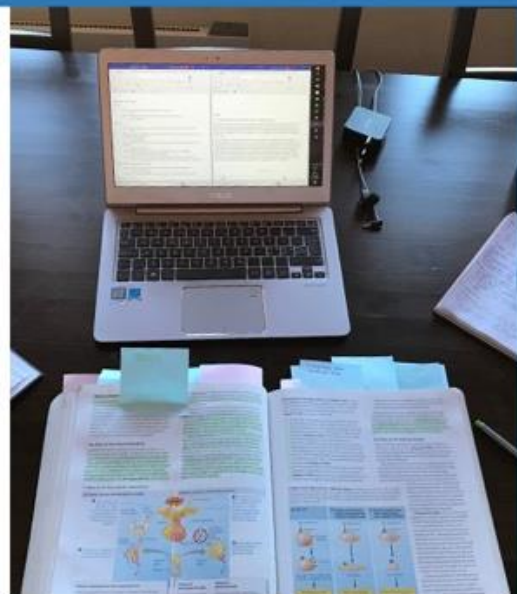




# ANNUAL REPORT 2020



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Front page photos: Vice rector of education Oddrun Samdal, UiB (top left), Digital learning, Pernille Eyde Nerlie (top right), Digital teaching, Ragnhild Gya (middle left), PTFC course and digital meeting, Vigdis Vandvik (middle), biORAKEL (middle right), analysing master project data, Sondre Olai Spjeld (bottom left), and Anne Bjune teaching lab, Jonathan Soule (bottom right).

## SUMMARY

In **2020**, bioCEED has continued to develop biology education to fill future needs in science and society, and to facilitate the scholarship of teaching and learning across higher education in Norway and beyond. Our activities are guided by our four focus areas – learning culture, innovative teaching, practical training, and outreach.

The past year was **productive on many levels**. The years of constructing a learning culture, along with numerous digital tools via a range of learning platforms, better positioned us to survive — and in many cases, thrive—when the pandemic hit, and education went largely digital from March 2020 onwards.

Among our major accomplishments we note the following:

- **BioCEED had substantial impacts** on multiple levels—from individual students to the national dialogue. We published nine papers on educational development, teaching and learning during a pandemic, and student-active research in peer-reviewed, international journals; we were involved in course and program redesign efforts that will impact all students across biology programs; we assessed and improved several digital tools that are freely available and developed usage of these tools to support courses at BIO and UNIS; we supported novel educational initiatives; we sponsored active seminar series; and we communicated our work to the public and relevant stakeholders through diverse venues.
- We enjoyed **enhanced collaboration with partner SFUs**, especially iEarth and CCSE. Most salient were the iEarth/bioCEED cooperation at UNIS, where they have decided to have common meetings every month to coordinate activities and cooperate when possible (examples are common educational seminars and courses, student activities and a DIKU-project; FieldPass), cross-SFU proposals submitted in October and February (e.g., LakeEd, IMPRINT, PROBE), and cross-SFU participation in seminars, workshops, and policy development (e.g., joint hearing replies). Additional projects are planned for 2021.
- BioCEED was bolstered by **new investigators** and **new initiatives**. For example, a teaching assistant (TA) training course was developed to support PhD candidates, students and technicians that teach in biology courses. The CALEQ pedagogical alignment tool was adapted for Norwegian higher education, and we continued rigorous assessment of several student-active projects and virtual field guides. **The bioCEED team has been strengthened** by hiring through externally funded projects. At UNIS one postdoc and one technician have been hired, and BIO hired one Postdoc and five 20% student research assistants. In addition, a 50% project admin was secured through the Redesign project (DIKU Aktiv).

**BioCEED experienced transitions in leadership.** Vigdis Vandvik stepped down from the Director position in January 2021, but remains invested in several bioCEED projects. The director position was advertised in early 2020, and after some pandemic-related delays, the position was filled by Sehoya Cotner, previously an adjunct professor in bioCEED at BIO, UiB and Associate Professor in the Department of Biology Teaching and Learning at the University of Minnesota. Sehoya is particularly interested in cross-STEM collaborative work (in

professional development, classroom innovations, and discipline-based educational research). Sehoja is part-time at bioCEED through July 2021, and begins her full-time position August 1. At UNIS, Deputy Director Pernille Eidesen is stepping down to take a new position at Department of Biosciences, University of Oslo. Eidesen will lead the school laboratory in biology, and largely work with educational development and educational research. She will participate in some ongoing projects and aim to initiate new cooperative projects with bioCEED. Her role in bioCEED will be filled by Stephen Coulson, the leader of the Arctic Biology Department at UNIS.

These changes in leadership and staff add significantly to our human resources and will enable us to continue to increase our activity within ongoing projects, as well as make new initiatives possible.

COVID19 presented challenges and opportunities. **All collegial activity went digital**, presenting challenges but also opportunities for increased participation and collaboration. In this situation, we capitalized on the collegial teaching culture built up through bioCEED over the years.

- Our online seminar series<sup>1</sup>, aligned with the aims of our educational development projects and focusing on enhancing quality in online learning, were especially well attended, and over time drew participants from beyond those typically present.
- Our student surveys during the pandemic enabled us to respond quickly to new needs, if not necessarily at the magnitude that students would have wished.
- We also experimented with an online student poster session for several courses and saw enhanced participation and developed better mechanisms for students to be involved with both giving and receiving meaningful feedback on their posters and presentations.
- Drawing on our existing digital platforms, we were motivated to further assess and scale up many of our existing tools.
- Our traditionally in-person biORAKEL and bioBREAKFAST student meetings lost some of their purpose and direction, but the student leaders of biORAKEL quickly reallocated attention to more text-based peer-review. This modification was well received by students.
- Some of our activities, notably student research practice and field courses, especially those involving international exchange activities, were especially hard hit by the pandemic restrictions. Here, we were able to use online research support tools and digital research activities (including digital remote internships) to deliver intended and sometimes even enhanced learning outcomes (e.g. BIO299 and RECITE project).
- The transition to a digital learning environment necessitated and inspired the development of a teaching assistant (TA) course, focusing on leading groups and alignment in feedback.
- We also learned a lot about student motivation and the importance of student-student interaction, findings that will inform several Centre projects in 2021.

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<sup>1</sup> See overview in Appendix.



- Finally, bioCEED-affiliated teachers and students responded constructively to the pandemic challenges, developing and publishing on novel online student-active learning tools and activities (e.g., lab-at-home, and virtual field guides).

Some of our planned research and development activities were severely disrupted, for example as planned educational experiments had to be cancelled and moved online. At the same time, it became evident that we need students to engage with our educational development initiatives. At UNIS, all courses were cancelled May to December 2020, and several projects were put on hold.

However, several projects were able to proceed close to plan despite unexpected challenges. The REdesign project (DIKU), the platform development, and student research experiences largely proceeded as planned, if not always in the planned format. The development of Virtual Field Guides (VFGs) was initiated before the lockdown, as tools to improve preparation for fieldwork, and to be utilized in assessment of practical field skills; these were highly valuable in situations where mobility was highly restricted. VFGs will be actively used this summer to compare and explore environments from different locations, thus addressing some of the travel restrictions imposed by the pandemic.

A successful past informs **future plans and priorities**. Key to our plans for 2021 are **alignment, assessment, and structure**. Specifically, ongoing (e.g., REdesign, CALEQ surveys, FieldPass, PFTC) and proposed (e.g., IMPRINT, PROBE) projects focus on understanding how instructors implement constructive alignment in their courses, and how thoughtful assessment can drive learning. We will also continue to assess, align and scale up existing educational innovations (e.g., bioSKILLS, Virtual Field Guides) and professional development programs (e.g., the Teachers Retreat, teaching and learning courses). We will build on our initial cross-SFU collaborations to enact meaningful, cross-STEM pedagogical change. Examples of the latter plans include a proposal to host STEM educators in a two-day workshop to develop course-based research experiences—using real, local data sources—in their courses, and a proposal to create a national-level DBER<sup>2</sup>-training program for early-career researchers. The growth in personnel, projects, and collaborations will require improved structure and coordination within bioCEED in the future.

Finally, in addition to continuing our work in educational development, we look forward to an **enhanced research footprint** for bioCEED. In addition to the existing postdocs and PhD students, currently poised to start publishing their work, we will also expand our overall investment in research. Not only is Sehoja's research area specific to biology-education research (BER) in higher education, but she will soon be joined by a UiB-supported BER PhD student, and she will mentor undergraduate students in BER research projects. Further, we have had great success with obtaining external funding for both development and research projects, allowing us to increase our number of personnel and enhance our overall impact.

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<sup>2</sup> Discipline based education research

## Focus area 1: Learning culture and educational leadership

The development and promotion of a **collegial learning culture**, based on SoTL and inspired by the research culture, is a major success and impact of bioCEED.

In 2020, the challenges caused by the Covid-19-pandemic meant that much of this collegiality had to find new digital arenas. Several of our annual activities within our institutions have been able to run as planned (e.g. Collegial Project Course, UNIS Learning Forum, BIO100-club, seminars), although in more digital formats than previous years.

For both teacher culture and educational leadership, specific actions are described and monitored through our Phase 2 Action plan. An overview over activities and outputs can be found in the project and dissemination lists in the Appendix.

### Highlights from activities and results in 2020

#### Collegial activities and local development projects

bioCEED has a number of collegial activities aimed primarily on our local teaching staff and students, but open to other interested audience from UiB and other HE institutions. Some activities (e.g. courses and events) are described in more detail below, others (e.g. seminars) can be found in overviews in Appendix).

bioCEED support teachers that work to develop, test and document the impacts of new teaching and learning methods in biology. Teachers can apply for small grants of up to 50 KNOK from bioCEED to support research and development projects in biology education. In addition, we provide support, supervision and funds for master students in teacher education and pedagogy with projects related to bioCEED and learning in Biology. These projects are described under Focus area 2 and 3.

#### *The BIO100-club*

The BIO100-club members are course leaders of core BIO-courses in the BIO BSc in biology at UiB. The club is a community of practice that has monthly meetings, discussing teaching and learning in biology, focusing on aligning the introductory level (100-courses) in particular. The 100-club contribute to the development the shared platform of resources (bioSKILLS). During 2020 the BIO100 club have continued developing generic skills and has involved experts in cooperative learning for a workshop. This resulted in a research project on cooperative learning in one of the courses<sup>3</sup>. The 100 club is highly engaged in the ongoing redesign of the BSc of biology, providing feedback to ongoing process and development of learning outcomes. A major focus of the 100 club is collegial feedback and alignment throughout the degree. An important topic in 2020 has been to support good practice in remote teaching and learning, and how to engage students in large classes in remote settings.

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<sup>3</sup> see Anja Møgelvang Jacobsens PhD project

### *AB bachelor course revision project*

This project was run through 2020 at the AB department and with administrative support of bioCEED. The project aimed to map how UNIS better can restructure the course packages at the AB department, in terms of time suitability and learning outcomes, to better integrate and align with the biology study programs at the mainland universities and hence develop a more attractive course portfolio for students. Some of the obstacles that prevent UNIS to gain more applicants are due to the 1) quota places allocation; 2) lack of information about UNIS in general on the websites of some of the partner universities; 3) unclear or lacking website information about UNIS courses/course packages and how these courses are aligned within the study program at the mainland universities; 4) mismatch between timing of possible exchange semesters and what UNIS courses that are recommended in the study programs; 5) UNIS course application deadline and admission letter comes late compared to other exchange destinations. The findings from the project are relevant for UNIS in general to enhance the educational quality and numbers of students applying for UNIS courses, in addition to strengthen the collaboration with the Norwegian universities.

### *Student experiences of the sudden shift to digital teaching*

bioCEED was involved in developing, conducting and presenting surveys to capture student experience of the sudden shift to digital teaching, and collect feedback and suggestions from BIO and UNIS students. The surveys provided very useful information for teachers and leaders, and exposed some of the challenges our students face (summaries of results [BIO](#) and [UNIS](#)). As a response to the survey results, bioCEED offered an [online motivation seminar](#) for students accompanied by a [web page summarizing motivation tips](#). The seminar was well attended (app 40 participants). The survey results, supported by students sharing experience, were presented and discussed at several digital [teacher meetings](#). These discussions led to the formation of a network (Task force learning environment) with the BIO student organisations, student counsellors, educational leader and bioCEED, that will work to support social learning environment during, and after, the pandemic.

### *Moving collegial arenas online - digital meetings at UNIS and BIO-UiB*

Different collegial meeting arenas for teaching staff were established to support teachers with the shift to, and practice of, digital teaching. One arena for teachers to discuss and ask questions was through **dedicated MS Teams channels**. Information and invitations to other fora were also shared here. Digital (teacher<sup>4</sup>) meetings became an important new arena for sharing in the collegium. A positive result of the close collaboration between UNIS and UiB through bioCEED was demonstrated by the opportunity for UNIS teachers to attend the [teaching meetings](#) and seminars/workshops at BIO, and vice versa. The meetings provided an [inclusive arena](#) where staff and students could discuss, exchange experience and information and provide collegial support.

Another platform that was developed during spring 2020 was the **UNIS web resource page *Digital Educational Resources*** to help teachers to set up a functional, temporary online

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<sup>4</sup> Although these meeting were called teachers meeting, they were open to and involved all staff and students interested to attend.



learning environment for their courses. Several digital meetings regarding digital teaching were arranged at UNIS, led by the Vice Dean of Education and Academic Affairs. Professor Ivar Nordmo (PED UiB) attended the first meeting to talk about how to best prepare students for the teaching and assessment ahead. A major topic was how to deal with fieldwork, a major component of many courses at UNIS. Some started with digital field courses, and several courses based their field sampling on data from previous years. One initiative that began shortly after the lockdown was to invite students to an open digital meeting with Academic Affairs, teachers, the Student Counselling in Tromsø and Ivar Nordmo. The students were given useful tips on how to maintain their everyday life from home and how they could study in the best feasible way in relation to intended learning outcomes and the curriculum.

### *Professional development*

bioCEED provide teaching staff opportunities for professional development through formal pedagogical training courses. In 2020, we have had special attention on developing pedagogical training opportunities for teaching assistants<sup>5</sup> (TAs) and PhDs.

In 2020, bioCEED held a **two-day pedagogical course for TAs** and tech/admin staff involved in teaching at BIO-UiB. The course was led by Associate Professor Lucas Jenø, with support from Christian Strømme and Dagmar Egelkraut. Teachers at BIO were consulted to make the course even more relevant to teaching at BIO. The course had two modules: facilitation and leading of groups, and written feedback. The first TA course had 38 participants and got very positive feedback from participants. The course will be revised during 2021 and improved to make it even more relevant for our diverse participants. The course will be offered at the start of each semester and the aim is to make it mandatory for PhD students and Postdocs with teaching duties.

At UNIS, bioCEED and iEarth are planning a new **3-days teaching and learning course for PhDs**. This course will provide PhD students with an introduction to basic learning theory and concepts, practical approaches, tools and skills for classroom and field teaching. The course is a part of an ongoing process rethinking, structuring and preparing PhD students for the teaching duties as part of the four-year PhD programme, and develop their teaching skills during their time at UNIS. The course will be offered in 2021 and taught by Ivar Nordmo from UiB and teachers from UNIS.

Led by associate guest professor Roy Andersson, bioCEED has run the **Collegial Project Course in Biology/STEM (MNPED660)** since 2015. In the 2019/20 version the course was co-taught by associate professor Jorun Nylehn and advisor Oddfrid Førland. The 2019/20 course was designed to support the [MN Faculty\(UiB\) project](#) to redesign bachelor's programs to strengthen generic skills and competences. A major component of the course is educational development SoTL group projects relevant to different aspects of the generic skills project and the teachers own interest and teaching practice. All MN-departments were invited to join the

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<sup>5</sup> Course TAs, biORAKEL etc. At our institutions teaching assistants are often PhD candidates with teaching duties. Some TAs are master students or undergraduate students.

course, and participants were recruited from Earth Science, Chemistry, Informatics, the MN Faculty administration and the University library, in addition to BIO. 18 participants completed the course, representing a wide range of educational and teaching staff from administration, postdocs, PhDs, librarians and professors.

bioCEED continues to support a professional and scholarly teacher culture at our institutions through the annual **Learning Forum (UNIS) and Teachers Retreat (BIO)**. Both events are now well established, and participation is high. Teachers contribute to the knowledge and experience exchange and development, supported and inspired by invited speakers that offer new perspectives and knowledge. In 2020, we were not able to hold the Annual Teachers Retreat at BIO, and we now plan for June 2021.

The 7<sup>th</sup> Learning Forum (LF) took place 27-29 October focussing on digital teaching. LF was organized by the Academic affairs, ECom and bioCEED. All guest students present at UNIS were invited and as part of the LF program [two student workshops](#) on group dynamics in collaborative work and science communication were held. This year the whole institution was invited to join lectures, sharing sessions and workshops. In total 94 participants, including 4 external guest lectures and 16 students, attended the forum. This is the highest number of participants ever recorded. 29 employees and students contributed to the Learning Forum with organising, lectures and sharing sessions. The event was organised as a hybrid event with strict COVID-19 infection control measures. Both physical and digital presentations were held, and all plenary presentations were streamed. Two keynote speakers; Malcolm Langford (UiO) and Hilde Damsgaard (USN), had talks about digital teaching and learning challenges. Three workshops were held on studying in a digital learning environment, digital tools and academic writing. In addition, through eight sharing sessions, staff discussed their experiences and thoughts on different teaching and learning methods. A new activity this year was an informal poster session with food and refreshments, which were well received.

### ***Excellent teaching practitioner and the Pedagogical Academy***

In October, The MN Faculty at UiB announced a call for applications to the Pedagogical Academy (Excellent Teaching Practitioner). To support applicants, bioCEED offered a series of teaching portfolio workshop events; an open teaching portfolio workshop for MN, an open teaching portfolio workshop at UNIS (collaboration with iEarth), and a two-step individual portfolio feedback activity in MittUiB (collaboration with iEarth). In total, 20 participants attended workshops. An open teaching portfolio workshop was also held at MN in February 2020 as part of the CPC course with in total 25 participants.

### **Students as partners – representatives, leaders and developers**

Students-as-partners are an important and essential priority for bioCEED. All bioCEED projects and activities should involve students as active partners. In 2020, we have involved students in discussions on the shift to digital teaching, strengthened our relationship with the student organisations, hired 5 student research assistants and continued all the student led projects.

Our **student representatives** are involved in bioCEED in a variety of roles; they initiate, participate, disseminate, contribute to, and lead projects and activities in collaboration with bioCEED, and with our partner institutions. In addition, they are part of bioCEED core team and Board. The student representatives from UNIS and BIO had a [joint meeting at Svalbard](#) in connection with the Learning Forum, where they discussed further plans for student projects and involvement in bioCEED.

Our student representatives and **student project members** continue to run and develop [bioBREAKFAST](#), [biORAKEL](#), [bioSPIRE](#) and [UNISprout](#) with increasing impact and success<sup>6</sup>.

In 2020, bioCEED decided to hire [5 student research and development assistants](#) (research technicians), using funds from a range of externally funded student active research projects. They named themselves bioBEES and [will work on](#) specific projects (e.g. Redesign, VuggeTilGrad) and develop new projects and activities.

Following an initiative from the student organisation of the BIO molecular biology students *Heliks*, bioCEED and biORAKEL supported [student led group sessions](#) to support students in what they found was a problematic and difficult course.

BioCEED initiated a network of network (Task force learning environment) with the BIO student organisations, student counsellors, educational leader and bioCEED, that will work to support social learning environment during, and after, the pandemic. This work will continue in 2021, and this network could also be a useful sounding board for other bioCEED initiatives.

### bioCEED contributions to quality work in Higher Education in Norway

As teaching and assessment methods develop to be more student active and constructively aligned, we find that the policies and regulations sometimes can be a hinder for this development. We wish to contribute to a change in our local and national regulations that support educational quality and development. We also advocate a knowledge-based approach to decision making and evaluation of Higher education.

- bioCEED have supported and provided input to [Nasjonalt fagorgan for biofag](#) on teaching and educational development matters, this year focusing on digital teaching in higher ed.
- As a follow up of [op-ed in Khrono](#) on the annual Study Barometer, bioCEEDs Vigdis Vandvik and Lucas Jenø was invited to contribute at a [NOKUT seminar debating the Study Barometer](#) (Studiebarometeret). They argued that the survey should be revised to make use of documented question batteries to provide higher resolution data on student learning behaviours and teaching and learning quality (and less on student satisfaction). These data will be more useful for the HE Institutions' quality work.

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<sup>6</sup> See description under each project under Innovative teaching/Practical training.

- Along with 5 other SFUs, bioCEED responded to the hearing regarding the revision of the Act relating to universities and university colleges. An important issue we addressed [in our comments](#) is how the law should facilitate constructive alignment between learning outcomes, teaching and assessment.
- We responded to the Norwegian Research Council's open hearing on Open Science, bringing forth student and educational perspectives.
- We wrote an [op-ed](#) in the relevance and a suggested indicator system debate in Khrono, about what 'relevance' in higher education is (and is not).

### Focus area 1 – Priorities for 2021

- Increased **student involvement** building and expanding on existing student-led projects, continue employing student research assistants (bioBEES) and involved them in research and development projects, build a stronger relationship with student organisations to reach and get input from a larger student community.
- **Professional development:** continue developing and offering the TA training at BIO, develop and offer TA training at UNIS. Offer collegial teaching and learning course and teaching portfolio workshops. Develop teaching and learning course for ADMIN, and in collaboration with SFU iEARTH offer an educational developer workshop. Continue seminar series.
- **Research:** submit publications from projects on developing collegial and scholarly teaching and learning culture.

## Focus area 2, 3: Innovative teaching and Practical training

An important priority in Focus Area 2 has been to mainstream bioCEED innovations into the formal structures and processes at our host institutions. This is essential for broad, lasting and sustainable local impact, and it requires moving beyond the project phase and the ‘coalition of the willing’ to involve staff and structures at the broader departmental and program level. This links directly to the work within focus area 3 where students should be exposed to a wide range of learning experiences. bioCEED especially develop authentic learning experiences occur when students engage with ‘real’ biology in the field or lab, when they train in performing and applying biological skills and competences in relevant contexts, or when they participate alongside ‘real’ biologists working in research or in the workplace.

In 2020, this aim is achieved through some large projects involving and including biology programs and educations within and across our biology departments. Testing and documenting a model for redesign of a whole BSc degree by broad involvement, developing and testing field work and assessment aligned with skills and competence learning goals, and students in research and work practice are main themes for bioCEEDs educational research and development under these Focus areas. We develop important tools for student learning within these topics. These tools and platforms are core to our ongoing educational research and outputs, and they also offer opportunities for external national and international collaboration and impact.

Specific actions relating to Innovative teaching and Practical training are described and monitored through our Phase 2 Action plan, and an overview over activities and outputs can be found in the project and dissemination lists in the Appendix. Highlights and results from our projects, activities and platforms in 2020 are described in the following section.

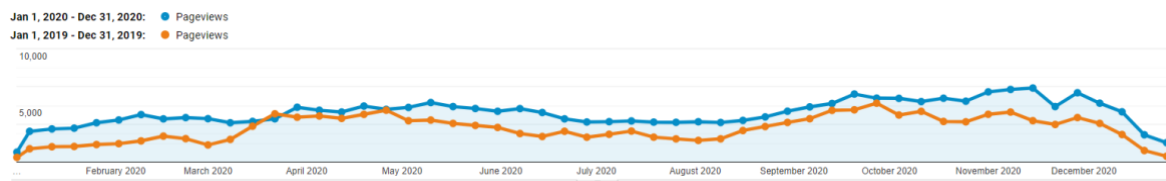
### Platforms and resources for courses, teachers and students



*bioSTATS* is bioCEED’s web-based learning platform dedicated to helping biology students understand data management and statistical analysis. Learning modules for undergraduate students focus on the basics of data management and visualization through tables and charts in MS Excel 2016. Modules for master students include statistical analysis using R/RStudio. *bioSTATS* is bioCEED’s web-based learning platform dedicated to helping biology students understand data management and statistical analysis. Learning modules for undergraduate students focus on the basics of data management and visualization through tables and charts in MS Excel 2016. Modules for master students include statistical analysis using R/RStudio.

In the past few years, *bioST@TS*’ audience has kept growing. While having merely 6100 users throughout 2017, *bioST@TS* counts today more than 150000 yearly users across the world. Fig. 1 shows an overview over the site usage (pageviews) in 2020 vs. 2019.





**Figure 1.** Number of pageviews measured weekly throughout 2019 (orange) and 2020 (blue). In total, 228888 pageviews were registered for 2020, approx. 1.5 times more than 2019. Source: Google Analytics.

Whereas a pronounced increase was visible throughout most of 2020 relative to 2019, we observed that the audience rate flattened in March-April, probably as a consequence of global impacts of the pandemic on academic teaching and learning environments.

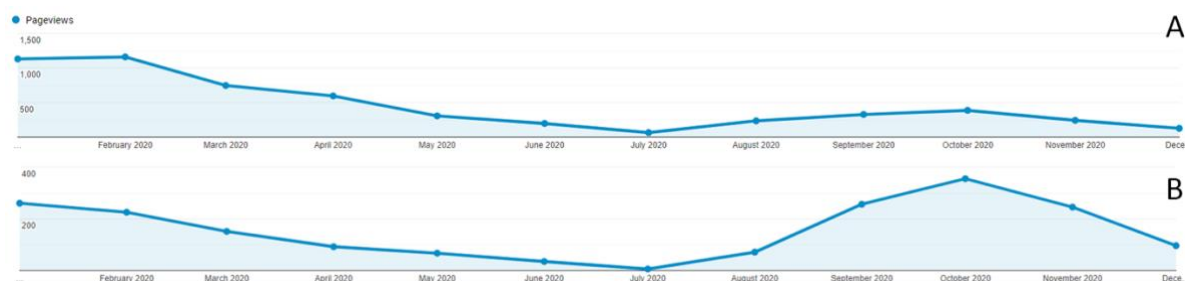
Early in 2020, we started a thorough evaluation of our webpages and saw a need for improvement in several areas, such as alignment of the content with current teaching activities. We initiated a collaborative effort with teachers at NTNU who were also in the process of building a website for teaching statistics in ecology courses. Together, we are currently producing new pages to be used as teaching material in biology courses at both universities. These new pages focus more intensively on the use of R/RStudio from the start of the BSc in biology. This will certainly bring more harmony and consistency in the way students learn data management and analysis from the start of their education.

The bioST@TS team have designed tailored tutorials and teaching activities for two core biology courses in the BSc in biology at BIO<sup>7</sup>. Through these activities, we now teach students how to transform their own raw data and lab notes into fully formatted lab reports with data analysis, figures and tables, all produced in R/RStudio.



To expand the recourses for transferrable skills training, we have continued to build *bioWRITE* / *bioSKRIV* as a web based resource for students and teachers on academic writing in biology during 2020. The platform contributes to align academic writing training across our programs. The platform contains resources in English, while its twin sister *bioSKRIV* offers similar content in Norwegian. Development of both platforms is coordinated with the “BIO100 club” and aligned with the Redesign-project of BSc in Biology. Fig. 2 shows use of bioWRITE since its opening in April 2019 and as of February 10<sup>th</sup>, 2020.

<sup>7</sup> [BIO101 – Organismal Biology 1](#) and [BIO104 – Comparative Physiology](#)



**Figure 2.** The number of pageviews measured monthly in the period January 2020-December 2020 for bioWRITE (panel A) and bioSKRIV (panel B). Source: Google Analytics.

### *Academic writing workshop for PhD students at Arctic Biology, UNIS*

In 2020, UNIS offered a workshop on scientific writing for PhD students at Arctic Biology. Covid-19 provided freed teaching capacity, yet also presented a need to provide scientific training for PhD students at UNIS as travelling and participating in courses on the mainland were no longer feasible. The students chose articles from contrasting journals and topics, and that were (re-)analysed from different perspectives. The students further wrote a proposal, close to their area of interest. Based on new perspectives gained through the lectures, proposals were discussed and re-written. The students learned how to give and receive feedback on their respective proposals.

At the beginning of the course, students were asked to evaluate themselves in terms of their knowledge in writing, and their expectations for this course. A second survey will be run at the end of the course in summer 2021 to evaluate benefits and difficulties experienced in this experimental course. The writing course was also presented in form of a workshop for staff at the UNIS Learning Forum in 2020.

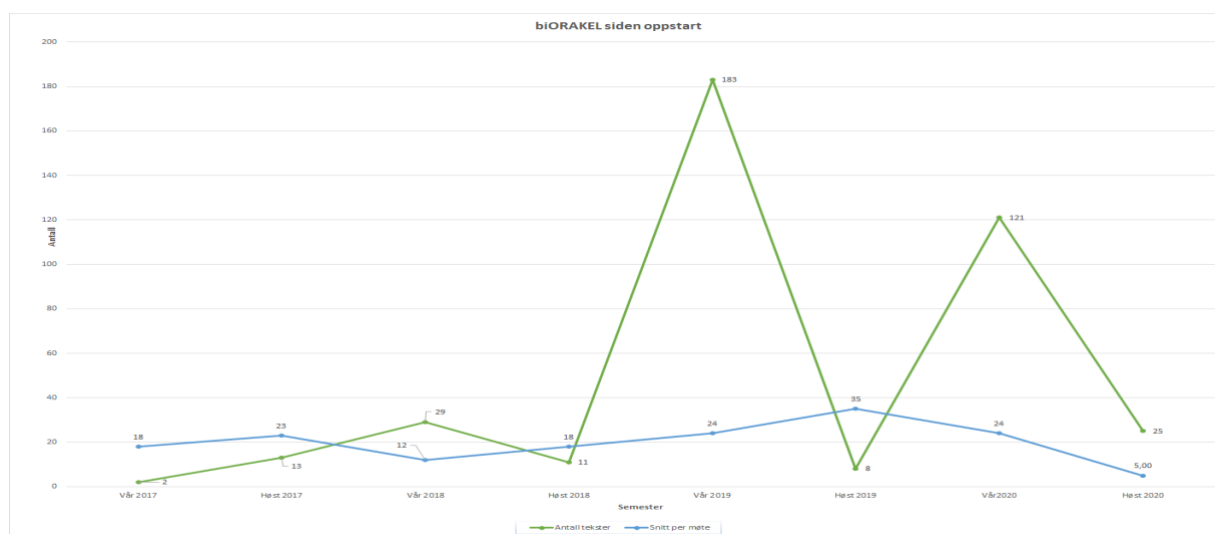
### Student-led projects



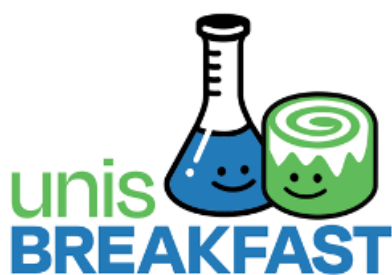
**biORAKEL** at BIO (UiB) is where 'oracles' (experienced biology students) advise, help and support younger students in their efforts to learn biology – and being a student at the Department of Biological Sciences (BIO). **biORAKEL**-meetings happen weekly at BIO, and the oracles welcome their fellow

students with knowledge, friendship, advise and waffles. The year has in many ways been characterized by the shutdown due to Covid-19. **biORAKEL** had a regular start before the shutdown, with an average attendance of 24 students showing up to the weekly Wednesday meetings to grab a waffle, a coffee, and getting some help or inspiration. Since we could not arrange any physical meetings after the University shut down, we tried to keep the meetings

going on different platforms online. After trying this for a while, we decided that the attendance was too low, and we officially ended the “physical/online” part of biORAKEL as long as campus was closed but kept the option to send emails to biORAKEL open. On the upside, students have kept sending reports for the oracles to give feedback on through the semester, and some general questions have also been sent by mail. If you take everything that has happened this year into consideration, we would say biORAKEL has still been both successful, and hopefully helpful for the students.



**Figure 3.** A total overview of biORAKEL since the beginning in spring 2017, each semester is shown with the average number of students each meeting (blue) and the total number of peer reviews (green).



It's all the same, only the names will change. *unisBREAKFAST* (former „bioBREAKFAST“) is a student-led initiative, that facilitate the exchange of knowledge and experience among undergraduate, Master and PhD students across all departments at the UNIS. Shaped as a professional and social meeting arena, it has since 2018 been attended by and shaped by students of all departments, what finally caused the change in name during the year of 2020.

bioBREAKFAST was re-named to [unisBREAKFAST](#) and a new logo has been designed. In addition, a bioCEED UNIS Facebook page has been launched to reach out to more students enrolled in studies at UNIS. This is as the communication at UNIS is mainly promoted via social media in contrast to more conservative homepages. The [unisBREAKFAST homepage](#) is however maintained in order to give a thorough overview of the project’s aims and goals as well as latest updates.

[unisBREAKFAST](#) are essentially seminar-formatted events, hosted by bioCEED student representatives at UNIS twice over the course of a semester in the morning (usually 8-10 a.m.) before the first lectures of the semester-long bachelor courses. Normally, two Master or PhD

students are invited to present their work and share insights to lessons learned and valuable skills and experiences they would like to promote as assets to better education. Furthermore, career prospects within their field of science are usually shared and discussed.

In 2020, challenged by the restrictions that followed the outbreak of the global CoVid-19 pandemic, the student representatives worked closely with bioCEED staff and Health Advisors at UNIS to develop a safe alternative to the former format. A total of 3 meetings have been performed with roughly 25-30 participants for each meeting. In autumn, Arctic Geology students formed the largest group, followed closely by Arctic Biology Students.



**bioSPIRE** is a student-led project which offers practical experience for undergraduates by letting them join an ongoing project at BIO, in the field or at the lab, mentored by MSc- or PhD-students, or other staff at UiB. In 2020, undergraduates could choose between 13 new projects and 3 permanent offers. These included projects in molecular biology, ecology, marine biology, etc. The repeated periods of lockdown or reduced access to our facilities prevented most of the students who had been lucky to start a [bioSPIRE](#) project in January-February to complete it. They also most certainly discouraged many students to contact project owners. Nevertheless, a handful of projects included field activities which were less affected by the restrictions.



**UNISprout** is a project that aims to give BSc students in Arctic Biology the opportunity to gain practical training in the field and lab through participation in relevant research projects, developed by MSc students, PhD students, Professors or technical within a 40-hour limit. The project is run through a web-based platform that enable MSc students and staff to get in touch with BSc students. In 2020, six projects were offered through [UNISprout](#). Even though not all of the projects could run successfully due to the worldwide Covid-19 pandemic, two projects engaged five students in marine and terrestrial biology research. UNISprout is planned to be further developed in 2021.

## Research and work practice courses and activities

### *Work placement at UNIS (AB208)*

The 15 ECTS bachelor course [AB-208 "Internship in Arctic Biology"](#) at UNIS is now a well-established course, and five new students were doing internships at different workplaces in Longyearbyen during spring semester 2020. In monthly seminars, the internship-students met and shared experiences and discussed what they had learned. Seminars were also used to train work-related skills, like applying for jobs and doing job-interviews through e.g. role plays. Students shared their experiences to the public [through videoblogs or written blogs](#). AB-208 is usually combined with a course focused on research practice (AB-207 Research Project in Arctic Biology - 15 ECTS), so students have the possibility to have a full-time practical semester.

### *Work practice in Biology (BIO298, UiB)*

BIO298 is well established as a 10 ECTS bachelor course at BIO. 17 BIO-students did work practice with hosts in the Bergen area in 2020. Read their blogs about the experience [here](#). During their work practice period, they also meet with course coordinator and each other to share experiences and discuss their work placement experience considering the role of biology in society, the subject matter they are working with, creating a pedagogical frame of the experience. BIO298 adapted to the lockdown situation by giving the students concrete assignments related to the work practice. Some could adapt their assignments to home-office, while others used their time to learn more about different jobs for biologists, how to build cv's or how to write op-eds. All were advised on how to adapt to the lockdown while maintaining the learning outcome of the course.

### *Research project in biology (BIO299, UiB)*

The course BIO299 (BIO,UiB) has been further developed through formulating new learning outcomes and designing learning activities to support them. The main learning outcome of BIO299 is twofold; (i) advanced BCs students get real-life experience with conducting research, working on individual projects in collaboration with a supervisor, and (ii) to build and strengthen biological and transferrable skills and competences using research as a learning arena. The course now has a firmer syllabus that includes seminars on relevant aspects related to research practice, ethics, and scientific presentation skills; while at the same time retaining the flexibility needed to such a practical course in research. The students present their work as a report, and a poster. They attend a poster workshop, learning how to present their present work as a poster. The poster presentation at the end of the course is held in collaboration with other courses (in 2020 with BIO250, BIO300a, BIO241, SDG214 and SDG215), which was a great success, both for the students learning outcome, and as it gave a more 'real' experience of presenting their results beyond a course setting. In 2020, we further developed the digital feedback during the poster session – more than 400 feedback forms were submitted by students and other participants, ensuring that all students got constructive and formative feedback on their poster and presentation. The format of the poster sessions will be further developed the coming semesters, and in collaboration with several additional courses trying out different formats of posters as assessment.

### *Student Digital Poster Symposium*



More than 100 students, teachers and staff attended the [BIO Fall 2020 Student Poster symposium](#), following the success of the [BIO Spring 2020 Student Poster symposium](#). The student poster symposium is now attained every semester, and a total of six BIO courses are involved in the one or more of the poster sessions.

Following the lockdown, we had to move both 2020 poster events online, and this worked out well, giving all students the opportunity to present posters, follow other presentations – and



providing all presentors peer-reviewed feedback through an online form. For the first time, the 2020 fall poster symposium was also expanded with student 5 minutes presentations of research projects. All posters are made available through the [bioPITCH](#)-page ( )

See also RECITE and ExperTS for more on student opportunities for research practice (below, Externally funded projects). And read the blogs of students in a variety of research practice [here](#).

## Research and development projects

### *PhD project on mathematics in biology education – Marius Ole Johansen*

My project will encompass the development and implementation of teaching resources in mathematics, statistics and modelling in the biology education. Surveys will be constructed and conducted to assess biology student's motivation competence and relatedness regarding mathematics. Introducing more relevant mathematical examples and exercises has the potential of inducing an intrinsic motivation, according to self-determination theory (SDT), as opposed to an externally regulated motivation. Studies indicate that intrinsically motivated students in general not only perform better at tests, but they are also more creative when facing challenges. Several experiments are to be conducted in which students are to be introduced to interactive mathematical models in various biology courses as well. Using SDT, any potential changes in motivation, competence and relatedness are to be assessed and compared to control groups. As of fall semester of 2019, all biology students are obliged to have completed the same mathematical course (R2) from Norwegian high schools, i.e. all students will have a similar mathematical background. Thus, this will be a perfect time to measure motivational aspects regarding the use of mathematics in the biology education as well as performing experiments and testing any effects this will introduce.



Based on the theoretical framework provided by SDT, 2 separate studies were conducted in 2019. The first study aimed to measure intrinsic motivation among first semester students regarding the mandatory calculus courses. A survey was designed with a pre-made path-way model in mind and conducted during lectures at the end of the semester.

The second study had an experimental design in which the effects of introducing relevant exercises was measured in a mandatory statistics course for biology students. A significant part of the course entail exercises in the statistical software package RStudio, and new tasks were designed and implemented with the aim of providing a rationale for students by having a relevant and more interesting profile. The experimental setup had a pre-test post-test design in which students were randomly split in 2 groups and then given either the old or the new exercises.

### *PhD project – Anja Møgelvang Jacobsen*

Preparing students for an uncertain future is a topic of discussion worldwide, and the main questions include what skills the students need and how the educational system may help the students develop these skills. In Norway, the White Paper “Working Life Relevance”, which is to be presented in 2021, is a clear testimony to the responsibility of higher education to address these questions. In order to meet these changing needs, the Faculty of Mathematics and Natural Sciences at UiB is now redesigning its bachelor programs. This redesign has as a specific aim to strengthen the generic skills taught at the faculty through three learning outcomes: 1) Cooperation, 2) Informational competence and ethics, and 3) Oral and written communication.



Building on Cooperative Learning (CL) theory, research and the ongoing redesign process at the faculty, this PhD project will contribute with knowledge on the uses and effects of CL in higher STEM education through three steps: 1) a literature review to obtain insight into the field of CL and its effects in higher global STEM education, 2) a survey examining the existing uses and effects of CL in select courses at the Faculty of Mathematics and Natural Sciences, UiB, and 3) an intervention study and implementation of CL structures in a big introductory biology course at the Department of Biological Sciences, UiB.

The literature review has been in progress for a while. Studies have been selected and screened and the necessary data extracted. I am now writing an article to disseminate my findings and hopefully the article will be completed in the spring of 2021. Due to the COVID-19 pandemic, the data collection for the second study in this PhD project was heavily delayed and not completed until November 2020. We have run some preliminary analyses of the collected survey data and they seem promising. Further, we have developed a solid rationale and theoretical framework for the study, and I will start writing an article based on this rationale, theoretic framework and collected survey data later in the 2021 spring semester. Since September 2020 I and a team of UiB faculty have been planning the CL intervention study in biology. This study will run for the greater part of the spring semester 2021 and we should be able to start analyzing the data either in June or in August. When the analyses of the data are available, probably during the fall semester 2021, we will start writing this third and last article.

### *Examining student attitudes*

Sehoya Cotner has continued, via collaboration with Lucas Jenó, a project examining student attitudes (e.g., test anxiety, science confidence). The students in the BIO100 (Introductory course in BSc Biology) are part of this study, along with students in other 100-level BIO courses. The aim is to investigate how students perceive their participation in the course, and how different teaching methods affect student learning and engagement. Students are also observed in class to map participation. This study will contribute to shape learning strategies

that will benefit future students. Several publications have resulted from this work (see Appendix with list of publications).

### *Researching impact of practical experience in research and work practice*

The students' experiences and learning outcomes in the course are being surveyed for a follow up study comparing research practice (BIO299), work placements (BIO298), international field courses (RECITE project PFTC courses), as part of the RECITE and EXperTS projects. Thus far, this have resulted in four publications (see Appendix).

## Externally funded projects

### *Online learning platform for Arctic Biology*

Granted by	Project period	Funding	PI/Main partner
Svalbard Environmental Fund	2018-2020	140 KNOK	PB Eidesen

The online learning platform Learning Arctic Biology at UNIS have been further developed in 2020, and a form PhD student have been engaged as editor to prepare new material, and extra technical support has been allocated to aid publication. In cooperation with the FieldPass project, a set of Virtual Field Guides (VFGs) have been added to the learning platform (<https://360.learningarcticbiology.info/>). Field teaching is highly valuable and beneficial, but the leap into the real world can be overwhelming. VFGs may reduce the gap between classroom theory and field settings, and students can become familiar with the field location in forehand.

### *FieldPass- "Development, testing and evaluation of tools and assessment forms that promote constructive alignment in field teaching"*

Granted by	Project period	Funding	PI/Main partner
DIKU Aktiv læring	2019-2023	4800 KNOK	PB. Eidesen



FieldPass aim to develop and test alternative ways of assessment suitable for assessing/evaluating knowledge, practical skills or general competences achieved through field work. In partnership with The University of Bergen, we will test arena innovative field preparations and assessment of learning in the field. We have identified three development areas we will focus on in this project 1) digital tools for preparation and assessment, 2) certification as assessment of practical skills, and 3) reflection combined with concept maps as assessment tool.

The project hired a technician and a postdoc in February/March 2020, but due to Covid-19, the project was put on hold from May 2020 until January 2021. The project staff was reallocated to other jobs for UNIS in this period. Before the project was put on hold, we

managed to start the development of Virtual Field Guides (VFGs) in cooperation with the Online learning platform- project described above.

### *ArtsApp: How technology impacts motivation and interest for learning species*

Granted by	Project period	Funding	PI/Main partner
NFR, Finnud	2018-2022	5900 KNOK	J.A. Grytnes (BIO) and Lucas Jen0 (PED)



ArtsAPP develops an interactive app for species identification. ArtsApp is an educational research and development financed by the Norwegian Research Council. The overarching goal is to optimize ArtsApp and enhance students' motivation and learning for species identification. Currently, we are working on implementing different features and functionalities based on an usability analysis we did with students. Furthermore, we have recently published the results from an experimental study we conducted with colleagues from the University of Stavanger. This [study](#) was published in Computers & Education. We have one study that is in press, in which we investigate if user interface and different functionalities in different learning tools have an impact on students' engagement, wellness, and learning. This study will be published in Frontiers of Psychology soon. Read more about the ArtsApp project [here](#).

### *Artsapp for Svalbards flora*

Granted by	Project period	Funding	PI/Main partner
Svalbard Environmental Fund	2019-2022	200 KNOK	PB Eidesen

The first full version of Artsapp for Svalbard was launched in June 2020, covering all vascular plants in Svalbard except graminoids. The current version is available in English. A Norwegian translation is being developed. A PhD at UNIS, will develop the graminoid key in 2021 as part of his duty work. The planned user-test of the app in a course setting has been postponed to 2021 as all UNIS courses were cancelled in 2020. Enjoy a small advertisement of the app and an intro to how to use it: <https://www.youtube.com/watch?v=i1lPoDaZrvo>

### *REdesign- Student active research and transferable skills in redesign of the biology education*

Granted by	Project period	Funding	PI/Main partner
DIKU Aktiv læring	2019-2022	4500 KNOK	S. Eliassen

The project is a partnership with BIO and UiB Læringslabben. Following a 8-step [model](#) for study programme redesign developed by Texas A&M, the project is currently redesigning the BSc Biology, while also adapting the model to Norwegian higher education context, and as importantly to BIO and to UiB. A core team consisting of BIO teachers, students, post doctor, administrative coordinator, didactics expert and UiB learning lab is established, and background information has been gathered. In 2020 the project group has conducted

workshops on developing intended learning outcomes and has also aimed at involving faculty in the project development, conducting digital meeting about the project and project development, and inviting all research groups to open hearings/discussions. The project also reports to the Programme board at BIO. Through a process of backwards planning, the intended learning outcomes will form the basis for creating learning rubrics for the degree. The project has a major emphasis on developing generic skills in teaching and learning, and alignment throughout the programme, and is involved in ongoing development in projects such as bioWRITE, TA course, poster sessions and the 100club (see above). The project has adapted to the corona-situation through a series of digital teacher meetings at BIO, focusing on current situation theme such as adapting teaching and learning to the remote setting, adapting lab-and fieldwork to lockdown situation, student involvement in remote teaching etc. Students are highly involved in the project, both in the core team, and as student research technicians. As part of the departmental hearing on intended learning outcomes, the students organized a student workshop on learning outcomes that resulted in a report on student perspective on the BSc programme, complementing the previously arranged 2 days student workshop in 2019.

### *Cross disciplinary high arctic field Laboratory for research and teaching*

Granted by	Project period	Funding	PI
Thon Stiftelsen	2019-2021	1350 KNOK	P.B. Eidesen

In 2019, the AB Department at UNIS got a funding from Thon to support the development of a Field Laboratory in Bjørndalen. The Field Lab is as a part of the departmental project BIG (Bjørndalen Integrated Gradient) close to Longyearbyen for education and research. In BIG, AB is combining resources to study and link systems from the marine realm, through the coastal zone and onto land. In 2020, the Field Lab was further equipped with infrastructure, and field support was provided to several student projects, and provide the research arena for students admitted to the practical course AB-207 Research Project in Arctic Biology (15 ECTS). The Field Lab efficiently links field activities in different courses across seasons.

### *Vugge til Grad – student active research*

Granted by	Project period	Funding	PI
Thon Stiftelsen	2019-2021	1500 KNOK	V.Vandvik, O.Førland, R.Gya

This project explore how exposure to, and practical experience with participating in, science and the scientific process can support student learning and motivation. Through several of our development projects (bioSPIRE, course-based research practice at the BSc, MSc, and PhD level) we explore different approaches to student-active research, and we assess the impact of these approaches on student learning outcomes and motivation. The different development projects complement each other in that they meet the student at different levels, put different demands on the students, set up diverse forms of collaboration between students and between students and supervisors/mentors, and thus they also provide diverse learning outcomes. For example, in bioSPIRE (student-led initiative; see above), BSc students can get research experience by assisting MSc or PhD students in the field or lab. In our research



practice course (BIO299, BIO), students get to do a small research project under supervision of a staff member, and here bioCEED is developing group activities and discourse to support professional development and awareness in the students. In [higher-level courses](#), planning, data management and publishing is increasingly included.

### *RECITE - Research and Education Partnership in Climate Change Impacts on Terrestrial Ecosystems*

Granted by	Project period	Funding	PI
NFR NTPART	2018-2021	5787 KNOK	V.Vandvik, with S.Cotner, A.Halbritter and others

RECITE develops and studies student-active research experiences through international student exchange for internships, and international research-based field courses. 2020 was a special year for RECITE: As the pandemic hit, we were on a large international field course in a remote location in Peru. You can read more about the experience [here](#). A focus of RECITE has been to expose students to the full reality of ‘real’ research, including a focus on reproducibility throughout planning, conducting, and managing data from research projects. RECITE supports the courses (and to some extent internships) with a string online scaffolding, which proved an added value supporting student learning, course and project sense of community, and inclusion and sharing of knowledge during the pandemic and associated shutdowns. This has inspired greater attention to the potential added value of open and reproducible science practices in our team, which again inspired the MORE proposal to allow us to develop and document these issues further. The international internship experiences were shifted to local internships and remote internships during the pandemic.

### *ExperTS: Experiments, Traits, Synthesis: Using knowledge from global ecological experiments to validate, assess, and improve trait-based theory*

Granted by	Project period	Funding	PI
NFR IntPart	2019-2022	5906 KNOK	V.Vandvik, with S.Cotner, A.Halbritter and others

ExperTS is a follow-up project from RECITE, focusing more on integration of ecological theory and synthesis with field-based and reproducible research experiences. Due to the pandemic, most activities have been put on hold in 2020.

### *MOVUL – Mobilbasert vurdering som læring*

Granted by	Project period	Funding	PI
DIKU Dig	2020-2021	550 KNOK	L.M. Jenø

Associate professor Lucas Jenø (UPED) and professor John-Arvid Grytnes (BIO) received a funding for the project “MOVUL: MOBilbasert VURdering som Læring”. MOVUL aims at developing a digital portfolio used for formative assessment for biology student in the BIO102 course. We are currently developing the backend of the app and integrating it to the UoB

systems. The project is a collaboration between University Pedagogy (UiB), BIO (UiB), and bioCEED (UiB).

## bioCEEDs small grants - master projects and teacher-initiated projects

### *Teacher project: Student learning strategies, personality and mindset*

Project leader Jorun Nylehn.

The project maps the learning strategies and mindset among biology students, and how the learning strategies and mindset correlates with personality. Questionnaires were distributed among the students at BIO101 in 2019, 2020 and 2021, and more than 170 students have hitherto answered questions about their learning strategies, personality and mindset. Personal interviews have been undertaken with 5 students and focus group interviews have been undertaken with 3 groups with 4 students in each group. The combined approach (questionnaires and interviews) is intended to give an overview of the students as well as in-depth information. Altogether 9 master students are involved in the project, 7 have finished their master theses and two have started in January 2021. The master students are writing 30 ECTS theses for the lector program at UiB in biology didactics.

### *Master projects: Biology students learning*

Master students: Emilie Orvik og Hannah Guthu

These two master projects investigate biology students' learning strategies and perception of constructive alignment between learning outcomes, teaching and assessment, in addition to personality traits. Data will be collected through a survey with validated questions. Part of the survey focus on drawing as a learning strategy, and specific survey questions will be developed for this part of the survey. Survey questions about constructive alignment are in line with the bioCEED pilot study CALEQ under the Redesign of BSc in Biology project. The survey will be conducted spring 2021 among first and second year bachelor students in biology at UiB.

### *Teacher project: Glacial microbiomes – in light and darkness (GLAD). Course alignment and cooperation*

Project leader Simone Lang.

The project GLAD aimed at combining two master/PhD courses at UNIS, AB329/829 (Arctic Winter Ecology) and AB327/827 (Arctic Microbiology) both of which carry out research on Foxfonna glacier located in the vicinity of Longyearbyen, Svalbard. Both courses explore microbial life on glaciers, albeit in contrasting seasons, winter and summer. We aimed to coordinate sampling and use of methods which will allow us to build a dataset that can be used across different courses for student active research. Specifically, real-time DNA sequencing will be incorporated in class activities. Due to Covid-19, both courses were cancelled in 2020. We have thus delayed the start of the project and its dissemination through the Learning Forum at UNIS, and educational videos on the bioCEED webpage to 2021.

## Applications for project funding 2020

- Lucas M. Jenö – MIND (Mobile integration or distraction: Understanding the motivating, distracting, or educating roles of technologies in higher education). Project submitted to the Norwegian Research Council (Young Research Talent). The project is a collaboration between the Department of Education, bioCEED, SLATE, University of Oslo, Purdue University, New York University, University of Reading, and Durham University.
- Sehoja Cotner, with Vigdis Vandvik – IMPRINT (Evidence-based mentoring: Impacts of mentor factors, mentoring practice and institutional context on student outcomes). Project submitted to the Norwegian Research Council. IMPRINT is a collaboration between several Norwegian universities, as well as the University of Minnesota and the University of Nevada Las Vegas.
- Sehoja Cotner – LakeEd (*Whither Winter: Preparing ourselves and students to understand climate change effects on aquatic ecosystems during their most vulnerable season*). Project submitted to DIKU. LakeEd is a collaboration between several Norwegian, French, and US universities.
- Aud Halbritter and Sehoja Cotner – PROBE (Praxis, access, and assessment: Open science for better science education). Project submitted to the Norwegian Research Council. PROBE involves 19 collaborators from the US and Norway, and includes three Centres for Excellence in Education (bioCEED, CCSE, and iEarth). Critically, PROBE arose from a discussion of research priorities with bioCEED members, and was selected through a voting process from among six suggested topics to pursue.
- Vigdis Vandvik, with Sehoja Cotner – MORE (Mainstreaming Openness and Reproducibility in Ecological Science and Education). Open Science practices and policies are rapidly transforming scientific publication, research funding, and higher education. MORE will mainstream open science and reproducible research practices in research-integrated educational activities through providing guidelines, open educational and research resources, and examples of best practice in ecology education. The project has partners in Norway, USA, China, South Africa, Canada, and will leverage strong international research and educational networks.

## Priorities for 2021

- **Research and development:**
  - Assessing constructive alignment in higher education: Wide survey of constructive alignment using the translated version of the Constructive Alignment of Learning Experience Questionnaire
  - BioConMod: The role of conceptual models in developing systems thinking for biology students
  - Redesign of BSc Biology: develop new ILOs following model of backwards planning, and develop rubrics based on ILOs
  - Testing new ways of assessment of practical and generic skills to improve course alignment

- Develop student-active research opportunities and document research integration in current education (Vugge-til-Grad)
- Fund teacher and student-initiated development projects
- Continue PhD research projects (see description of PhD projects)
- Invite work practice hosts to a meeting to collect feedback and input to further develop work practice courses
- **Platforms:** expand on and develop the existing platforms in alignment with development projects as well as teacher and student needs.

## Focus area 4: Outreach

Sharing, communicating, and interacting with different audiences 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. Dissemination and outreach are thus important not only to promote bioCEED outputs, but also as a key part of the idea behind bioCEED. Our communication and dissemination strategy is broad, both thematically (see Focus areas 1-3 in this report and in the [Action Plan](#)) and regarding its aims. We support outreach activities that are variously aiming to raise **awareness**, to improve **understanding**, and/or to foster **action** regarding our focus areas and specific action. These activities have different audiences and scopes, ranging from local communication with our staff and students regarding practical pedagogical issues, to national and international communication aiming more to affect educational policy and society more broadly.

The COVID situation shifted our activities towards more digital participation (digital media, online workshops and seminars). It also led to several planned conference contributions being postponed or cancelled. In 2021, we will focus on offering more seminars for, and by, students; and presenting research results in relevant channels. We are also finally giving our web pages [bioCEED.no](http://bioCEED.no) a much needed update and upgrade.

Our outreach activities are summarized in Table 1 and Appendices. Specific communication plans and targets are described in the [Action plan](#). In addition, we wish to highlight the student-led conference SCOPE, initiated and run by the UNIS student representatives.



**SCOPE** is a pilot project initiated by bioCEED UNIS student representatives) in autumn 2020 in order to plan and run the first-ever student-led conference across boundaries in Longyearbyen, Svalbard. SCOPE as an abbreviation stands for Student-led Conference on Polar Environment / Education / Excitement / Enthusiasm / Exploration. By leaving

the “E” flexible it might be possible (and is within the initiator’s intention) to shape events that can be clustered in those groups and make the conference more divers and colourful – and most

importantly engaging to a lot of students in town. So far, SCOPE is intended to take place in October 2021.

The conference will be organised and hosted by students of Longyearbyen (i.e. UNIS students, high school students and students from Folkehøgskole). SCOPE is supposed to be a great opportunity for the youth of the town of Longyearbyen to get together and shape an exchange and inspiration platform of their own. All of this will be sparked by what they, that they are up in the North, share: the love for polar environment and topics related to exploring its secrets.

The conceptual idea of SCOPE has been presented by the bioCEED student representatives at the UNIS Learning Forum in October 2020. A panel of 11 students forms the steering committee for the planning phase of the conference and has to date performed two meetings. SCOPE has been seeking funding from the local fond "Korkpenger" in Longyearbyen as well as the Svalbard Miljøvernfond.

Outreach summary			
Format	Previous **	2020 *	Reference
Scientific publications	19	9	Cristin.no, bioCEED.no
Conference presentations/papers	61	3	Cristin.no
Other presentations	81	12	Cristin.no
Seminars, workshops, courses	>57**	26	Appendix, bioCEED.no
Media (op-eds, interviews, magazine articles, podcasts etc.)	26	11	Cristin.no, bioCEED.no, nokut.no
	18		SFU Magazine
Platforms	6	4	bioCEED.no
Student meetings/seminars biORAKEL, unisBREAKFAST	>54*	~24	bioCEED.no
	>75		Mitt.uib.no, bioCEED.no

**Table 1.** Summary of dissemination output. \*as reported in CRISTIN \*\*see annual reports 2014-2018



## APPENDICES

### Overview of dissemination and outreach activity



Many of these activities are further described in our [Newsletter](#).

**Conference presentations, Op-Eds and articles in the media: [cristin.no](http://cristin.no) (project 468879)**

### The bioCEED community and beyond – seminars, workshops, courses

bioCEED seminars 2020		
Topic	Speaker(s)	When and where
Helping students grow as disciplinary writers	Lene Nordrum, Lund University	29. Jan. 2020, BIO
Practical training and fieldwork @BIO	Sigrunn Eliassen	3. Mar. 2020, BIO
Seminar: Use of digital field notebooks	Kim Senger, AG, UNIS	10. Mar. 2020, UNIS
Let's talk about teaching at BIO	Sigrunn Eliassen	19. Mar. 2020, BIO
How do we move lab courses online?	Sigrunn Eliassen	26. Mar. 2020, BIO
How to deal with assessment and off-campus exams	Sigrunn Eliassen Arild Raaheim, Roy Andersson & Stian Torset (student representative)	16. Apr. 2020, BIO
Student perspectives on digital teaching @BIO	Sigrunn Eliassen	23. Apr. 2020, BIO
UNIS digital ongoing education and digital exams, meeting for staff	Hanne H. Christiansen, AG, UNIS & Ivar Nordmo, UiB	4. May 2020 UNIS
Teaching fall 2020 – online or on-campus	Sigrunn Eliassen	4. Jun. 2020, BIO
Teacher meeting at BIO: Learning outcomes and alignment in the study programme	Sigrunn Eliassen, Kristin Holtermann & Cecilie Boge	26. Oct. 2020, BIO
Teacher seminar at BIO: experiences with digital and hybrid teaching in the autumn 2020. Perspectives from students and teachers	Sigrunn Eliassen & Vigdis Vandvik	26. Nov. 2020, BIO
Sharing session: What would you like your TA to know?	Pernille Bronken Eidesen, Simone Lang & Tina Dahl	7. Dec. 2020, UNIS

<b>bioCEED Teacher/staff development BIO/UNIS activities 2020</b>		
<b>Topic</b>	<b>Speaker(s)/Facilitator(s)</b>	<b>When and where</b>
Course: Collegial Teaching and Learning – in STEM Education (MNPED660, 5 ECTS)	Roy Andersson	2019/20, MN UiB
Academic writing workshop for PhD students	Simone Lang, UNIS	2020/21, UNIS
Workshop: Study environment and student conflict management	Hanne Rieber & Tone Toft, UiT	21. Jan. 2020, UNIS
Workshop for BIO teachers (100 club, redesign and bioWRITE): helping students grow as disciplinary writers	Lene Nordrum, Lund University	28. Jan. 2020, BIO
Workshop: The well-structured teaching portfolio	Roy Andersson & Harald Walderhaug (UiB)	26. Feb. 2020, MN
Samarbeidslæring (workshop for 100 club)	Susan Johnsen & Anja Møgelvang Jacobsen	4. Jun. 2020, BIO
Teachers Assistant Course	Lucas Jenø, Christian Bianchi Strømme & Dagmar Egelkraut	24.-25. Aug. 2020, BIO
Workshop on intended learning outcomes (for redesign-team)	Kari Bjørgo Johnsen and Marianne Huse, UiB Læringslab	29.sep 2020, UiB
Workshop: How to start writing a well-structured teaching portfolio	Anders Ahlberg, Roy Andersson & Pernille Bronken Eidesen	26. Oct. 2020, UNIS
Learning Forum 2020	Malcolm Langford, UiO, Hilde Damsgaard, USN & internal speakers	27.-29. Oct. 2020 UNIS
Workshop: The well-structured teaching portfolio	Roy Andersson, Harald Walderhaug & Stein Dankert Kolstø	29. Oct. 2020, MN
Workshop: Teaching Portfolio Workshop (for ETP applicants)	Roy Andersson & Anders Ahlberg (iEarth)	Nov.-Dec. 2020, MN/UNIS
Workshop: Engaging students during remote instruction - online workshop	Sehoya Cotner, Sigrunn Eliassen, Vigdis Vandvik & teachers from UNIS	Jan.-Feb. 2021, BIO and UNIS
Teachers Assistant Course	Lucas Jenø, Christian Bianchi Strømme & Dagmar Egelkraut	25.-26.Feb. 2021, BIO/Online

bioCEED Student meetings & seminars 2020		
Topic	Who	When and where
biORAKEL	The Oracles	Irregular/online, 2020, BIO
Student workshop: Longyearbyen survival workshop	Hanne Rieber & Tone Toft, UiT,	20. Jan. 2020, UNIS
bioBREAKFAST	Stud representatives, PhD student Peter Betlem, AG & master student Anne Bruls, AB	10 Mar. 2020, UNIS
Digital seminar for students: How to adapt to the current student life and prepare for the exam period	Ane H. Bjørsvik, Hanne Rieber, UiT, Tone Toft, UiT & Ivar Nordmo, UiB	3. Apr. 2020, UNIS
bioCEED seminar (digital): Scientific funding	Pernille Bronken Eidesen	17 Apr. 2020, UNIS
Student seminar: Motivation	Lucas Jenø	24. Apr. 2020, BIO
Student poster symposium (online)	Students from courses STG214, SDG215, BIO241, BIO299 presented posters	13. May 2020 BIO
unisBREAKFAST (former bioBREAKFAST)	Stud representatives, Master students Mikkel J. Breedveld & Lukas Frank from AGF	30. Sept. 2020, UNIS
Workshop Learning Forum: Group dynamics in a collaborative work	Ivar Nordmo, UiB	22. Oct. 2019, UNIS
Workshop Learning Forum: Science communication for early career scientists: from peer review journals to popular science	Richard Hann, NTNU	28. Oct. 2020, UNIS
Student workshop on Learning Outcomes	Student organisations, organized by student representatives and bioBEES	16. Nov. 2020. BIO
unisBREAKFAST (former bioBREAKFAST)	Stud representatives, master student Markus Floer (AGF) & former master student Vanessa Pitusi (AB)	26. Nov. 2020, UNIS
Student poster symposium (online)	Students from courses BIO299, BIO250, BIO300A presented posters	2. Dec. 2020, BIO
Introduction to teaching assistant course	Lucas Jenø	8. Jan. 2021

## bioCEED reaching out - conferences, events, meetings and seminars

Presentations at scientific conference (peer reviewed) 2020				
Title	Occasion	Contribution	Speaker	When and where
Going high: Biodiversity and ecosystem functioning along some of the world's most striking altitudinal gradients OR how a plant functional traits course travelled three continents and counting.	<i>International Humboldt Day 2020</i>	Invited talk	<b>Vandvik V</b> , Halbritter AH, Chacon Labella J, Telford RJ, 105 PFTC participants, Cotner S & Enquist BJ.	International Biogeographic Society, September 17 <sup>th</sup> , online.
The power of experimental macroecology in disentangling global change impacts on nature – and in educating the next generation ecologists	OIKOS2020	KEYNOTE	<b>Vandvik V.</b>	March 3 <sup>rd</sup> -5 <sup>th</sup> , Reykjavik, Iceland
Building the research-teaching nexus in ecology: three courses to get there.	OIKOS 2020 conference, Reykjavik, Iceland	TALK	Eliassen S., Ø. Fiksen Ø. Varpe.	04. March 2020
Educating future scientists-moving from data to action	S.It.E Congress 2020	Round table discussion, invited	Pernille Bronken Eidesen	14th of September, Lecce, Italy online

Presentations at seminars, workshops, conferences, etc. 2020				
Title	Occasion	Contribution	Speaker	When and where
Perspectives on educational quality – from and SFU	NOKUT strategy seminar	Talk and panel discussion	O Førland	13. Jan 2020, Oslo
Strategies for Developing a Teaching and Learning Culture – at the Institutional, Faculty and Departmental levels	TeLEd Seminar UiB	Seminar	R Andersson	28. Jan. 2020, UiB
Studentaktiv forskning og overførbare ferdigheter i redesign av biologi-utdanningen.	Project application workshop- Program for student active learning, DIKU	Presentation	S Eliassen	19. Feb. 2020, UiB
Overgang til digital undervisningsformer på BIO – studentundersøkelse.	1) Teacher seminar MN Faculty, UiB. 2) iEarth seminar 3) Head of departments meeting, MN-Fac	Presentation	S Eliassen	29. April 2020 27. May 2020 24. June 2020
Education X open science workshop.	<i>Living Norway colloquium 2020 Towards openness and transparency in Applied Ecology</i>	Invited workshop	Fraser H, Salgugero-Gomez R, Strydom T, Halbritter A, Arregoitia LDV & Vandvik V.	12-13 Oct. 2020, NINA, Trondheim

Student peer assessment as an educational tool	Department Day, Informatics/UiB	Workshop	Roy Andersson	2 8. May 2020, UiB
SFU info	Learning Forum	Presentation	P B. Eidesen, D Walch & C Hess	28. Oct. 2020, UNIS
Student conflict management	Learning Forum	Sharing session	T Dahl, E Strømseng & L Håkansson	27. Oct. 2020, UNIS
Field work failure and the new professor	Learning Forum	Sharing session	S Lang & M Furze	27. Oct. 2020, UNIS
How to teach scientific writing	Learning Forum	Workshop	P B Eidesen & S Lang	28. Oct. 2020, UNIS
Hvorfor full revolusjon* er nødvendig. *av studiebarometeret.	Seminar om Studiebarometeret - NOKUT	Invited talk	Jeno & Vandvik	2. Nov. 2020, Oslo
Student involvement in SFU	SFU nettverkssamling	Presentation	Ø Vabø	11. Nov. 2020,
Konkurranserearena for utdanningskvalitet – hvordan virker den?	UiB studiekvalitetsseminar	Presentation	V Vandvik	9. Dec. 2020. UiB
Når studentene er med å bestemme	UiB studiekvalitetsseminar	Presentasjon	S Eliassen	9. Dec. 2020, UiB

## bioCEED publications 2020

- Geange, S. R. *et al.* Next-generation field courses: Integrating Open Science and online learning. *Ecol. Evol.* 1–11 (2020). doi:10.1002/ece3.7009
- Chacón-Labela, *et al.* (2020). From a crisis to an opportunity: Eight insights for doing science in the COVID-19 era and beyond. *E Ecology and Evolution* 2020;00:1–9. DOI: 10.1002/ece3.7026
- Patrick L, Thompson S, Halbritter AH, Enquist BJ, **Vandvik V** & Cotner S. 2020. Adding value to a field-based course with a science communication module on local perceptions of climate change. *Bulletin of the Ecological Society of America* 101(3): e01680. doi: 10.1002/bes2.1680
- Cotner, S, *et al.* 2020. International scientists need better support during global emergencies. <https://www.timeshighereducation.com/blog/international-scientists-need-better-support-during-global-emergencies> (accessed 17 Feb 2021)
- Jeno, L. M., Dettweiler, U., & Grytnes, J-A. (2020). The effects of goal-framing and need-supportive app on undergraduates' intentions, effort, and achievement in mobile science learning. *Computers & Education*, 159, 1-14; [10.1016/j.compedu.2020.104022](https://doi.org/10.1016/j.compedu.2020.104022)
- Cotner, S., Jeno, L. M., Walker, JD., Jørgensen, C., & Vandvik, V. (2020). Gender gaps in the performance of Norwegian biology students: The role of test anxiety and science confidence. *International Journal of STEM Education*, 7(55); 10.1186/s40594-020-00252-1
- Jeno, L. M., Diseth, Å., & Grytnes, J-A. (in press). Testing the METUX model in higher education: Interface and task need-satisfaction predict engagement, learning, and well-being. *Frontiers in Psychology*; 10.3389/fpsyg.2021.631564
- Vandvik V, Halbritter AH, Yang Y, He H, Zhang L, Brummer AB, Klanderud K, Maitner BS, Michaletz ST, Sun X, Telford RJ, Wang G, Althuizen IHJ, Henn J, Erazo Garcia WF, Gya R, Jaroszynska FOH, Joyce BL, Lehman RL, Moerland MS, Nesheim-Hauge E, Nordås LH, Peng A, Ponsac C, Seltzer L, Steyn C, Sullivan MK, Tjendra J, Xiao Y, Zhao X & Enquist BJ. 2020. Plant traits and

vegetation data from climate warming experiments along an 1100 m elevation gradient in Gongga Mountains, China. *Scientific Data* 7(189): 1-15. doi: [10.1038/s41597-020-0529-0](https://doi.org/10.1038/s41597-020-0529-0)

Gya, R., & Bjune, A. E. (2021). Taking practical learning in STEM education home: Examples from do-it-yourself experiments in plant biology. *Ecology and Evolution*.

### bioCEED online and in the media

- **Monthly bioCEED Newsletter:** <http://bioceednews.w.uib.no/>
- **bioCEED Web pages:** <http://bioceed.w.uib.no/>
- **DIKU SFU Newsletter:**
- **Twitter:** @sfubioceed @VVandvik @OysteinVarpe @lucas\_jeno @Frueidesen @bioCEED\_JS @oddfriidforland
- **Facebook:** <https://www.facebook.com/bioceed/>
- **Facebook UNIS:** <https://www.facebook.com/bioceedUNIS>
- **Instagram:** sfubioceed
- **“A tribute to the Scholarship of Teaching and Learning”,** Øyvind Fiksen
- **NOKUT-podden** (<https://www.nokut.no/om-nokut/nokut-podden/>):
  - #1 Den vanskelige samtalen. Intervju med Vigdis Vandvik
  - #8 Den om studenter som underviser. Intervju med Sehoya Cotner
  - #10 LIVE –pod. Gjest: Oddfrid Førland
  - #19 Den om merittering av undervisere. Intervju med Øyvind Fiksen
  - #20 Den om å velge god vurderingsform del 1. Med Arild Raaheim
- **Kvalitetstid – en podkast fra Diku**
  - Er kulturendring en forutsetning for å kunne jobbe med innovasjon i utdanning? Intervju med Vigdis Vandvik
- **Op -eds**
  - *“Vi vil ha full revolusjon: Studiebarometeret 2.0!”* (Vandvik, Jenø, Raaheim, Hole, Velle) *Krono.no* 8.feb 2020: <https://khrono.no/vi-vil-ha-full-revolusjon-studiebarometeret-20/458917>
  - *“Ny vår for undervisning”* *Forskerforum* 6.feb 2020 (interview with Pernille Bronken Eidesen and Øyvind Fiksen, among others): <https://www.forskerforum.no/gjer-karriere-med-undervisning/>
  - *Hvis klimakonkurransen skal fungere, er det noen ting man bør tenke på.* *Krono* 6 des, Vigdis Vandvik, Lucas Jenø, Joachim Tøpper <https://khrono.no/hvis-klimakonkurransen-skal-fungere-er-det-noen-ting-man-bor-tenke-pa/424985>
  - *Transforming science education to meet the needs of today’s students and tomorrow’s science.* Blog post, Living Norway website. Law E, **Vandvik V**, Grainger M, Nilsen EB. <https://livingnorway.no/2020/11/05/transforming-science-education-to-meet-the-needs-of-todays-students-and-tomorrows-science/> November 5<sup>th</sup>



- [Relevans, lissom?](#) Snevert markedstilpasset kompetanse er neppe det morgendagens arbeidsgivere trenger. Velle, G., Førland, O., Haave, M., Jenø, L, Strømme CB, VAndvik, V. *Khrono*, 8<sup>th</sup> June 2020.
- *Aune-utvalget vil gi bråstopp i utviklingen av gode vurderingsformer.* Langford M, Larsen JMR, **Vandvik V**, Vabø ØS, Sindre G, Gjesteland T, Samir H, Malthe-Sørensen A, Bakke J & Vestre JM. *Khrono* June 30<sup>th</sup>.
- *International scientists need better support during global emergencies.* Cotner S, Enquist BJ, Chacon J, Maitner BS, Farfan-Rios W, Michaletz S, Gauthier T-LJ, **Vandvik V**, Hošková K, Pierfederici ME, Quinteros-Casaverde NL, Sanchez Diaz E, Jessup L, Strydom T & Von Oppen J. *Times Higher Education*, April 17<sup>th</sup>.
- Hearings
  - Along with 5 other SFUs, bioCEED responded to the hearing regarding the revision of the Act relating to universities and university colleges. An important issue we addressed [in our comments](#) is how the law should facilitate constructive alignment between learning outcomes, teaching and assessment.

See also our [web archive](#) for press.

### bioCEED platforms

- bioST@TS : <https://biostats.w.uib.no/>
- bioPRACTICE student blogs: <https://biopraksis.w.uib.no>
- bioPITCH: <https://biopitch.w.uib.no/>
- Learning Arctic biology: <https://www.learningarcticbiology.info/>
- Virtual field guides, Svalbard: <https://360.learningarcticbiology.info/>
- Internship students blogs from the AB-208 course: <https://blog.learningarcticbiology.info/>
- Teach2Learn: <https://teach2learn.w.uib.no/>
- ArtsAPP: <https://artsapp.uib.no/> and Identify arctic plants with your phone: <https://www.youtube.com/watch?v=i1IPoDaZrvo>
- BioWRITE: <https://biowrite.w.uib.no/>
- Larvae Knowledge Incubator: <https://lki.w.uib.no/> , project leader Ivar Rønnestad.

### Awards

Awards 2020		
Who	Title	From
Sigrunn Eliassen	Olav Thon Stiftelsens nasjonale pris for fremragende undervisning	Olav Thon Stiftelsen

Name	Function in bioCEED, position	Unit
Vigdis Vandvik	Centre director (2014-2020), professor	BIO, UiB
Sehoya Cotner	Prof II (2016-2020) Centre director (2021-), professor	BIO, UiB
Pernille Bronken Eidesen	Deputy Centre director (2014-2021), Associate professor	AB, UNIS
Stephen Coulson	Deputy Centre director (2021-), professor	AB, UNIS
Oddfrid Fjørland	Centre coordinator, PhD student	BIO, UiB
Jonathan Soulé	Senior engineer	BIO, UiB
Tina Dahl	Advisor, adm. and tech support	AB, UNIS
Eike Stübner	Staff member, adm support	AB, UNIS
Kristin Holtermann	Project coordinator	BIO, UiB
Roy Andersson	Associate professor II, academic developer	bioCEED
Lucas Jenö	Associate professor	PED,UiB
Gro van der Meeren	Core team member, senior scientist	IMR
Marius Ole Johansen	PhD candidate	bioCEED
Anja Møgelvang Jacobsen	PhD candidate	bioCEED
Christian Bianchi Strømme	Post doc	bioCEED
Sigrunn Eliassen	PI, associate professor	BIO, UiB
Simone Lang	Core team member, associate professor	AB, UNIS
Gaute Velle	PI, researcher, ProfII	Norce /BIO, UiB
Jorun Nylén	Core team member, associate professor	BIO, UiB
Adèle Ménnerat	PRIME researcher	BIO, UiB
Anne Laure Simonelli	PRIME postdoc	BIO, UiB
Kristin Holtermann	Administration, project coordination	BIO,UiB
<b>Student partners:</b>		
Marie Sofi Brastad	student representative	AB, UNIS
Anne Bruls	student representative	AB, UNIS
Daniela Walch	student representative	AB, UNIS
Christina Hess	student representative	AB, UNIS
Ørjan Vabø	Student representative	BIO, UiB
Ingvild Straumøy	Student representative	BIO, UiB
Sondre Olai Spjeld	Student representative /bioBEE	BIO, UiB
Pernille Eyde Nerlie	Student representative /bioBEE	BIO,UiB
Jørund Johansen	Student research assistants (bioBEE)	BIO, UiB
Tonje Totland	Student research assistants (bioBEE)	BIO, UiB
Lars Martin Myhre	Student research assistants (bioBEE)	BIO, UiB

## Externally funded projects (granted) 2014-

Granted by	Project title	Project period	Funding	PI/Main partner
DIKU Dig	<i>MOVUL – Mobilbasert vurdering som læring</i>	2020-2021	550 KNOK	L.M. Jenø
DIKU Aktiv læring	<i>Utvikling ,testing og evaluering av verktøy og vurderingsformer som fremmer meningskapende samsvar i feltundervisning</i>	2019-2022	4800 KNOK	P.B. Eidesen (UNIS+ BIO)
DIKU Aktiv læring	<i>Studentaktiv forskning og overførbare ferdigheter i redesign av biologiutdanningen</i>	2019-2022	4500 KNOK	S. Eliassen
Thon Stiftelsen	<i>Utvikling av et høy-arktisk, tverrfaglig feltlaboratorium for forskning og undervisning</i>	2019-2021	1350 KNOK	P.B. Eidesen (UNIS)
Thon Stiftelsen	<b>STUDENTAKTIV FORSKNING – FRA VUGGE TIL GRAD</b>	2019-2021	1500 KNOK	V.Vandvik, O.Førland, R.Gya, E. Lygre (BIO)
Thon Stiftelsen	<i>Pris for fremragende undervisning</i>	2019	500 KNOK	L.Rønnestad (BIO)
Olaf Grolle Legat	<i>Biology students' knowledge in species identification</i>	2018	10 KNOK	L.M. Jenø
Svalbard Environmental Fund	<b>Artsapp for Svalbards flora</b>	2019-2022	200 KNOK	P.B. Eidesen (UNIS)
UiB	<i>Learning Environment Prize to biORAKEL</i>	2018	50 KNOK	Core team of students (BIO)
NFR, Finnud	<i>ArtsApp: How technology impacts motivation and interest for learning species</i>	2018-2021	5900 KNOK	J.A. Grytnes (BIO)
NFR/DIKU Intpart	<b>RECITE- Research and Education Partnership in Climate Change Impacts on Terrestrial Ecosystems</b>	2018-2020	4500 KNOK	V. Vandvik (BIO)
Svalbard Environmental Fund	<b>Online learning platform for Arctic Biology</b>	2018-2020	140 KNOK	P.B. Eidesen (UNIS)
NFR/DIKU Intpart	<i>ExperTS - Experiments, Traits, Synthesis: Using knowledge from global ecological experiments to validate, assess, and improve trait-based theory</i>	2019-2021	4500 KNOK	V. Vandvik (BIO)
NFR/DIKU Intpart	<b>PRIMA LEARNING - Connecting hands-on-Practice and Innovative MARine ecological sampling methods and analysis tools for enhancing student LEARNING"</b>	2018-2020	4500 KNOK	A.G.Salvanes (BIO)
NFR/DIKU Intpart	<i>Excel AQUA - Norway-Japan Partnership for Excellent Education and Research in Aquaculture</i>	2017-2019	4500 KNOK	Rønnestad (BIO)
NFR/DIKU Intpart	<i>FILAMO - Connecting Field work and Laboratory experiments to numerical MOdeling in a changing marine environment</i>	2017-2019	3960 KNOK	Ø.Fiksen (BIO)
Thon Stiftelsen	<i>Numerical Competence and Student-Active Research</i>	2017-2019	1400 KNOK	Eliassen, Varpe, Soulé
SiU, IntPART	<i>IScope (integrating Science of Oceans, Physics and Education)</i> Project number 249718	2016-2018	4345 KNOK	K.Pittman, (BIO)
Thon Stiftelsen	Research project student-active research: <i>Økosystem, klima og variasjon i eit «mini-havøkosystem»: ein vestnorsk fjord</i>	2016-2018	1137 KNOK	AG. Salvanes, (BIO)
SiU - High North Programme	<i>TraitTrain. Comparing climate change impacts on High North vs. Alpine ecosystems through research and training in trait-based approaches HNP-2015/10037</i>	2016-2018	1500 KNOK	V. Vandvik. (BIO/UNIS)
Norgesuniversitet	Artsapp: En applikasjon for enklere artsidentifikasjon	01.01.2015-30.12.2017	550 KNOK	JA. Grytnes (bioCEED)
Olsens Legat	<i>Effekten av ArtsAPP på studenters læring og motivasjon</i>	2015-2016	47 KNOK	L. Jenø (bioCEED)

Thon Stiftelsen	Excellent Teaching Award	2015	500 KNOK	C.Jørgensen (BIO)
Thon Stiftelsen	Excellent Teaching Award	2015	500 KNOK	K.Pittman (BIO)
UiB	Learning environment Award	2015	50 KNOK	C. Jørgensen (BIO)
WUN Research Mobility	Research stay at University of Rochester, USA,	Sept-Oct 2015	36 KNOK	Lucas Jenø (bioCEED)
UHR	Contribution to for talk at MNT-conference 2015	18-19.03.2015	75 KNOK	Ø.Fiksen, JA Grytnes (bioCEED)
NFR- FINNUT programme	<b>PRIME - How Implementation of PPractice can IMprove relevance and quality in discipline and professional Educations (knowledge building project). NFR Project number: 238043</b>	<b>01.08.2014-01.08.2018 (ext 2020)</b>	<b>7000 KNOK</b>	<b>G. Velle (bioCEED/Uni)</b>
SiU- UTFORSK	TRANSPLANT.Student research experience linked to an international research project.	2014-2016	1109 KNOK	V.Vandvik. (BIO)
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	JA Grytnes. (bioCEED)
UiB, PEK-programme	<i>Sammen for bedre læring</i>	03.04.14-03.04.15	280 KNOK	A. Raaheim (UiB)
Research Council of Norway-FINNUT	Travel scholarship for developing projects – University of Otago	autumn 2014	160 KNOK	PB Eidesen (AB)