



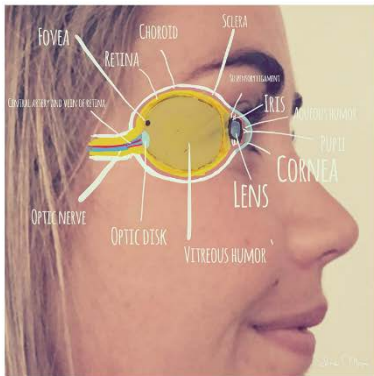
Centre for
Excellence in
Education



Interim evaluation – Centre for Excellence in Education (SFU) 2017:

bioCEED Action Plan

Phase Two



Preface

This Action Plan marks the final stage in bioCEED's contributions to the SFU midterm evaluation. Here we are not repeating the information given in the annual reports, self-evaluation, or during the site visit, but rather building on all these and specifying and refining our future plans in specific action points. In doing this, we have paid particular attention to the two reports provided by the Evaluation Committee, discussions during the site visit, and feedback to our draft Action Plan.

The Action Plan has been developed through discussions in the Steering Committee, supported by input from bioCEED Board and Advisory Board (AB) meetings in May 2017, and especially from inputs from the joint bioCEED Board and AB seminar in September 2017.

The aims and intended outcomes from the second centre period build on the goals and achievements from the first period and are supported and monitored through a number of specific actions and outputs. In developing the Action Plan for the second funding period, we realized that the detailed format used in the first funding period is no longer necessary. This Action Plan is therefore more condensed, focusing on identifying main intended outcomes within each of the four focus areas identified in 2016, and monitoring progress towards these in the form of specific actions towards our intended outcomes, with a number of measurable targets, including outputs, indicated for each action.

As stated in the mid-term evaluation report, bioCEED will now focus on aligning and mainstreaming our work, while maintaining the project-based SoTL culture and the educational research focus we developed in the first funding period. We will focus on:

- **Mainstreaming** bioCEED innovations into the relevant formal structures and fora (e.g., programmes, institutional strategies and systems, decision-making structures, policies, rules and regulations at local to national levels) to secure continuity beyond the centre period, application beyond the centre and our host departments, and also free up bioCEED resources and personnel for new activities.
- **Alignment** of different activities will allow us to make optimal use of our platforms, within-course initiatives, strategic program development, and quality assurance systems. This will help develop truly constructively aligned study programs, focusing on developing key skills and competences through the curriculum.
- Finally, the **collegial SoTL culture** and associated **educational research** will benefit educational development, effective assessment, student learning, job satisfaction among both teachers and supporting staff, collegiality, and institutional outcomes.

As more actions are ready for mainstreaming, and as pilot projects come together and are aligned, the role of bioCEED changes from being the driving force behind specific concrete interventions to a coordinator contributing support and producing and communicating researching outcomes. This role will be strengthened in the years to come.

On behalf of the bioCEED team, we thank NOKUT for a constructive mid-term assessment process during 2017. We look forward to continuing our contributions to excellence in Higher Education.

Pernille B. Eidesen, Tina Dahl, Oddfrid T.K. Fjørland, and Vigdis Vandvik

I. VISION

bioCEED’s vision is to develop relevant biology educations that fill future needs in science and society by connecting scientific knowledge, practical disciplinary and transferable skills, and societal applications. These connections should guide the development of curricula as well as teaching and learning methods throughout course portfolios and programmes.

bioCEED has been a catalyst, initiating projects that facilitate the interplay between the corners of the biological triangle: biological theory, practical skills, and societal relevance (Phase 1, Fig. 1). The interactions have created tensions and feedback loops, which have facilitated content curriculum development (i.e., a movement towards a more integrated triangle; Phase 2, Fig. 1). bioCEED has thus progressed from a focus on “how” to teach and learn biology towards a focus that also concerns “what” biology education is and should be.

bioCEED’s main approach towards achieving this vision is through developing a scholarly quality culture among teachers and learners. This means that educational innovations and practices are founded in relevant biological and educational theory, and that learning outcomes are documented, tested, and critically assessed. Such a culture will both allow innovations and innovators to flourish, provide an ideal testing ground for those innovations, and allow critical assessment of their role in an aligned curriculum. This integration process will be continued and strengthened in Phase 2. Many of the actions set out for Phase 1 are now completed, allowing us to mainstream these into the daily operation. This creates room for new priorities and higher-level contributions, allowing us to focus more on integration across the three ‘corners’ of the triangle and on developing external collaborations and contributions.

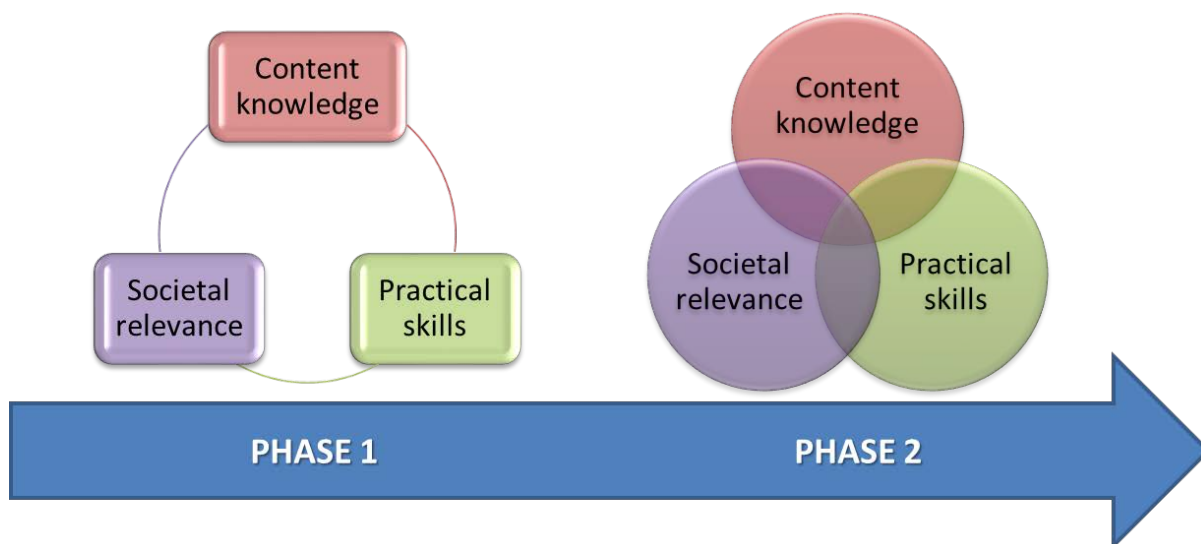


Figure 1. The evolution in how the bioCEED triangle has been understood and used – from the early-stage focus on interlinking three different and distinct aspects within the domain of biology, to the later-stage more holistic approach expanding the scopes of each of the three aspects, while also integrating and linking them more closely with each other.

II. Centre objectives

We here describe the intended outcomes for each of the bioCEED focus areas, with the planned actions and associated measurable targets for Phase 2. Each action is aimed at specific audiences¹ at different levels². The planning and execution of these actions will involve different bioCEED and partner institution members, including our biology staff and students, technical and administrative staff, leadership, and local, national and international collaborators (see also III). Care will be taken to involve students as partners at all levels and phases of the actions and projects.

Focus area 1: Teacher culture and educational leadership

During Phase 2, bioCEED will step up to take a leading role in transforming the perceived roles and functions of the teacher culture and educational leadership in higher education. The development of a collegial teacher culture, based on SoTL and inspired by the research culture, has been a major success of bioCEED Phase 1. We will now take this outcome to the next level. Locally, we will act to broaden and deepen (A1, A2, A3), assess, document and disseminate (A1, A3, A4, A7), and institutionalize (A3, A6) activities and processes towards strengthening the collegial SoTL teacher culture. Nationally and internationally, we will move from case-based sharing of experiences with various actors towards more general and wide-reaching impacts. We will research and publish new knowledge on critical success factors (A4, A7), and we will communicate our experiences via various more general channels to achieve HigherEd community (A8), and policy (A6) impact.

An important bioCEED outcome is to stimulate and guide the development of strong educational leadership that recognizes and explicitly values effective teaching practices and high-impact contributions to the teacher culture. Based on realized and documented impacts on local practices within bioCEED's partner institutions and on institutional and national policies, we will work to strengthen evidence-base, identify success factors, and promote development of similar mechanisms across the HigherEd sector in Norway and internationally (A5, A6).

Actions	Audience	Targets
A1. Offer project funding and support to stimulate collegial SoTL-based teaching development	Biology educators locally / nationally	Projects completed (15) Innovations implemented (>10) Outcomes and impacts documented (>5 scientific papers published)
A2. Work with the Pedagogic Academy to develop collegial fora and a SoTL culture at the faculty level	MN Faculty	Active and visible Pedagogic Academy Staff participation in the fora (>40/yr.)
A3. In collaboration with the University Pedagogy Unit, develop courses for educators at different levels (TAs, PhDs, Tech/Admin, Teachers)	Partner institutions educators	Courses developed, evaluated, and implemented (4 courses) Good participation (10/course/yr.)
A4. Research impact of educator course participation on teaching practice and student outcomes	HigherEd internationally	Impacts documented and shared (6 conference presentations, 2 papers) Published papers (2)
A5. Contribute to develop and assess impact of educational leadership	Partner institutions, at all levels	EdLead training module(s) developed EdLead has clear role
A6. Contribute to the development and implementation of educational merit systems	HigherEd in Norway	Process participation (3 institutions) Institutional collaboration (2 inst.)
A7. Develop a research project to assess role of teacher culture for educational quality in HigherEd	RCN FINNUT Programme	Project developed, funded, and successfully completed. Papers published (>3)
A8. Based on bioCEED projects, organize and contribute to workshops and research on SoTL culture development	Teachers, students, HigherEd internationally	Workshops arranged (>3) Well attended (>30 participants)

¹ E.g., students, teachers, programmes, biology educations, leadership, policy, and/or the wider HigherEd community

² E.g., locally, nationally, and internationally

Focus area 2: Innovative teaching

In Phase 2, bioCEED will use experiences from pilot studies and associated research from Phase 1 to establish a model for an integrated biology education at program-level, with **constructively aligned curriculum and assessment** focusing on key skills and competences in biology.

We will achieve this through new transdisciplinary projects, and further integration and development of established skills platforms (A9, A10, A11). We will involve students and stakeholders in building and updating the models, ensuring relevance for both the biologists to be and their future employers (A12, A15, Focus area 3). We will facilitate and support the institutions by generating and sharing our knowledge (A14, A15, A17, A18). An important outcome from focus area 2 is published research on the impact of innovations on student motivation and learning (A16, A19, A20).

A key success criterion is involving students as partners in educational development and assessment of success. The ambitions of bioCEED also range beyond educational development within our host institutions. We will continue to collaborate with external partners, both within biology and beyond, to generalize approaches developed and lessons learned. We aim to establish ourselves as a model for educational transformation and curriculum development (A12, A13). Towards this, bioCEED will focus on connecting different projects and innovations into a holistic framework, aiming to support and facilitate course and program-level curriculum development vs. key skills and competences in biology education (i.e., alignment). This requires moving beyond the ‘coalition of the willing’. bioCEED’s role is in developing a teacher culture and collegium that is able and motivated to do this, and to keep doing it, rather than as a ‘service provider’ that conducts the programme transformation (Focus area 1).

Actions	Audience	Targets #
A9. Wider use of platforms across major courses, as a backbone for aligned bioSKILLS training across programmes	Teachers, students	Courses that use the platforms (>10) Staff and students contributing to develop them (>50)
A10. Develop and implement new bioSKILLS modules for key subject-specific and transferable skills	Teachers, students	Modules developed (4) bioSKILLS is backbone of skills training through curriculum
A11. Develop joint virtual and physical model systems to support training key skills and competences	Biology educations, teachers, students	Development of model systems (>3) Implementation into courses (>6)
A12. Develop program-wide ILOs for key subject-specific and transferrable skills	Programmes, teachers, students	Track change in course and programme subject and skills-related ILOs
A13. Develop quality assurance that effectively captures developments and their outcomes	Programmes, institutions, teachers, students	Document change in course and programme inputs and outcomes, focusing on skills and alignment
A14. Stimulate educational innovation through project funding and support. Prioritize projects with students as partners.	Biology educators and students locally and nationally	Projects completed (>20) ...with students as partners (>10) Innovations implemented (>15) Impacts documented (>7 papers)
A15. Establish student panel to advise development of innovative teaching modules and curricula	Programmes, Institutions	Panel meetings and reports (10) Innovations tested, implemented (>10)
A16. Research the impact of innovations on staff and student attitudes, learning, and motivation	Teachers, students, HigherEd internationally	Improved educational outcomes (>5) PhD (1) and MSc (4) theses Published papers (>5)
A17. Organize workshops on educational development at biological scientific conferences	HigherEd biologists internationally	Workshops arranged (>5) Well attended (>50 participants)
A18. Organize and contribute to workshops and research on innovative teaching	Teachers, students, HigherEd in Norway	Workshops arranged (>5) Well attended (>50 participants)
A19. Research project on outcomes of student-active research and inquiry-based learning	RCN FINNUT programme	Project developed, funded, and successfully completed (>4 papers)
A20. New PhD project on impact of digital learning and assessment tools on student learning and motivation	HigherEd internationally	Research papers published (4) Presentations at conferences (4) Guidelines developed

Focus area 3: Practical training

At the core of the bioCEED vision is that our students should be exposed to a wide range of authentic learning experiences. These come in many forms, and can 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. Towards this end, bioCEED will continue to build a conscious and well-developed relation with society, stakeholders, and biological research.

Developing and implementing such training components, both through full-on work placement courses with external partners (A21) and through in-house courses³ (see also Focus area 2), is a bioCEED priority. In particular, our work placement course (A21) offer unique opportunities for student involvement in curriculum development, course planning and execution, as students develop, document and report on their work and learning outcomes in close collaboration with the practice hosts and their university tutor. Through blogs and workshops the students communicate directly among each other and with external user groups. This enhances students’ future career trajectories by fostering their ability to make informed choices about career opportunities, learning strategies, key skills, and interests – ensuring useful outcomes for both students and employers.

During Phase 2, we will make more systematic use of our practice courses and components³. To better exploit their impact and role in learning we will make practice courses an integral part of the biology programme (A21). We will develop a manual for work placements in disciplinary educations to share experiences (A22). We will develop a consistent strategy for dialogue with stakeholders, including establishment of meeting places between HigherED, students and workplaces to exchange information and experiences (A22, A23, A24). We will repeat the bioCEED Survey in 2018 and 2022 (A25) to assess changes in student, staff and sector experiences and attitudes, and we will explicitly research the impact of different forms of practice on student outcomes and educational quality in higher education (A26).

Actions	Audience	Targets
A21. Revise and streamline the practice courses as a compulsory part of the disciplinary BSc programmes and ILOs	Biology educations, teachers, students	Practice integrated in all programmes All students have had practice course
A22. Develop and document ‘best practice of practice’ to enable transfer of experiences across disciplinary educations	Programmes, teachers, HigherEd	A manual for ‘work placement for better learning in disciplinary educations’
A23. Formalize ‘practice network’ with staff, students, and partners in the private and public sector	Private sector, public sector	Systematic development of work practice in biology education
A24. Establish a panel of end-users, staff and students to advise on biology education curriculum development to meet society’s need	Private sector, public sector, HigherEd	Panel established and active Recommendations followed up at programme and institutional level
A25. Carry out bioCEED survey 2018 and 2022	Programmes, teachers, students	Surveys completed and published Papers on change over time in student, staff, and sector experiences (2)
A26. Research the impact of different forms of practice on staff and student attitudes, learning, and motivation	Teachers, students, HigherEd internationally	Improved educational outcomes (>3) PhD (1) and MSc (2) theses Published papers (>4)

³We offer practical training that contributes to build subject and transferrable skills through our Work placement, Research practice and Dissemination practice courses, as well as in our more standard in-house biology courses, where lab, field, writing, communication, and numerical analyses components are integrated.

Focus area 4: Outreach

bioCEED has a well-developed and ambitious outreach strategy⁴, that describes who (bioCEED, our staff and students), how, why, and what we will communicate to different audiences and through different communication channels. Outreach is also key outcomes and assessment criteria of many the specific actions in Focus areas 1-3. In Phase 2, we will continue to develop our communication platforms (A27), summarize and monitor the overall output from, usage of, and impact of bioCEED’s platforms, research, and activities (A28).

Actions	Audience	Targets
A27. Develop bioCEED communication platforms; web page, bioSKILLS, newsletter, etc.	Teachers, students HigherEd	Platform content develops (10% yr.) Relevant reach locally and externally
A28. Contribute to scientific literature, public debate, and policy development vs. quality teaching and learning in HigherEd	Policy, society, teachers, students, HigherEd	Scientific papers (>5/year) opinion pieces (10/year) impacts on policy (1/year)

III. ORGANISATION AND MANAGEMENT AND CENTRE RELATIONS

The main organisational and management structures in bioCEED will be continued through Phase 2. The **Steering Committee** oversee daily operation, ensure that centre objectives are met, and allocate resources and responsibility. **Students** are involved as active and responsible partners. **bioCEED’s Board** oversee centre activities, and contribute to develop collaborations within our consortium and with external partners, and they will be used actively in Phase 2. The international **bioCEED Advisory board** (AB) is an important resource in strategic matters. Activities and outcomes are evaluated and summarized through the Annual Reports as one of many tools for monitoring and evaluating progress and success. The organisation, including the four strategic focus areas will be evaluated and adjusted, if necessary, during Phase 2. A large fraction of bioCEED activities are related to externally funded projects, and a key priority will be to increase the project portfolio while achieving a good balance of activities between partners. Appropriate mechanisms are in place for dealing with challenges relating to organisation, projects, collaboration, personnel and student relations. bioCEED has strong **institutional support** from UNIS and UiB. This support entails allocation of staff resources and PhD positions, funding, and involvement in and impact on institutional processes and policy development. Our host institutions will continue this level of support in Phase 2.

Student and stakeholder involvement in bioCEED is already strong⁵; they participate in leadership and management, and as co-creators of and active participants in our R&D projects, panels, meetings, and innovations. These aspects are further strengthened and profiled in Phase 2 through *specific actions within all focus areas*, supported by quantitative targets, and hence assessment criteria, associated with student and stakeholder involvement. Several bioCEED projects involve collaboration and partnerships with other biology educations in Norway and abroad, with other SFUs, and across HigherEd more generally⁶. International collaboration is ensured through our two adjunct professors⁷, staff and student exchange, through leadership of and participation in joint projects and networks⁸ and through incoming and outgoing mobility with relevant partners internationally.

⁴ For more information see Annual report 2016 (pp 19-20) and Self-evaluation report

⁵ See Self-Assessment, including additional information, and Annual reports for details

⁶ See Self-Assessment and Additional Information for specific information

⁷ R&D and policy development projects

⁸ E.g. RIVA institute, ISSOTL