	Poster	15-16 June	Ø. Varpe
<i>Nasjonalt forum for utdanningsleing i biologi</i>	Biofagrådet, NMBU, Ås	Talk	31 Mar	Ø. Varpe
<i>bioCEED results and participation</i>	Lederseminar BIO	Talk	09 Mar	V. Vandvik
<i>Fremragende, liksom? Hvordan vi fikk SFU-status</i>	SFU Søker-seminar	Talk	08 Mar	V. Vandvik
<i>Fremragende, liksom? Veien mot SFU-status.</i>	Seminar, Høgskolen i Hedmark, Evenstad	Invited talk	10 Feb	V. Vandvik
<i>Vestlandets første Senter for fremragende utdanning – hvordan jobber vi i bioCEED</i>	Fagleg-pedagogisk dag, UiB	Invited talk	05 Feb	V. Vandvik

#### Dissemination for understanding – the outcomes of our strategic focal areas and projects

Title	Occasion	Contribution	2017	Speaker
<i>Active learning - what is it and how do you get there?</i>	Symposium Nye utdanningsmetoder, Biokjemisk Kontaktmøte, Finse	Invited talk	19-22 Jan	A. Goksøyr
<i>The effects of technology on learning</i>	3rd Conference of the Norwegian Ecological Society	Talk	12-13 Jan	L. Jenø
<i>Numerical competence and quantitative skills in biology education</i>	3rd Conference of the Norwegian Ecological Society	Workshop	11 Jan	S. Eliassen, J. Soulé & M. Lebon
<i>Om sammenhengen mellom læring, undervisning og vurdering</i>	Høyskolen Kristiania	Invited talk	Jan	A. Raaheim
<i>Om sammenhengen mellom læring, undervisning og vurdering</i>	Juridisk fakultet, UiB	Invited talk	Jan	A. Raaheim
Title	Occasion	Contribution	2016	Speaker
<i>Om sammenhengen mellom læring, undervisning og vurdering</i>	Institutt for klinisk psykologi, UiB	Invited talk	Dec	A. Raaheim

<i>The lecture: challenges and possibilities</i>	Graduate School of Human Interaction and Growth, UiB	Invited talk	Dec	A. Raaheim
<i>Student active learning – best practice examples from bioCEED</i>	Teaching seminar – GFI UiB	Invited talk	06 Dec	T. Hole & O. Førland
<i>Om forholdet mellom læringsutbyttebeskrivelser, undervisning og vurdering. Eksempler fra arbeidet i bioCEED.</i>	NOKUT-seminar – Læringsutbyttebeskrivelser som pedagogisk verktøy	Invited talk	06 Dec	A. Raaheim
<i>Utdanningskvalitet i biologikurs. Fra underviserkultur til læringskultur</i>	Forskningsdagen på Institutt for Arktisk og Marin Biologi, UiT	Invited talk	23 Nov	L. Jenø
<i>Bruk og vurdering av blogg i høyere utdanning</i>	Workshop - digital vurdering i HU, Norgesuniversitetet	Invited talk	18 Nov	T. Hole & A. Raaheim
<i>Om meningsskapende samsvar mellom undervisning, læringsutbytte og vurderingsform</i>	Norgesuniversitetet, Høgskolen i Oslo og Akershus	Invited talk, workshop	18 Nov	A. Raaheim
<i>Using video as a teaching tool:</i>	Learning Forum, Workshop, UNIS	Invited talk	16 Nov	J. Soulé
<i>Digital eksamen og alternative vurderingsformer</i>	Høgskulen i Volda	Invited talk	08 Nov	A. Raaheim
<i>Undervisning Live: Underviseren som ikke liker å undervise</i>	NOKUT konferansen	Talk	02 Nov	C. Jørgensen
<i>Sammenhengen mellom læring, undervisning og vurdering</i>	Høgskolen i Oslo Akershus	Invited talk	Nov	A. Raaheim
<i>Det handler om læring</i>	Institutt for global helse og samfunnsmedisin	Invited talk	Nov	A. Raaheim
<i>Undervisning, læringsutbyttebeskrivelser og vurderingsformer – sammenheng?</i>	Høgskolen i Bergen	Invited talk	Nov	A. Raaheim
<i>Læring, motivasjon og vurdering</i>	Uppsala University	Workshop	Oct	A. Raaheim
<i>Digital assessment – pedagogical possibilities</i>	Pedagogical Conference, Uppsala University	Keynote	27 Oct	A. Raaheim
<i>Hvilke effekter har teknologi på studentenes læring og motivasjon?</i>	UiBs Læringskonferanse	Invited talk	20 Oct	L. Jenø
<i>Stories from a student</i>	ISSOTL 2016, LA USA	Talk	11-15 Oct	M. Hauso
<i>Finding a voice through a collegial Teaching and Learning culture</i>	ISSOTL 2016, LA USA	Talk	11-15 Oct	R.Andersson O. Førland & V. Vandvik
<i>Teaching and student active learning methods from a comprehensive (overall) pedagogical perspective</i>	NMBU	Invited talk	Oct	A. Raaheim
<i>Studentaktiverende undervisningsformer og sammenhengen mellom læringsutbytte, undervisningsformer og vurdering</i>	NMBU- Handelshøyskolen	Invited talk	Sept	A. Raaheim
<i>Forskingsbasert utdanning</i>	Teacher seminar, IBV UiO, Sundvolden hotel	Keynote	02-03 Jun	Ø. Fiksen
<i>Re-examining learning and teaching methods</i>	Fakultetsseminar Nord universitet	Invited talk	13- 15 Jun	T. Hole

<i>The effect of a mobile-application tool on intrinsic motivation, perceived competence and achievement</i>	The 6th International Conference on Self-Determination Theory	Poster	02-05 Jun	L. Jenø
<i>Alternative eksamens- og vurderingsformer</i>	NTNU Læringsfestivalen	Invited talk	09 May	A. Raaheim
<i>Læring, motivasjon og prestasjoner</i>	BI, Oslo	Invited talk	May	A. Raaheim
<i>Læring, vurdering og alternative vurderingsformer</i>	Høgskolen i Harstad	Workshop	Apr	A. Raaheim
<i>Undervisningsutvikling på BIO</i>	Biofagrådet, NMBU, Ås	Talk	31 Mar	Ø. Fiksen
<i>Blogg i undervisning</i>	Psykologisk Fakultet, UiB	Invited talk	18 Feb	T. Hole

### Dissemination for action – contributing to policy and the public debate

Title	Occasion	Contribution	2016	Speaker
Work practice in Education	UiB	Working group – report	2016	V. Vandvik
Establishing a reward system at UiB: Excellent teaching Practitioners	UiB	Working group	2015-2016	V. Vandvik & O.Førland
Establishing a reward system at UiB: Excellent teaching Practitioners	MN-Faculty, UiB	Working group - <a href="#">memorandum</a>	2016	V. Vandvik & O.Førland
<i>Hur får man professorerna med på en kollegial SoTL-kultur?</i>	LTHs Pedagogiska Inspirationskonferansen Lund University	Keynote	15 Dec	V. Vandvik
<i>Vurdering og vurderingsformer</i>	Universellforum 2016 – om universell utforming av læring, Høgskolen i Bergen	Invited talk	29 Nov	A. Raaheim
<i>Sammen for bedre læring. Om læring i tverrprofesjonelle team i praksis</i>	Møte i Nasjonal fagstrategisk enhet for utdanning og forskning innen helse- og sosialfag	Invited talk	24 Nov	A. Raaheim
Informasjonsmøte om meritteringsordningen Fremragende underviser (Excellent Teaching Practitioners)	MN-Faculty UiB	Meeting	17 Nov	V. Vandvik & O. Førland
<i>Kvalitetskultur i høyere utdanning. Noen suksesskriterier</i>	NOKUT konferansen	Panel discussion	02 Nov	V. Vandvik
<i>Hvordan skape kollektivt engasjement for studiekvalitetsarbeid - erfaringer fra bioCEED</i>	Kick-off seminar for revisjon av studieprogram og emner, UiB	Invited talk	31 Oct	Ø. Fiksen
<i>Studenter: læringsprosessen - fra ekstern, til perifer og integrert deltager</i>	Nokut's Høringskonferanse for ny studietilsynsforskrift	Invited talk	30 Sept	A. Raaheim
<i>The story of bioCEED – or How to grow a SoTL culture from scratch</i>	2016 EAIR FORUM BIRMINGHAM	Talk (paper)	01 Sept	R.Andersson O.Førland & V. Vandvik
<i>How can we measure change?</i>	RIVA Meeting, Virginia Tech, USA	Talk	17 June	V. Vandvik

<i>Authentic lab &amp; field education</i>	RIVA Meeting, Virginia Tech, USA	Talk	16 June	P. Bronken Eidesen & A. Ahlberg
<i>Er det rom for mer læring?</i>	NOKUT-frokost	Panel discussion	13 June	L. Jenø
<i>Digitalization of teaching – possibilities and challenges</i>	NOVA Strategy Seminar 2016, NMBU	Invited talk	07 June	A. Raaheim
<i>Eksempler fra bioCEED – hva har det betydd for studentene</i>	NSOs innspillsseminar til Kvalitetsmeldingen	Talk	07 Apr	M. Hauso
<i>Policies and Incentives for Developing a University's Teaching and Learning</i>	Kontaktkonferansen 2016, Fra struktur til kvalitet.	Invited talk	12 Jan	R. Andersson

## bioCEED Personell

Name	function in bioCEED	posistion	Unit
Vigdis Vandvik	Centre leader	Professor	BIO, UiB
Pernille Bronken Eidesen	Deputy Centre leader	Ass. professor	AB, UNIS
Oddfrid Førland	Coordinator	Advisor	BIO, UiB
Jonathan Soulè	Technical support (education)	Chief engineer	BIO, UiB
Tina Dahl	Administration and technical support	Executive officer	AB, UNIS
Torstein Nielsen Hole	PhD candidate		bioCEED/PRIME
Lucas Jenø	PhD candidate		bioCEED
Anne Laure Simonelli	Post doc		bioCEED/PRIME
Roy Andersson	Ass. Professor II	Academic developer	bioCEED
Sehoya Cotner	Ass. Professor II	Academic developer	
Sigurd Stefansson*/ Ørjan Totland	WP1 leader	Professor, Head of Education	BIO, UiB
Sigrunn Eliassen	WP2 leader	Ass. professor	BIO, UiB
Janne Søreide/ Tove Gabrielsen	WP3 leader	Ass. professor	AB, UNIS
Arild Raaheim	WP4&6 leader	Professor	PED, UiB
Øystein Varpe	WP5 leader	Ass. Professor	AB, UNIS
Gro van der Meeren	WP7 leader	Senior scientist	IMR
Gaute Velle	PRIME project leader	Researcher, Prof II	Uni /BIO, UiB
Cissy Ballen	Associate researcher	postdoc	University of Minnesota
<b>Student representatives</b>			
Tone Ulvatn (spring)	student representative	Student	BIO, UiB
Mari V. Bjordal (autumn)	student representative	Student	BIO, UiB
Ragnhild Gya (autumn)	student representative	Student	BIO, UiB
Alexandra Poje (spring)	student representative	Student	AB, UNIS
Margot Nyeggen (spring)	student representative	Student	AB, UNIS
Nanna Devatier (autumn)	student representative	Student	AB, UNIS
Renate Alling (autumn)	student representative	Student	AB, UNIS

\*replaced by Ørjan Totland from 01.12.2016

## Accounting 2016

		Budget	Result	Deviation
		2016	2016	2016
<b>Personnel</b>	<b>BIO</b>	1 821 427	2 074 707	-253 280
	<b>UNIS</b>	782 200	437 146	345 054
	<b>Inkind BIO</b>	4 768 497	5 276 658	-508 161
	<b>Inkind MN</b>	1 772 000	1 772 000	0
	<b>Inkind AB</b>	1 000 000	1 000 000	0
	<b>Inkind IMR<sup>19</sup></b>	900 000	140 000	760 000
	<b>Inkind HERU<sup>20</sup></b>	255 000	258 726	-3 726
<b>Expenditures</b>	<b>BIO</b>	524 000	269 601	254 399
	<b>AB</b>	30 000	0	30 000
	<b>IMR</b>	20 000	0	20 000
	<b>Inkind BIO</b>	0	34 904	-34 904
<b>Development WP1-5</b>	<b>BIO</b>	1 135 000	615 020	519 980 <sup>21</sup>
	<b>AB</b>	75 000	123 857	-48 857
	<b>Inkind BIO</b>	528 000	134 570	393 430
	<b>Inkind AB</b>	100 000	100 000	0
<b>Dissemination WP6-7</b>	<b>BIO</b>	120 000	99 691	20 309
	<b>Inkind BIO</b>	0	29 890	-29 890
<b>Total</b>		13 831 124	12 366 770	1 464 354
<b>NOKUT</b>		4 507 627	3 620 022	887 605
<b>Inkind</b>		9 323 497	8 746 748	576 749

BioCEED		Budsjett	Resultat	Avvik
		2016	2016	2016
<b>Personnel total</b>		11 299 124	10 959 237	339 887
<b>Expenditures</b>		574 000	304 505	269 495
<b>Development</b>		1 838 000	973 447	864 553
<b>Dissemination</b>		120 000	129 581	-9 581
<b>Total</b>		13 831 124	12 366 770	1 464 354

BioCeed		Budsjett	Resultat	Avvik
		2016	2016	2016
<b>Inkind</b>		9 323 497	8 746 748	576 749
<b>NOKUT</b>		4 507 627	3 620 022	887 605
<b>Total</b>		13 831 124	12 366 770	1 464 354

<sup>19</sup> IMR professor II position are budgeted under IMR in kind, but reported under BIO in kind. Hence, negative deviation for IMR in kind reporting and positive deviation from BIO in kind reporting.

<sup>20</sup> 20% of Arild Raaheims position at HERU is allocated to bioCEED work, but is not formally transferred to and reported under BIO in the UiB project reporting system (reporting is done at HERU).

<sup>21</sup> We are still seeing some carryover due to delays in activities and expenses the start-up year, with subsequent carry-over. Budget and expenditures are projected to be in balance from 2017 onwards.

## Externally funded projects

Granted by	Project title	Project period	Funding	PI/partners
Intpart	<i>Norway-Japan Partnership for Excellent Education and Research in Aquaculture</i>	2017-2019	4500 KNOK	Ivar Rønnestad
Intpart	<i>Connecting Field work and Laboratory experiments to numerical MOdeling in a changing marine environment</i>	2017-2019	3960 KNOK	Øyvind Fiksen
Thon Stiftelsen	<i>Numerical Competence and Student-Active Research</i>	2017-2019	1400 KNOK	Sigrunn Eliassen, Øystein Varpe, Jonathan Soulé
SiU, IntPART	<i>IScope (integrating Science of Oceans, Physics and Education)</i> Project number 249718	2016-2018	4345 KNOK	Karin Pittman, Dept. of Biology, UiB
Thon Stiftelsen	Research project student-active research: <i>Økosystem, klima og variasjon i eit «mini-havøkosystem»: ein vestnorsk fjord</i>	2016-2018	1137 KNOK	Anne Gro Salvanes, Dept. of Biology, UiB
SiU - High North Programme	<i>TraitTrain Comparing climate change impacts on High North vs. Alpine ecosystems through research and training in trait-based approaches</i> HNP-2015/10037	2016-2018	1500 KNOK	PI: V. Vandvik. Partners: BIO UiB, UNIS, University of Arizona, and Chinese Academy of Sciences (CN)
Norgesuniversitetet	Artsapp: En applikasjon for enklere artsidentifikasjon	01.01.2015-30.12.2017	550 KNOK	PI: John-Arvid Grytnes Partners: bioCEED, Centre for Science Education and the Norwegian Biodiversity Information Centre
Skibsreder Jacob R. Olsens og Hustru JG Olsens Legat	<i>Effekten av ArtsAPP på studenters læring og motivasjon</i>	2015-2016	47 KNOK	L. Jenø
Thon Stiftelsen	Excellent Teaching Award	2015	500 KNOK	Christian Jørgensen

Thon Stiftelsen	Excellent Teaching Award	2015	500 KNOK	Karin Pittman
UiB	Learning environment Award	2015	50 KNOK	Christian Jørgensen
WUN Research Mobility Programme.	Research stay at University of Rochester, USA,	Sept-Oct 2015	36 KNOK	Lucas Jenø
Universitets- og høyskolerådet	Contribution to for talk at MNT-conference 2015 (technology and science)	18-19.03.2015	75 KNOK	Øyvind Fiksen, John-Arvid Grytnes
Research Council of Norway- FINNUT programme	PRIME - <i>How Implementation of PRactice can IMprove relevance and quality in discipline and professional Educations (knowledge building project)</i> . NFR Project number: 238043	01.08.2014-01.08.2018	7000 KNOK	PI: Gaute Velle Partners: bioCEED, Uni Research
SIU- UTFORSK	TRANSPLANT. Student research experience linked to an international research project.	2014-2016	1109 KNOK	PI: V.Vandvik. Partners: BIO UiB, NMBU and Institute of Mountain Hazards and Environment, Chinese Academy of Sciences (CN)
Research Council of Norway- FINNUT programme	ArtsApp: En applikasjon for enklere artsidentifikasjon (pre-project). NFR Project number: 237821	01.05.2014-30.04.2015	287 KNOK	PI: JA Grytnes. Partners: bioCEED, Centre for Science Education and the Norwegian Biodiversity Information Centre.
UiB, PEK-programme	<i>Sammen for bedre læring</i>	03.04.14-03.04.15 (continued after funding period)	280 KNOK	PI: A. Raaheim Partners: TVEPS, Dept of Education, UiB, Grieg-akademiet, bioCEED, CEMPE
Research Council of Norway- FINNUT programme	Travel scholarship for developing projects – University of Otago	autumn 2014	160 KNOK	Pernille Bronken Eidsen

## Plans vs. activities in 2016

	<i>Indicators of progress</i>	<i>Achievements</i>	<i>Milestones and deliverables 2016</i>			
			i	ii	iii	iv
<b>WP0: Leadership and coordination (BIO)</b>						
<b>A1</b>	Effective organisation and decision-making structures	<ul style="list-style-type: none"> <li>Steering group</li> <li>Board in operation</li> </ul>				
<b>A2</b>	Set up and maintain physical and virtual infrastructure	<ul style="list-style-type: none"> <li>Office area in BIO</li> <li>New web page in place and under further development</li> <li>Facebook, Twitter, Blogs/Platforms, Newsletter</li> </ul>			M/D	
<b>A3</b>	Advisory Board	<ul style="list-style-type: none"> <li>AB meeting March 2016</li> <li>AB report 2016</li> </ul>		M	D	
<b>A4</b>	Daily management, monitoring and reporting	<ul style="list-style-type: none"> <li>Weekly steering group meetings</li> <li>Annual report</li> <li>Revision of WP structure</li> </ul>				D
<b>WP1: Teacher culture (BIO)</b>						
<b>A5</b>	Annual teachers retreat	<ul style="list-style-type: none"> <li>Teacher's retreat 2016 in BIO</li> <li>Learning Forum 2016 AB/UNIS</li> </ul>				D
<b>A6</b>	Professor II positions	<ul style="list-style-type: none"> <li>Two appointed (Roy Andersson and Sehoya Cotner)</li> </ul>				M
<b>A7</b>	Teacher groups	<ul style="list-style-type: none"> <li>TG in operation AB; structure being revised to better align research and education at BIO</li> <li>Monthly seminars on teaching and learning</li> <li>Literature colloquia at department level AB</li> </ul>				
<b>A8</b>	Teaching renewal through pedagogic courses and exchange	<ul style="list-style-type: none"> <li>Collegial Project Course in STEM</li> <li>Pedagogic course offered UNIS staff every 2<sup>nd</sup> year (UPED)</li> <li>Participation at workshops and conferences on teaching and learning</li> <li>Joint project with Sehoya Cotner/Cissy Ballen - exchange</li> <li>PhD candidates on research stays</li> <li>bioCEED research group weekly meetings</li> </ul>	M/D			
<b>A9</b>	Web forum	<ul style="list-style-type: none"> <li>bioSKILLS resources on web (bioST@TS )</li> <li>Teach2Learn resources on web</li> <li>Facebook pages</li> <li>Practice blogs</li> <li>Newsletter</li> </ul>				
<b>WP2: Learning environments (BIO)</b>						
<b>A10</b>	Expand learning environment; field, lab, digital	<ul style="list-style-type: none"> <li>bioST@Ts launched and promoted nationally</li> <li>develop bioSKILLS – bioWRITE in progress</li> <li>ArtsApp – further development</li> <li>Teach2Learn - using student produced videos in teaching</li> <li>Digital learning tools – testing, using</li> <li>Work practice, research practice, dissemination practice</li> <li>Field course learning – research</li> <li>Climate stations</li> </ul>				M

		<ul style="list-style-type: none"> <li>Moving more teaching activity from class room to field (AB)</li> </ul>				
<b>A11</b>	Develop student spaces	<ul style="list-style-type: none"> <li>Oracle service in R</li> <li>bioST@Ts</li> <li>New student rooms (Marineholmen)</li> </ul>				
<b>A12</b>	Set up and experiment with digital tools for education	<ul style="list-style-type: none"> <li>ArtsApp, PollEv, Learning catalytics &amp; video tutorials</li> <li>bioST@Ts (bioSKILLS)</li> <li>TE2LE</li> <li>Video production for flipped classroom</li> <li>A. Raaheim leads national expert committee on digital assessment (Norgesuniversitetet)</li> </ul>				<b>D</b>
<b>A13</b>	Dedicated educational technical and administrative staff	<ul style="list-style-type: none"> <li>Educational technicians</li> <li>Educational administrative support staff</li> </ul>				
<b>WP3: Active students (AB)</b>						
<b>A14</b>	Redesign courses to enhance student-active learning	<ul style="list-style-type: none"> <li>Work load mapping</li> <li>Focus on alignment in course and programme design</li> <li>BSc courses – coordination of skills, knowledge, student active learning and different types of assessment</li> <li>Include questions of change and development in teaching in student evaluation forms</li> <li>Student active learning (TBL, field, seminars) tested and used in several courses (e.g. AB201, AB202, AB204, BIO201, BIO210, BIO301, BIO208 ) –less lecturing</li> <li>PhD study learning on field courses</li> </ul>				
<b>A15</b>	Integrate learning-to-learn skills across curriculum	<ul style="list-style-type: none"> <li>Focus on problem-solving, individual and group work, scientific writing, presentations training and review (give constructive feedback (AB courses)</li> <li>Courses include (transferrable) skills training (group work, problem solving, scientific writing, presentation, review etc)</li> <li>Student seminar on scientific reading and writing (UNIS)</li> <li>Societal skills – communicate results in popular scientific way (video, blogs, presentations – BIO296, BIO347 etc.)</li> <li>Mapping of skills training (reports)</li> <li>bioSKILLS</li> <li>Research-based education</li> <li>Hands on experience</li> </ul>				
<b>A16</b>	Use students actively in planning and education activities	<ul style="list-style-type: none"> <li>Students do midterm and course end evaluation</li> <li>Use PhDs and TAs in teaching and course planning</li> <li>BIO297 Field course teaching</li> <li><i>PhD teaching training course in 2017</i></li> <li>ArtsApp – students continue developing app</li> <li>Open meetings with students</li> <li><i>Oracle service will be expanded (student driven project)</i></li> </ul>				

<b>A17</b>	Offer internships in public and private sector	<ul style="list-style-type: none"> <li>• Internships in society and research, AB207, BIO298, BIO299, BIO296</li> <li>• <i>Develop internship course at AB</i></li> </ul>					<b>M</b>
<b>A18</b>	Provide certification for particular skills	<ul style="list-style-type: none"> <li>• BIO 297 Field teaching</li> <li>• Safety course and marine cruise certificates given to students (AB)</li> <li>• HES training of master students (BIO)</li> <li>• <i>System for electronic registration of field activities under development</i></li> <li>• HES in lab and field – connected to skills training</li> </ul>					
<b>WP4: Activity alingment (HERU)</b>							
<b>A19</b>	Develop quality assurance and evaluation methods	<ul style="list-style-type: none"> <li>• Focus on quality assurance, evaluation, documentation</li> <li>• COPUS projects</li> <li>• Work load mapping and adjustment</li> </ul>					
<b>A20</b>	Use quality assurance in institutional learning	<ul style="list-style-type: none"> <li>• Teacher course: Collegial Project Course</li> <li>• Meetings with decision makers locally and nationally</li> <li>• Student seminars</li> <li>• bioCEED seminars</li> <li>• bioSKILLS</li> <li>• bioCEED Survey</li> <li>• Project: “Sammen for bedre læring”</li> <li>• MSc theses - Learning and assessment in Biology, <i>Drop-out and motivation</i></li> <li>• Revision of courses and Programmes at UiB</li> <li>• Learning progression project (TOK) BIO</li> </ul>					<b>D</b>
<b>A21</b>	Two PhD students in educational science	<ul style="list-style-type: none"> <li>• PhD projects progressing as planned</li> </ul>					
<b>A22</b>	Experiment with, and research, new learning methods	<ul style="list-style-type: none"> <li>• Several courses at BIO and AB – <i>documentation will be gathered in 2017</i></li> <li>• Pilot project in alternative assessment form, Law Faculty UiB (A. Raaheim)</li> </ul>					<b>D</b>
<b>A23</b>	Reduce lecturing by 20%	<ul style="list-style-type: none"> <li>• In progress. New teaching methods and workload mapping. (see WP3)</li> <li>• COPUS projects (how much do we actually lecture?)</li> </ul>					
<b>A36*</b>	National survey of biology education	<ul style="list-style-type: none"> <li>• bioCEED Survey published</li> </ul>					
<b>A37*</b>	Transferrable skills alignment	<ul style="list-style-type: none"> <li>• Mapping biostatistics and writing skills across the curriculum - report</li> <li>• Mapping transferrable skills in learning outcomes</li> <li>•</li> </ul>					
<b>WP5: Develop educational leadership (AB)</b>							
<b>A24</b>	Appoint and empower education leaders	<ul style="list-style-type: none"> <li>• Educational leaders in operation</li> <li>• National Forum for Educational Leadership</li> <li>• ECOM (UNIS Education Committee)</li> <li>• Dissemination – teacher culture and educational leadership for change and development</li> </ul>	<b>D</b>				

A25	Align teaching and research in institutional strategies	<ul style="list-style-type: none"> <li>• Input to strategy and policy processes</li> <li>• Various presentations</li> <li>• Reward system for teaching excellent at MN UiB – Excellent Teaching Practitioner</li> </ul>				
A26	Identify and remove obstacles to change	<ul style="list-style-type: none"> <li>• Teacher course projects</li> <li>• Secure meeting places to discuss and develop education (Teacher retreats, colloquia, seminars etc.)</li> <li>• <i>Literature review planned</i></li> </ul>				
A27	Incorporate teaching efforts in staff reward systems	<ul style="list-style-type: none"> <li>• UiB giving teaching and research equal status</li> <li>• UNIS put more weight on teaching experience in recruitment process</li> <li>• UiB Reward system (ETP) after initiative from bioCEED</li> <li>• Teaching prizes</li> <li>• Meetings, presentations, debate participation, etc.</li> </ul>				
A28	Promote education in internal communication	<ul style="list-style-type: none"> <li>• Activities continue</li> <li>• Newsletter</li> </ul>				
<b>WP6: Spread of best practice (HERU)</b>						
A29	Develop web forum to freely-accessible 'idea-bank'	<ul style="list-style-type: none"> <li>• Monthly bioCEED seminars (streamed)</li> <li>• bioSKILLS and other web resources</li> <li>• Newsletter</li> </ul>	M			
A30	Publish project results in the education science literature	<ul style="list-style-type: none"> <li>• 3 journal papers published in 2016</li> <li>• bioCEED report published at the Bergen Open Research Archive (BORA)</li> </ul>				D
A31	Develop 'test cases' for use in other institutions	<ul style="list-style-type: none"> <li>• ArtsAPP</li> <li>• Teach2Learn</li> <li>• bioST@TS</li> <li>• Practice &amp; research project courses</li> <li>• Courses for teaching staff</li> <li>• Projects on teaching, learning, assessment, course design and digital teaching tools</li> <li>• BIO-courses studied in the UiO project <a href="#">Quality of Norwegian Higher Education: Pathways, Practices and Performances</a></li> </ul>			M	
A32	Arrange and participate in international conference in biology education	<ul style="list-style-type: none"> <li>• Several contributions on national &amp; international conferences on education (see Outreach), e.g. EAIR, ISSOTL, LTH Campus Conference, RIVA</li> <li>• Bid to host ISSOTL2018 (accepted)</li> </ul>				
<b>WP7: Sector / societal communication (IMR)</b>						
A33	Annual meeting between students and industry/sector	<ul style="list-style-type: none"> <li>• Career day annually from 2012</li> <li>• Work practice host meeting</li> </ul>				
A34	Arrange workshops with end-user panels	<ul style="list-style-type: none"> <li>• Work practice host meeting</li> <li>• Sector contact in various courses</li> </ul>				
A35	Present project results in sector-specific fora	<ul style="list-style-type: none"> <li>• see Outreach</li> </ul>				
A38*	National survey of biologists in the workforce	<ul style="list-style-type: none"> <li>• Published</li> </ul>	D			

\*new work packages that have been planned and initiated after the project was funded.