



Senter for
fremragende
utdanning

bioCEED
senter for fremragende utdanning i biologi

Annual report 2014



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Photo front page:L. Hagenlund, K. Holm, C. Irgens

1 Summary

bioCEED Centre of Excellence in Biology Education was officially opened on April 1st 2014. An important priority in the first year has been to get the centre into the operation phase, including appointing the bioCEED leadership, steering committee and work package leaders, ensuring good collaborative relations, getting the formal structures in place, setting up the physical and virtual infrastructure, and filling vacancies. These priorities will contribute to and efficient operation of bioCEED in the years to come.

At the same time, a successful SFU launch depends critically on starting up the core educational activities in the centre, and on being visible, both internally within the institutions and externally. In bioCEED, we have prioritized starting up several larger projects in 2014. First, we have designed a national survey of learning in biology to be launched in early 2015. This survey will be sent out to teachers, students, and administrative staff at the bioCEED partners and a selection of the larger biology educations in Norway. A parallel survey goes out to biologists and their employers in more than 40 companies and organizations in the public and private sector. The surveys will serve as a base-line, but also provide important data on student, staff, administrator, employee and employer attitudes, experiences, wishes and priorities for biology and biology educations. Second, we have developed a number of new courses with student-active learning focus, including courses offering internships in the public and private sector. Third, we have developed and tested out new digital tools for education, in particular, the ArtsApp for species identification. Fourth, we have arranged our first teachers' retreat and started work towards developing quality assurance and promoting collegiality among the educational staff. Along with these main activities, a number of additional smaller and larger projects make up the bioCEED portfolio for 2014.

Research-based education and activity alignment are core elements in bioCEED and are essential in all bioCEED activities, as described under each work package. Educational development within bioCEED is research-based in two dimensions. First, our educations build on and link explicitly to our ongoing research in biology. For example, we use and present current research in our educational programs, and our students participate in research through research practice courses, and through research components in a number of courses from BSc to PhD. Second, our educations are also based on and will contribute to research on learning and links between educational activities, motivation, and learning. A continuous focus on alignment is secured through a separate work package with this in focus and alignment is also strongly in focus in the leadership and teacher culture work packages.

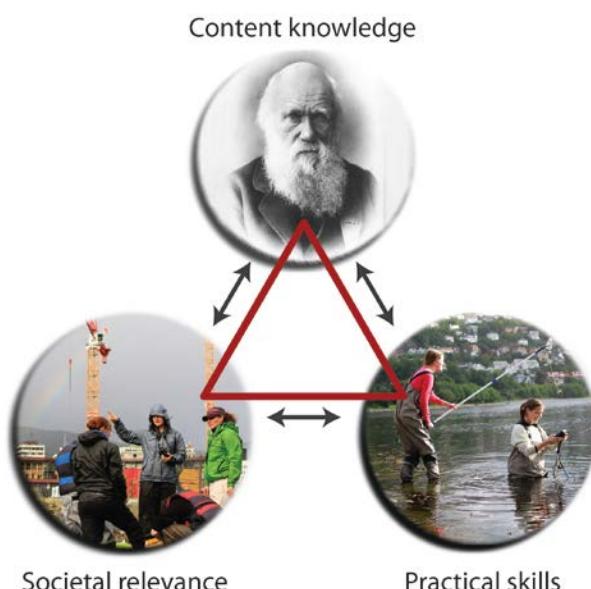


Fig 1 The 'domain of biology', can be defined by the interactions between the development of scientific content knowledge (theory, factual knowledge) and practices within biology itself, and society's applications of and needs for this knowledge and these skills

The strong institutional support from the board and leadership at UIB and UNIS is continuing into the operation phase. In particular, we are actively involved in ongoing strategy processes at both institutions, and we have been actively used in institutional promotion.

The economy of the centre is proceeding according to plan. In addition to the allocation from NOKUT, we have secured 6.1 millions in own contributions. In 2014, total expenditures are 5.5 million. The underspending is largely related to late appointment of personnel, and we anticipate that the expenditures in 2015 will be according to plan.

In 2015, we will follow up the activities started in 2014, largely following the plans outlined in the application. In particular, we will carry out the surveys, carry out and conduct research on the educational transformation within our courses, continue to develop infrastructure, and work towards further developing the teacher culture, educational leadership, sector communication, and activity alignment.

bioCEED steering committee

Vigdis Vandvik

Centre leader, Professor,
Department of Biology, UiB

Pernille Bronken Eidesen

Deputy Centre leader, Ass.Professor
Arctic Biology, UNIS

Øyvind Fiksen

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

Sigrunn Eliassen

WP leader (2), Researcher
Department of Biology, UiB

Tove Gabrielsen

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

Arild Raabeim

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

Øystein Varpe

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

Gro van der Meeren

WP leader (7),
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Torstein Nielsen Hole

PhD candidate, bioCEED/PRIME

Lucas Jeno

PhD candidate, bioCEED

Roy Andersson

Ass. professor II, bioCEED,
LTH, Lund University

Gaute Velle

Project leader, PRIME
Professor II Department of Biology, UiB
Researcher, Uni Research

Magnus Svendsen Nerheim

Student representative bioCEED
Master student, BIO, UiB

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Student representative bioCEED
Master student, Dept. of Biology, UiB

Jonathan Soulé

Chief engineer, bioCEED
Dept. of Biology, UiB

Oddfrid Førland

Project coordinator, bioCEED
Dept. of Biology, UiB

Tina Dahl

Executive officer
Arctic Biology, UNIS

Kristin Holtermann

Scientific assistant
bioCEED

2 Results

bioCEED is organized in Work Packages (WP, Figure 2), where each WP addresses a corresponding strategy linked to the goals of the centre as described in the application¹. WP leaders are responsible for following up the work within their work package within the bioCEED, as well as ensure links and cooperation with other WPs. The work is organized in a number of specific actions, consisting of one or more small projects (see attachment). Each Action and project is classified under a specific WP, but may have relevance and feed into other WPs as well. Relationships between WPs are seen in Fig.2.

This organization is 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.

Some of the planned actions represent potential for radical transformation of our educational programs; others are more incremental but needed as part of a coordinated educational strategy. The plans and progress during 2014 for each of these actions are specified in the appendices (Appendix 5.3).

In the text below we give our evaluation of the results achieved in 2014, and outline specific plans for 2015 as well as any implications of what we have learnt in 2014 for long-term plans for the centre.

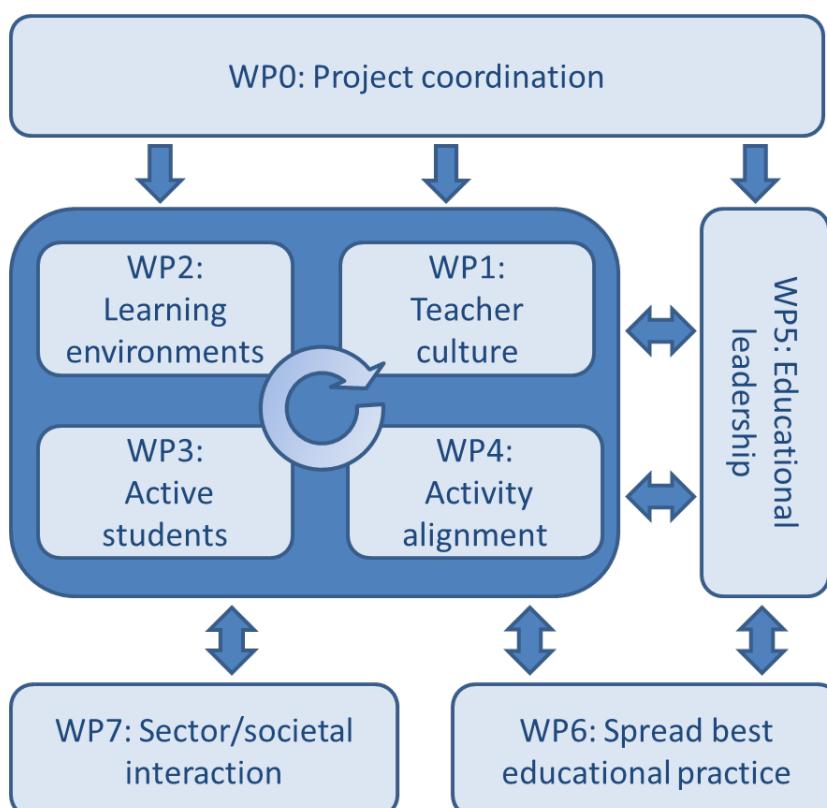


Fig 2. The organization of activities in bioCEED into work packages (WPs). The WPs are linked to the projects strategies, and represent different perspectives on education that each are important priorities in bioCEED. The four WPs within the blue central area represent important determinants of educational quality within educational activities themselves, *sensu stricto* whereas the outer WPs represent surrounding fields and processes that affect educational quality.

¹ <http://biologi.uib.no/studier/files/bioCEED/BioCEED%20application%20text.pdf>



bioCEED students at field courses explore plant and animal species and their adaptations to their natural habitats by means of field demonstrations, observations, different sampling methods, and digital tools. Photos: M. S. Nerheim (top, middle right, bottom), BIO (Instagram) (middle left).

WPO Leadership and coordination - WP leader Vigdis Vandvik

Organization and management

bioCEED has established a well-functioning and active Steering committee (see box on page X), consisting of the centre leaders, work package and project leaders, PhD candidates, student representatives, and designated administrative and technical staff in Bergen and Longyearbyen. The group meets weekly over skype 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 Consortium agreement was signed in October 2014, and we are now in the process of appointing the official bioCEED Board (bioCEED has had an Interim board in the period April-Oct 2014). The vice rector of education at UiB will lead the bioCEED board, and all parties of the consortium will be represented by leaders from their institutions. A board meeting will be held in spring 2015.

bioCEED appointed the Advisory Board in April 2014. The AB convened during the start-up meeting in April 2014, and will meet annually to follow up and give input and advice on the progress and activities in bioCEED. The next annual meeting will be held during the spring semester 2015 in Bergen.

The strong institutional support from the board and leadership at UIB and UNIS is continuing into the operation phase. In particular, we are actively involved in ongoing strategy processes at both institutions, and we have been actively used in institutional promotion.

Physical and virtual infrastructure

A bioCEED office has been established at BIO, UiB.

The domain bioceed.no has been secured, and we are working on building web pages for communication both within the consortium and for public outreach. bioCEED has facebook pages for external communication as well as several internal groups.

During the first year in operation, we have recruited two PhD candidates (13.10.2014) and one Prof II (1.1.2015), an educational technician (25.08.2014), a student administrator (jan.2015) and a combined technical / administrative position (01.01.2014) (full personnel overview in appendix 5.1). We have also hired personnel in various temporary positions to assist with specific tasks linked to bioCEED (survey, internships, ArtsApp, etc.). These positions have been funded over bioCEED, the institutional contributions, and externally funded projects under the bioCEED umbrella (PRIME, ArtsApp, TransPlant)²

bioCEED advisory board

Ivar Myklebust
Norwegian Biodiversity
Information Centre

Trond Schumacher
University of Oslo

Gunnar Öquist
Umeå University

Mette Marianne Svenning
University of Tromsø

Roy Andersson
Gjennombrottet, Lund
University

Doris Jorde
Norwegian Centre for
Science Education

Jeremy Pritchard
University of Birmingham

Päivi Kinnunen.
Aalto University

² Funded by the Research Council FINNUT programme, Norgesuniversitetet, and SIU.

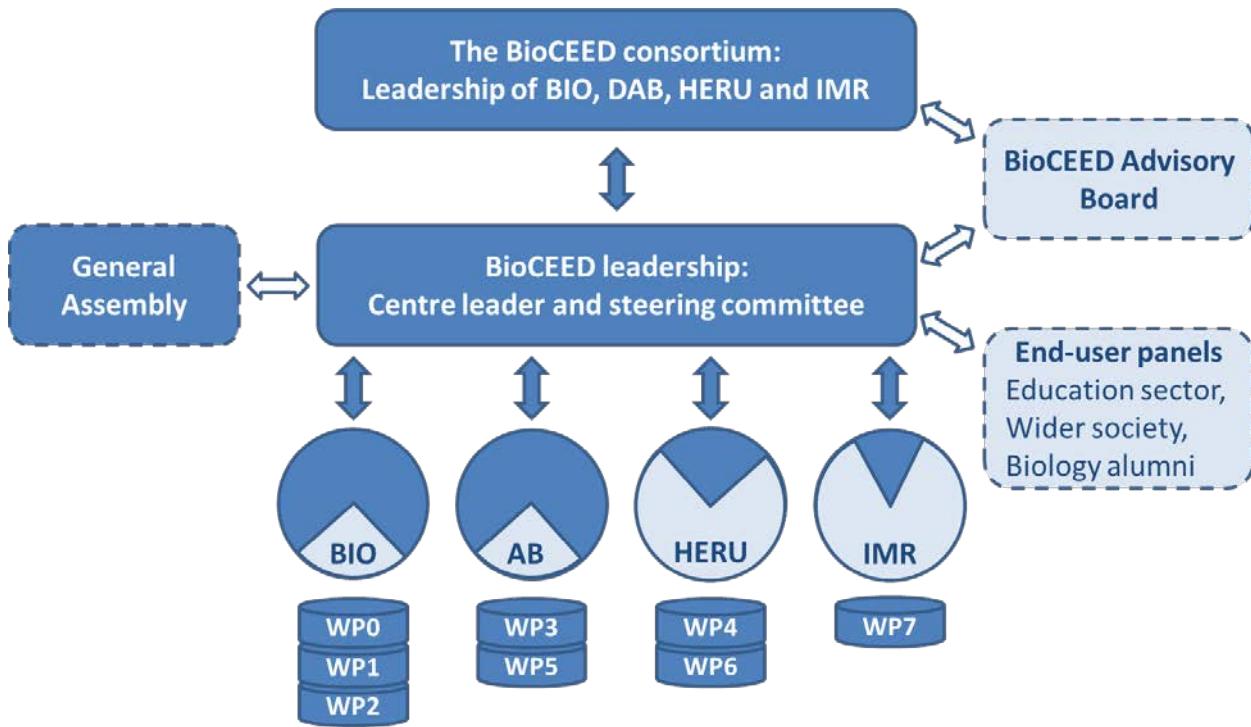


Figure 3. Project leadership, co-ordination, communication, and responsibilities. Governing (solid outline) and advisory (hatched outline) bodies are represented as rectangles, the educational activity at each of the partner institutions as circles, project work packages as stacked disks, and decision-making 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.

WP1 Teacher culture- WP leader Øyvind Fiksen

bioCEEDs aim to build a collegial learning culture among teachers is crucial to achieve the wanted reform of biology education. The programme board at BIO has been given responsibility for implementing this work package, and they have successfully implemented several activities:

- **Teachers retreat 2014 (BIO).** The first teacher's retreat was held in November 2014. 35 teachers from BIO participated in the retreat was held at Lyngheisenteret, Lygra, over two days. The main focus was discussing and sharing experiences in teaching and learning, and we had a morning session on research- vs teaching culture led by Roy Andersson, LTH. The 'World cafe' discussion format was used to stimulate discussions. The relevance and future activities in the teacher groups were also discussed.
- **bioCEED seminar series.** Starting in December, 2014, we are organizing monthly open seminars over a variety of topics in teaching and learning. The seminars are meant to encourage active participation by the staff, give specific ideas and "tools" teachers and students can implement in their own teaching and learning, and promote a sharing culture. "Best practice" examples can be presented, but you do not have to be "best" to present a topic in this series. The form and aim of the seminar series was discussed and decided on the Teachers retreat. The seminars are streamed to allow participation within bioCEED and beyond.
- **Collegial teaching development.** An important inspiration for bioCEED has been the Academic Development Unit at LTH, Lund University. bioCEED has appointed Roy Andersson from this unit adjunct professor (professor II) in a 10% position for two years. In cooperation with Andersson, bioCEED will develop Collegial Project courses in Teaching and learning.
- **Educational sabbaticals.** bioCEEDs deputy leader Pernille Bronken Eidesen received support from the Norwegian Research Council FINNUT programme for a sabbatical at University of Otago, New Zealand. The stay has generated plans for two bioCEED projects on course alignment and how practice-based teaching affects student motivation. This collaboration will strengthen bioCEEDS international cooperation.
- **Establishing education committee at UNIS.** An Educational Committee (ECOM) has been established at UNIS. Scientific and student administrative department heads and the director meet in this committee. We will assess the possibility of a bioCEED representative in the Education Committee at UNIS.

Plans and priorities for 2015:

- **Continuing teacher's retreats.** We plan a joint teacher's retreat for BIO and UNIS in 2015.
- **Teaching and learning course for PhDs.** A clear message from the staff during the application phase was the need to support PhDs and postdocs in their development as teachers. In May 2015 we will therefore organize a joint 'teachers retreat' for this group at BIO and AB, focusing specifically on early-career teaching challenges (course leadership, teaching to foster learning, feedback, and supervision). The retreat will be followed by seminar-based interaction among the participants over educational issues.

- **Educational sabbaticals.** After discussions at the teachers retreat and in the consortium, we will focus on shorter visits and / or stays (2 weeks - 3 months) to share experience between specific courses at bioCEED and similar courses abroad and at other universities in Norway.
- **Web forum.** The virtual forum is under development. We are currently using the UIB web pages, email lists, and internal and open Facebook pages actively to communicate over educational development. Our monthly seminars are also podcasted and serve as a communication channel over educational development.
- **Teachers groups.** A teachers group consisting of the staff responsible for AB bachelor courses has been established and will meet monthly to share experiences from their courses, discuss relevant literature, following the model from and communicating over skype with the bioCEED seminar series at BIO.,

WP2 Learning environment - WP leader Sigrunn Eliassen

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. A priority in 2015 has been the development of digital tools to promote learning.

- **Developing ArtsApp.** One of our priorities in field-course learning development has been the ArtsApp. This project was initiated by our students, who insisted that the development of apps for species identification is the way forward for learning biodiversity monitoring and taxonomy skills. ArtsApp has developed by biology teachers and students at BIO in collaboration with Centre for Science Education and the Norwegian Biodiversity Information Centre. Additional external funding³ is allowing further development of ArtsApp, and our goal is that in the future, apps will be available for the major species groups in Norway, and these apps are flexible in difficulty level so that they can and will be used by students, professionals and the public. Read and see more about ArtsApp here⁴.
- **Podcasts.** We are developing high-quality podcasts for use in anatomy education in cooperation with DigUIB and professor emeritus Harald Kryvi. These podcasts will support a transformation towards more student active learning and form the basis for 'flipped classroom' approaches in anatomy.
- **Digital package.** bioCEED has several projects developing and testing digital teaching and tools, including usage of PollEv, interactive boards, small instruction videos, etc.
- **Work practice.** One of the main hypotheses in bioCEED is that internships or placements in research, industry and the public sector can support learning also in disciplinary subjects like biology education. In the spring semester 2015 we are launching our new 'practice' subjects and starting up research on learning in these subjects (see PRIME).
- **Supporting staff.** Excellence in education requires not only excellent teachers and students, but also excellent educational support. bioCEED has recruited a chief engineer for educational support with focus on lab and field education (BIO) and an executive officer at UNIS. The academic affairs administration at BIO and AB are involved in bioCEED projects and academic development work within the two departments.

ArtsApp team

John-Arvid Grytnes
Project leader, Professor
BIO, UiB

Kjetil Fossheim
Developer, Master student
BIO, UiB

Siri Skoglund
Scientific advisor
BIO, UiB

Linn Cecilie Krüger
Scientific advisor
BIO, UiB

Centre for Science Education

The Norwegian Biodiversity Information Centre

**The BIO102-students,
UiB**

³ From the Research Council of Norway (FINNUT) and Norgesuniversitetet, see attachments.

⁴ <http://www.uib.no/aktuelt/82002/app-gj%c3%b8r-biologiutdanningen-mer-moderne>

Plans and priorities for 2015:

- **Anatomy podcasts.** Production of a series of videos in fish anatomy that will tie together the theory (normally given through lectures) and the practical (lab course in fish anatomy). Professor Emeritus Harald Kryvi has repeatedly been recognized for his excellent pedagogic skills and highly interactive style during lab courses, and he will be featured in a series of short video presentations on that students can use to prepare for labs. This project is in cooperation with [DigUiB](#) at UiB.
- **Climate stations.** Climate and climate change is important for biology and biologists. We will install climate stations at our BSc-level field course sites at Lygra and Østerbø that automatically transmit electronic data that can be downloaded in the field or back at the university. In this way, our students can learn to use loggers and local logger data actively in their field projects, while at the same time gaining an understanding for the links between biology and climate science.
- **Biological statistics.** Biologists use statistics and mathematical modeling for a variety of purposes. We will streamline the teaching of statistics and modeling across our curriculum by
 - mapping needs and approaches given in different courses across the curriculum
 - developing a coherent curriculum with a natural progression from BSc to PhD
 - offering training at all levels and for a variety of needs through digital support tools, oracle service, and taught courses.

For all these learning tools and infrastructures, learning outcomes will be tested through the work of our PhDs and postdoc.

WP3 Active students - WP leader- Tove Gabrielsen

bioCEED aims to redesign our programmes and courses to set learning goals that engage students actively in their pursuit of competence across the biological ‘domain’. We will integrate problem-solving and learning-to-learn skills across the curriculum, and use students actively in planning and conducting learning activities. This will be achieved by providing opportunities for extra involvement and activities, based on student interests. We will also offer internships in the public and private sector and research laboratories from year 1, and provide certification (acquired competence in specific topic, etc.).

- **Internships - PRIME.** We have now started new internship courses at the beginner and advanced BSc levels where students can gain practical experience with work in research and/or the public and private sector. The learning outcomes of these courses will be tightly monitored by our PhD student’s research. PRIME is developed in collaboration with Uni Research Environment⁵ and is funded by the RCN FINNUT programme (full application text⁶). More about PRIME in appendix 5.4.1.

During 2014 PRIME has been in contact with over 40 companies and institutions that employ biologist (our ‘end-users’), and we have now established contact with 43 companies / institutions, of which 15 will offer internships in 2015. These end-users will also be important informants in the national survey of learning and knowledge needs in biology.

- **Course in field teaching.** Both BIO and AB have a long-standing tradition using student (and PhD) assistants during field courses. Previously, these assistants would get little formal training as educators, and they would be paid by the hour. In 2014 bioCEED offered an alternative where students could join the course *Field course teaching* and get a pedagogical course, field course teaching experience and write a report. An approved final report will give 5 ECTS, and the course will be part of their study programme. These students will thus get both formal training in their role as teaching assistants and certification of their teaching skills.
- **Course transformation.** We have started smaller and larger projects for course transformation through our study programmes. These include experiments with new learning approaches in the field, lab, lectures, team work and digital spaces, and more systematic treatment of transferrable skills (see WP2).
- **Open meeting with students.** In May 2014 bioCEED organized an open meeting with students at BIO. Students were asked to give their feedback and opinions on communication and active students, digital teaching and biologist in today’s society. The feedback was very constructive and will help bioCEED to focus our activities in alignment with student needs and interests.

⁵ <http://uni.no/en/uni-environment/>

⁶ <http://biologi.uib.no/studier/files/PRIME%20final.pdf>

PRIME team

Gaute Velle
Project leader
Prof II BIO, Researcher Uni Research

Post doc (to be appointed)

Torstein Nielsen Hole
PhD Candidate bioCEED/PRIME

Tom Olav Klepaker
Professor, BIO UiB

Beate Ulrikke Rensvik
Student advisor/coordinator
BIO, UiB

Plans and priorities for 2015:

- **Certification.** With UNIS as a model, bioCEED will develop a health, environment and safety course for biology students, with focus on field and lab HES. This course will both secure that the students have the necessary competence they need in their education and later working life, and document this training in diplomas/transcripts.
- **PhD oracle service.** BIO will set up an oracle service for undergraduate and graduate students, run by PhD candidates as part of their teaching duty. The oracle service will allow the PhD candidates to teach and advise students within topics in which they are “experts”. The students will get a low-threshold service, and the PhD candidates will get valuable teaching experience.
- **Course transformation.** The transformation of our courses including introducing new learning approaches will continue with even larger effort in 2015.
- **Dialogue meetings with students.** Continue with open meetings and workshops with the students at BIO and AB.

WP4 Activity alignment- WP leader Arild Raaheim

Aligning all activities so that curricula, learning approaches, evaluation, and expected learning outcomes are well aligned, not only within specific courses but also across the curriculum is a considerable challenge. In 2014, bioCEED has worked towards this goal in the following ways:

- **Quality assurance.** We will focus on using the existing quality assurance tools and methods effectively, but also develop additional methods when necessary. The goal is to have quality assurance and evaluation methods that effectively enable monitoring of progress and spread of 'best practice'.
 - We have a number of smaller projects in specific courses.
 - The programme boards have responsibility for educational quality at the departments, and their role is key to these processes.
 - The programme board have emphasized the role of the course report – and we have received more and better reports than before. The reports are discussed in the board meetings, and for all our mandatory courses the teachers come to these meetings to present their reports and get feedback from the board.
- **Institutional learning.** Another goal is to focus on institutional learning in implementation of The Qualifications Framework. Here we have had meetings with our Associate Professor Roy Anderson from LTH Lund, where they have worked towards this goal for a decade. We have also had meetings and discussed these issues with the university board, educational leadership at various levels at UIB, etc. (see appendix 5.5)
- **PhD students.** The two PhD students in educational science were appointed in October 2014. They have been working on developing surveys of learning in biology targeted at biology students, teachers, and administrative staff. These surveys, along with our national survey of biologists in the workforce, will be a core data source for these students PhD research.
- **Semester alignment.** As part of aligning the bachelor courses at UNIS better, the course AB202 was moved from the fall semester to the spring semester starting spring 2015. This alignment of our courses allow improved sharing of guest lecturers between courses, better alignment of field activities between the semesters, and in general a better alignment of the AB bachelor courses.
- We are involving our MSc student at the teacher education programme in researching learning strategies in biology, and in developing a mapping tool for transferrable skills

Plans and priorities for 2015:

- **Survey of learning in biology.** Surveys have been developed, and requests for participation sent out to the biology educations at UiB, UNIS, NMBU, UIO, UIT, NTNU, HIT, and UiA.
- **Scale educational effort.** Experiment with and assess selected traditional and new learning methods, while ensuring that both student and staff time budgets are adequately balanced. It is tempting to add new activities without reducing the traditional teaching. Therefore, bioCEED will:
 - Survey student time budgets at UNIS
 - Perform work load calculations at all courses and programmes at BIO
 - Monitoring teaching, aiming to reduce lecturing by 20% relative to 2011.

- **Project: Together for better learning.** This is a co-operation between bioCEED, the Faculty of psychology, the Faculty of medicine and dentistry, and the Faculty of humanities at the University of Bergen and the SFU CEMPE. All participating partners have some external placement as part of their educational programme. 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/from practice.
- **Transferable skills training.** We will be mapping specific transferable skills in biology education across our curriculum, following the work plan developed for biostatistics. We will identify practical skills and general competences taught in the different courses at BIO/AB (e.g. scientific writing, presentation, literature search, critical thinking, etc.), and develop comprehensive training programme in skills and general competences across the curriculum.

WP5 Educational leadership - WP leader – Øystein Varpe

Already in the SFU application process it became evident to us that educational leadership is key to developing educational quality. Educational leadership is needed for the development of coherence and alignment across the curriculum, for furthering a collaborative rather than privatized educational culture, and for valuing and ‘seeing’ efforts and development towards improved education. New practices, like developing a scholarly culture of teaching and learning, also requires inputs and a consistent encouragement from the leadership. Leadership should be supporting, not commanding, and it is important that we also value and protect the individual staff members’ academic freedom to choose their own teaching style, method, and specifics of the curriculum, just as we value and protect the same academic freedoms in research. In bioCEED, we have worked towards:

- **Strengthening educational leadership.** BIO and AB have appointed Heads of education – and at BIO we also have a coordinator for each study specialization as leaders of the teachers group. The head of education has real power; he/she allocates the teaching budget, professor II positions, and TA’s to different courses.
- **Incorporating teaching in staff reward systems.** The departmental ‘accounting systems’ for scientific and educational success (the ‘HUPI index’ at BIO) and teaching time management systems, educational prizes, etc., are all under revision.
- **PhD and postdoc teaching.** We have changed the allocation of PhD teaching hours and professionalised the use of the teaching resource that PhDs and postdocs represent.
- **Strategic planning.** We are actively involved in ongoing strategy processes at both institutions. Education, and an aim for excellence in education, has been well implemented in the new strategic plan of UNIS “Research-based education of the next generation of Arctic experts, The University Centre in Svalbard, Strategic plan 2014-2020”. We have also had a number of meetings and discussions over educational strategies, both locally and nationally (see Appendix 5.5).
- **Dissemination.** bioCEED has given several talk and contributed to seminars and workshops on educational leadership, both internally and externally (see Appendix 5.5).
-

Plans and priorities for 2015:

- **PhD and postdoc teaching duties.** University-funded PhDs and postdocs have 25% teaching duties as part of their contract. We will evaluate the use of this resource for our courses to ensure that the PhD students are able to utilize their knowledge and skills in the courses. Their development as teachers will be followed up in WP1.
-
- **Literature review.** Write a review about research on educational leadership and relate it to the structures currently in place in our local institutions and departments
- **Leadership.** Further empower our ‘education leaders’ and establish these as part of our institutional organizations

- **Strategy.** Ensure solid implementation of education in the department level strategy currently being developed. Integrate and align teaching and research in the new strategic plan at BIO and AB.
- **Reward.** Continue work towards Incorporating teaching and education efforts and success into staff reward systems, including inputs into salary, sabbatical, and promotion regulations. We will meet with the vice-rector for education, and exchange experience with Lund University during spring 2015.
- **Communication.** Explicitly promote education in our internal communication

WP6 Spread of 'best practice'- WP leader Arild Raaheim

There were no planned activities or milestones for this WP during 2014. However, we have still initiated some activities:

- **Seminar series.** We are organising a monthly seminar series over educational topics. These are streamed and podcasted seminars streamed, and therefore open to participation from outside.
- **Student placements.** We have had meetings with [SIU](#) who are in the process of developing work placements for Norwegian students abroad
- **Educational workshops / conferences.**
 - We have given a number of invited talks about bioCEED core ideas and participated in panels and debates about educational leadership and development, e.g., at [Kunnskapsdepartementets Kontaktkonferanse](#) (see appendix 5.5 for full overview)

Plans and priorities for 2015:

- **National educational collaboration.** Systematics teaching with ArtsApp – national collaboration with other universities, Artsdatabanken and FORBIO
- **Educational workshops / conferences**
 - We are sponsoring a session on 'ecology education' at the Norwegian Ecological Society Annual conference in March 2015⁷.
 - We will give 2 talks at the MNT conference in Bergen in May (ArtsApp and Educational leadership)⁸.
 - We have been invited to give a keynote at the European First Year Experience conference⁹.

⁷<http://nof2015.uib.no/index.html>

⁸http://www.uhr.no/aktuelt_fra_uhr/mnt-konferansen_2015

⁹http://www.uib.no/en/efye_2015

WP7 Links between education and society - WP leader Gro van der Meeren

The main priorities under WP7 in 2014 have been the survey, PRIME internships, and the annual career day at BIO. These activities are proceeding according to plan. We have also had a number of activities in specific courses.

- **Survey.** The survey of biological competence relevance of biology for work across the private and public sectors has been sent out to more than 500 participants in 43 public and private companies / organisations.
- **Internship courses.** We have developed two new courses at BSc level offering internships in the public and private sector (10 and 3 STP). So far, 12 companies have signed agreements to receive students, and the courses are implemented as of Spring 2015.
- **Sector contact in courses:**
 - The first-semester introductory course in biology at BIO has had a practice day with the IMR
 - [The course AB-335 Ecosystem-based Management of Arctic Marine Systems](#) at UNIS allows students first-hand experience with IMR research through participation in a 10-day cruise where they work along-side researchers¹⁰
- **Annual career day.** WE are organising a meeting place for BIO students and relevant potential employers. The students arrange the day, with support from bioCEED and IMR.

Priorities in 2015 will be to follow up these activities, and also to communicate over bioCEED at sector-specific fora. Presentations and posters at conferences will be prioritized.

- Collaboration between bioCEED and researcher/projects/ management tasks at the IMR
 - Extend PRIME internships to more institutions, prepare a series of short-term internships for the Bachelor level and longer-term internship for the Master level
 - Invite students for short-term courses arranged by sector companies and organisations, such as the faunistic analyses on marine invertebrates and fish at IMR

¹⁰ http://svalbardposten.no/index.php?page=vis_nyhet&NyhetID=5056



Svalbard students in action in the field. Photos: F. Eggenfeline (top)r, M. E. Svoen (middle left, bottom) K. Andreassen (middle right).

3 Dissemination and outreach

There has been considerable interest in bioCEED from across the higher education sector in Norway. We have been invited as speakers at different across the educational sector in Norway and at conferences, and we have been invited to participate in panel debates. We have also been invited to write or contribute data about educational development. In the first year, we have prioritised communication about the background, ideas and plans behind bioCEED.

During the reporting period, bioCEED has thus contributed 29 invited talks or presentations in different fora. These presentations have focused on various aspects of bioCEED, including educational quality, educational leadership, the SFU process, and development of bioCEED . We have also participated in panel debates, including the ministry of education's "Kontaktkonferanse" (see appendix 5.5). Press coverage (see appendix 5.5), podcasts, and other dissemination activities have also been produced.

We have also started dissemination as part of some of the work packages. Specifically, the bioCEED seminar series is being podcasted, and the first ArtsApps are publically available.

4 Plan for 2015 and the following period

Activities in 2015 will largely follow the original project plan. Specifically, we will follow up our large projects, including the surveys, PRIME, ArtsApp, as well as the smaller projects within each WP including coordinating skills training, experimenting with learning methods, developing teacher culture and educational infrastructure (see details under each WP above).

Educational alignment and experimentation with new learning methods will be a priority in 2015, along with research activities linked to our projects. During 2015, we plan to write reports and sector publications based on the result of the surveys, and draft the first papers for scientific journals based on the survey results. ArtsApp will also yield publication of both and communication of results in scientific journals, sector-specific-fora and at conferences.

National collaboration over educational development will also be initiated, linked to ArtsApp and other initiatives.

5 Appendices:

5.1 Personell

Name	function in bioCEED	position	Unit
Vigdis Vandvik	Centre leader	Professor	BIO, UiB
Pernille Bronken Eidesen*	Deputy Centre leader	Ass. professor	AB, UNIS
Oddfrid Førland	Coordinator	Administration	BIO, UiB
Jonathan Soulè	Technical support (education)	Chief engineer	BIO, UiB
Tina Dahl**	Administration and technical support	Executive officer	AB, UNIS
Additional scientific staff			
Øyvind Fiksen	WP1 leader	Professor, Head of Education,	BIO,UiB
Sigrunn Eliassen	WP2 leader	Researcher	BIO, UiB
Tove Gabrielsen	WP3 leader	Ass. professor	AB, UNIS
Arild Raaheim	WP4&6 leader	Professor	HERU, UiB
Øystein Varpe	WP5 leader	Ass. Professor	AB, UNIS
Gro van der Meeren****	WP7 leader	Senior scientist	IMR
Gaute Velle	PRIME project leader	Researcher, Professor II	Uni research/BIO, UiB
Student representatives			
Magnus Svendsen Nerheim*****	student representative	Master student	BIO,UiB
Mildrid Elvik Soven	student representative	Master student	AB, UNIS

*on sabbatical autumn 2014. Head of department Ole Jørgen Lønne was part of the Steering group in her absence.

**from 01.01.2015

***from 01.01.2015

****replaces Mette Mauritzen as WP leader from January 2015

*****replaced by Tone Ulvatn from 01.01.15

5.2 Accounting

These accounts are divided in two parts, budgets and results for bioCEED as planned, and additional funding due to new projects funded under the bioCEED umbrella.

5.2.1 Original funding sources and plans:

		Budsjett	Resultat	Avvik
		2014	2014	2014
Personell	BIO	1 750 000	899 060	850 940
	UNIS	422 800	65 422	357 378
	Inkind BIO	2 000 000	3 486 197	-1 486 197
	Inkind MN	800 000	377 752	422 248
	Inkind AB	1 000 000		1 000 000
	Inkind IMR	900 000		900 000
	Inkind HERU	1 000 000		1 000 000
Expenditures	BIO	150 000	112 245	37 755
	Oppstarts	0	76 493	-76 493
	AB	150 000	43 059	106 941
Development	WP1-5	340 000	180 364	159 636
	HERU	0	3 000	-3 000
	Inkind BIO	300 000	300 000	0
	Inkind AB	100 000		100 000
Dissemination	WP6-7	20 000	18 963	1 038
Total		8 932 800	5 562 554	3 370 246
NOKUT		2 832 800	1 398 605	1 434 195
Inkind		6 100 000	4 163 949	1 936 051

		Budsjett	Resultat	Avvik
		2014	2014	2014
Personell total		7 872 800	5 128 431	2 744 369
Expenditures		300 000	188 738	111 262
Development		740 000	183 364	556 636
Dissemination		20 000	18 963	1 038
Total		8 932 800	5 519 495	3 413 305

		Budsjett	Resultat	Avvik
		2014	2014	2014
Inkind		6 100 000	4 163 949	1 936 051
NOKUT		2 832 800	1 398 605	1 434 195
Total		8 932 800	5 562 554	3 370 246

Personnel costs:

The budget for 2014 included full personnel costs from 01 April 2014 to December 2014. The main reason for the deviation from the budget in 2014 is late appointment of the budgeted positions.

Start-up costs:

Includes costs from opening and travels connected to centre establishing.

Expenditures:

The WPs have had lower costs in 2014 than budgeted. However some costs are expected in 2015 that cover activities in 2014

Other remarks/deviations:

Transfer of funds to UNIS for 2014 is delayed.

5.2.2 Additional funding/projects:

Granted by	Project title	Project period	Funding	PI/partners
Research Council of Norway- FINNUT programme	ArtsApp: En applikasjon for enklere artsidentifikasjon (pre-project)	01.05.2014-30.04.2015	287 KNOK	PI: John-Arvid Grytnes. Partners: bioCEED, Centre for Science Education and the Norwegian Biodiversity Information Centre.
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>	01.08.2014-01.08.2018	7 MNOK	PI: Gaute Velle Partners: bioCEED, Uni Research
Research Council of Norway- FINNUT programme	Travel scholarship for developing projects – University of Otago	autumn 2014	160 KNOK	Pernille Bronken Eidesen
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
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
SiU	TRANSPLANT. Student research experience linked to an international research project.	2014-2016	1 109 KNOK	PI: Vigdis Vandvik. Partners: BIO UiB, NMBU and Institute of Mountain Hazards and Environment, Chinese Academy of Sciences (CN)
UiB, PEK-programme	Sammen for bedre læring	03.04.14-03.04.15	280 KNOK	PI: Arild Raaheim Partners: TVEPS,UiB, Department of Education, UiB Grieg-akademiet, bioCEED, CEMPE,

5.3 Plans vs. activities in 2014

Actions	Indicators of progress	Achievements	Milestones and deliverables			
			i	ii	iii	iv
WP0: Leadership and coordination (BIO)						
A1	Effective organisation and decision-making structures	<ul style="list-style-type: none"> Steering group in operation Consortium agreement signed Board in the process of being formally appointed 	M			
A2	Set up and maintain physical and virtual infrastructure	<ul style="list-style-type: none"> Office in BIO in place Web page in place <i>Forum under development</i> <i>Facebook pages and groups</i> 			M/D	
A3	Appoint an international Advisory Board	<ul style="list-style-type: none"> AB appointed 		M		
A4	Daily management, monitoring and reporting	<ul style="list-style-type: none"> Weekly steering group meetings 				D
WP1: Teacher culture (BIO)						
A5	Annual teachers retreat	<ul style="list-style-type: none"> First teacher's retreat november 2014 				M
A6	Professor II positions	<ul style="list-style-type: none"> One appointed 		M		
A7	Teacher groups	<ul style="list-style-type: none"> TG in in operation BIO, AB Monthly seminars on education 	M			
A8	Teaching renewal through pedagogic courses and exchange	<ul style="list-style-type: none"> One sabbatical in 2015 Courses for PhD's 	M			
A9	Web forum	<ul style="list-style-type: none"> Under development Facebook pages 		M		D
WP2: Learning environments (BIO)						
A10	Expand learning environment; field, lab, digital	<ul style="list-style-type: none"> ArtsApp, podcasts, etc. PRIME practice placements <i>Climate stations under development</i> <i>Biostats 'package' under development</i> 				M
A11	Develop student spaces	<ul style="list-style-type: none"> Kollokvieøy <i>Oracle service under development</i> 				M/D
A12	Set up and experiment with digital tools for education	<ul style="list-style-type: none"> ArtsApp Digital boards, clickers, etc. being tested <i>Anatomy podcasts under development</i> 				
A13	Dedicated educational technical and administrative staff	<ul style="list-style-type: none"> Educational technicians in place Educational administrative support staff in place 	M			
WP3: Active students (AB)						
A14	Redesign courses to enhance student-active learning	<ul style="list-style-type: none"> Various activities in BIO100, BIO101, BIO102, BIO201, AB202, BIO230, BIO210, BIO347, AB335, BIO382, 	M			D
A15	Integrate learning-to-learn skills across curriculum	<ul style="list-style-type: none"> Mapping of skills training, PRIME 				

A16	Use students actively in planning and education activities	<ul style="list-style-type: none"> BIO297 Field course teaching, PhD teaching training, volunteer student Tas ArtsApp – students make apps Open meetings with students <i>Oracle service under development</i> 	M			
A17	Offer internships in public and private sector	<ul style="list-style-type: none"> PRIME internships in society and research BIO198, BIO199, BIO298 BIO299 				
A18	Provide certification for particular skills	<ul style="list-style-type: none"> BIO 297 <i>HES in lab and field</i> 				
WP4: Activity alignment (HERU)						
A19	Develop quality assurance and evaluation methods	<ul style="list-style-type: none"> Focus on quality assurance, evaluation, documentation Develop teaching accounting system 				
A20	Use quality assurance in institutional learning	<ul style="list-style-type: none"> Meetings with UIB board, educational boards, Rectorate, Lund University etc. Semester alignment Project: "Sammen for bedre læring" <i>MSc theses on learning outcomes</i> 				
A21	Two PhD students in educational science	<ul style="list-style-type: none"> Appointed November 2014 				
A22	Experiment with, and research, new learning methods	<ul style="list-style-type: none"> See A 14. The PhD students will follow up. 				
A23	Reduce lecturing by 20%	<ul style="list-style-type: none"> In progress AB scale educational effort 				
A36*	National survey of biology education	<ul style="list-style-type: none"> National survey of learning in biology among students, teachers, and administrative staff 				
A37*	Transferrable skills alignment	<ul style="list-style-type: none"> <i>Started mapping biostatistics skills across the curriculum</i> <i>Plan mapping of transferrable skills across the curriculum</i> <i>MSc theses started</i> 				
WP5: Develop educational leadership (AB)						
A24	Appoint and empower education leaders	<ul style="list-style-type: none"> Educational leaders appointed PhD and postdoc teaching 	D			
A25	Align teaching and research in institutional strategies	<ul style="list-style-type: none"> Input to ongoing strategy processes Various presentations 				
A26	Identify and remove obstacles to change	<ul style="list-style-type: none"> Literature review in progress 				
A27	Incorporate teaching efforts in staff reward systems	<ul style="list-style-type: none"> BIO's 'HUPI index' under revision Teaching prizes under development Meetings, presentations, debate participation, etc. 				
A28	Promote education in internal communication	<ul style="list-style-type: none"> BIO-info newsletter section on education 				
WP6: Spread of best practice (HERU)						
A29	Develop web forum to freely-accessible 'idea-bank'	<ul style="list-style-type: none"> Monthly ED seminars streamed 				

A30	Publish project results in the education science literature	<ul style="list-style-type: none"> • 			
A31	Develop 'test cases' for use in other institutions	<ul style="list-style-type: none"> • Meetings with SIU about models for placements • Systematics teaching with ArtsApp – national collaboration with other universities, Artsdatabanken and FORBIO 			
A32	Arrange and participate in international conference in biology education	<ul style="list-style-type: none"> • Session on education on the Norwegian Ecological Society annual conference 2015 • 2 talks at the MNT conference • Keynote and presentations at EFYE conference 			
WP7: Sector / societal communication (IMR)					
A33	Annual meeting between students and industry/sector	<ul style="list-style-type: none"> • Career day annually from 2012 • 	M		
A34	Arrange workshops with end-user panels	<ul style="list-style-type: none"> • PRIME • Sector contact in various courses 	M		
A35	Present project results in sector-specific fora	<ul style="list-style-type: none"> • Debate at Kontaktkonferansen • 			
A38*	National survey of biologists in the workforce	<ul style="list-style-type: none"> • National survey competence in the workforce amongst companies and public sectors employing biologists 			

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

5.4. PRIME

Research project funded from FINNUT from 2014 – 2018. See 5.2.2. Summary of project aims:

In 2014 bioCEED and Uni Research Environment¹¹ got funding through the Research Councils FINNUT Programme for the knowledge-building project *PRIME - How implementation of Practice can Improve relevance and quality in discipline and professional Educations* (full application text¹²).

Through this knowledge-building project we aim to reach our main goal through a set of sub- goals, each with a corresponding work package (WP):

Aim 1. Identify the key competences (disciplinary, transferrable) held by biologists entering the work force, as seen from the educator perspective, the student perspective, and the employer perspective.

Aim 2. Systematically review and evaluate current study programs and assess how different learning methods applied in those programs (theory, practice, and internships) contributes to build the key competences identified under Aim 1.

We will follow up the knowledge gained in Aims 1 and 2 by:

Aim 3. Develop and implement, at different stages in the study programs:

- a. Internship modules of various extent (single-day to whole semester), and for different specific objectives (learn the profession vs. put the theory into context)
- b. Enhanced practice modules (field, lab, assignments) within our course portfolio to support both disciplinary and transferrable skills in our students.

In parallel with the work towards Aims 1-3:

Aim 4. Evaluate the effect of implementing different elements of internships and enhanced practice in both discipline and profession educations, and if effective, develop more of such training in our study programs.

Aim 5. Evaluate how different learning methods (traditional disciplinary training, enhanced practice, internships) influence post-study careers.

In parallel with the work towards Aims 1-5:

Aim 6. Communicate findings to relevant audiences within the Higher Education sector, the private and public sector where biologists find employment, and beyond

One of bioCEEDs PhD candidates (Torstein Nielsen Hole) will do his research within this project. PRIME is now in the process of recruiting a post doc for the project.

During 2014 PRIME has been in contact with over 40 companies and institutions that employ biologist (end users), and has now established collaboration with 12 companies/institutions. These end-users will offer internships and be important informants in the national survey.

¹¹ <http://uni.no/en/uni-environment/>

¹² <http://biologi.uib.no/studier/files/PRIME%20final.pdf>

5.5. Dissemination and outreach

5.5.2. Talks, seminars, workshops, conferences with bioCEED contributions

Title	Venue	Type	2013	Presenter
Veien fram til SFU	Institutt for biomedisin, UiB	Presentation	18.12.13	Øyvind Fiksen
			2014	
Veien fram til SFU	Klinisk institutt, UiB	Presentation	06.02.14	Øyvind Fiksen
SFU bioCEED	Studenttillitsvalgte UiB, UiO, NHH og NTNU	Presentation	15.02.14	Oddfrid Førland, Magnus Nerheim
SFU – hemmeligheten bak	UH-nett VEST	Presentation/Seminar	03.03.14	Øyvind Fiksen
Information meeting	Svalbard lokalstyre	Presentation	05.03.14	Pernille B. Eidesen
MatRIC launch	MatRIC	Presentation	12.03.14	Pernille B. Eidesen
bioCEED opening	UNIS, Longyearbyen	Host	28.03.14	The bioCEED team
bioCEED opening	UiB, Bergen	Host	30.04.14	The bioCEED team
Alumnidagane	UiB	Presentation	09.05.14	Øyvind Fiksen
Open meeting with students	BIO	Workshop	14.05.14	Sigrunn Eliasssen
Strategisamling	NTNU	Presentation	03.06.14	Ole-Jørgen Lønne
FINNUT programseminar	Forskningsrådet	Seminar	11.06.14	Gaute Velle, Oddfrid Førland
Riva Institute	LTH, Lund	Seminar	12.-15. 06.14	Øyvind Fiksen, Oddfrid Førland
FoU-basert utdanning	UHR	Seminar	20.06.14	Øyvind Fiksen, Magnus Nerheim
Sammen for bedre læring	UiB	Workshop	18-19.09.14	Øyvind Fiksen, Arild Raaheim
Utdanningsledelse – UiBs ledersamling	UiB	Presentation/Seminar	13.10.14	Vigdis Vandvik, Øyvind Fiksen
Video workshop	MatRIC	Workshop	23.10.14	Øyvind Fiksen
Veien fram til SFU	Institutt for samfunnsmedisin, UiB	Presentation	29.10.14	Vigdis Vandvik
Styreseminar UiB	UiB	Presentation	31.10.14	Vigdis Vandvik
Statsministerens besøk på Svalbard	UNIS	Presentation	02.11.14	Ole-Jørgen L
Sammen for bedre læring	UiB	Workshop	10.11.14	Lucas Jeno, Arild Raaheim
Fagforum	SiU	Presentation	10.11.14	Vigdis Vandvik
Self-Determination Theory	Motivation conference	Conference	13.11.14	Lucas Jeno, Torstein N. Hole
Kvalifisert og kompetent til Dovre faller	UHR (Bergen)	Conference	14.11.14	Øyvind Fiksen, Arild Raaheim

Utdanningskonferansen 2014 – Sammen om endring?	Forskningsrådet	Poster	17.11.14	(Gaute Velle)
Seminar for vitenskaplig ansatte	Institutt for geovitenskap, UiB	Presentation	19.11.14	Vigdis Vandvik
Presentation and information meetings in PRIME with internship hosts ¹³		autumn-14	Gaute Velle	
Læring i det 21. århundre	Nasjonal PPU-konferanse, HIB	Presentation/Conference	27.-28.11.14	Øyvind Fiksen
SFU Nettverkssamling	NOKUT	Workshop	09.12.14	bioCEED team
Studiekvalitetsseminar – Utdanningsledelse	UiB	Presentation/Seminar	10.12.14	Øyvind Fiksen
		2015		
Frafall i høyere utdanning	UiB	Workshop/Seminar	09.01.15	Lucas Jeno
bioCEED and the Norwegian Biodiversity Information Centre	Norwegian Biodiversity Information Centre	Meeting/Presentation	13.01.15	Vigdis Vandvik
<u>Kunnskapsministerens kontaktkonferansen med universiteter og høyskoler 2015</u>	Ministry of Education and Research	Panel debate	20.01.15	Vigdis Vandvik
Seminar on educational leadership and student active learning	Department of Clinical Dentistry, UiB	Presentation/Seminar	04.02.15	Øyvind Fiksen
Educational leadership	NOKUT conference on Educational leadership at UiT	Presentation	12.02.15	Øyvind Fiksen
Ecology education	Norwegian Ecological Society Annual conference	Conference session	12.03.15	Øyvind Fiksen
ArtsAPP	National MNT-conference 2015	Presentation	18.03.15	John-Arvid Grytnes
Educational leadership	National MNT-conference 2015	Presentation	18.03.15	Øyvind Fiksen
the European First Year Experience conference		Keynote & Presentation	15.06.15	Vigdis Vandvik Lucas Jeno
Assessment in Higher Education, Birmingham “Developing new practices for assessing broader student outcomes”		Paper submitted	June-15	Lucas Jeno, Torstein N. Hole
IICE, Irland 2015. «Promoting transferrable skills in discipline education»		Paper submitted	Apr-15	Torstein N. Hole
IICE, Irland 2015. “Why higher education should encourage learner-centered education”		Poster submitted	Apr-15	Lucas Jeno

¹³ Naturvernforbundet Hordaland, Uni Miljø LFI, Uni Miljø Sam marin, Artsdatabanken, Grøn etat Bergen kommune, NIVA, Nordahl Grieg vgs, Runde Miljøsenter, Skolelaboratoriet i Realfag, Senter for internasjonalisering av utdanning.

5.5.3. bioCEED in media

Title	Publication	2014
"Fire Bergensmiljø vil bli SFU"	På Høyden	31.05.2013
BIO er finalist i SFU-konkurranse	uib.no	15.08.213
Eitt steg nærmare framifrå utdanning	På Høyden	19.08.213
BIO granted status as Center of Excellence in Higher Education"	uib.no	08.11.2013
UNIS part of new center of excellence in education: bioCEED	unis.no	08.11.2013
BIO tildelt status som Senter for fremragende utdanning	uib.no	08.11.2013
Startar nytt supersenter	På Høyden	08.11.2013
Burde utvidet studiestøtten	Bergensavisen	09.11.2013
Bergen får senter for fremragende utdanning	Forskning.no	11.11.2013
Trodde me hadde vunne Oscar	Bergens Tidende	13.11.2013
Biologi til Folket	Hubro #1 2014	
Økosystembasert forvaltning – og undervisning	Svalbardposten	26.09.2014
App gjør biologiutdanningen mer moderne	uib.no	21.10.2014
SFU Magasinet	SFU-Magasinet	23.10.2014
Vil få slutt på søvndyssende forelesninger	Studvest	26.11.2014