

Lærarsamling BIO 2016

Bjørnefjorden gjestetun, Os.

Onsdag 30. november: avreise frå BIO 15:30 for dei som skal vere med fellesbussen.

Litt å bite i når vi kjem fram

Plenum:

17:00 : Velkomst v/ Ørjan

17:15: **Sehoya Cotner:** Kva føregår eigentleg i undervisinga på BIO? Resultat frå COPUS-undersøkingar våren 2016.

Diskusjon

17:45: **Case: Bruk av læringsutbytte i vurdering og tilbakemelding i BIO100** v/ Christian

18:15 **Gruppearbeid** – Programkartlegging (*Curriculum mapping*)

Vi ser på program og emne på BIO samsvar mellom programskildring og emne. Arbeidet er førebuing til workshop Dag 2. Gruppeinndeling etter studieretning (og antal påmeldte frå dei ulike retningane).

Bachelor i biologi	Master i biologi – Marinbiologi, Fiskeribiologi og forvaltning, Havbruksbiologi	Master i biologi – Mikrobiologi, Miljøtoksikologi, Utviklingsbiologi og fysiologi	Master i biologi – biodiversitet, evolusjon og økologi	Integrert master: Fiskehelse og HavSjø
Anne, Sigrunn, Ståle, Øyvind, Christian, Ida,	Dag, Audrey, Kristin H, Arne, Jeppe, Amund, Anne-Gro, Arild, Karin	Anders, Jon-Vidar, Odd-Andre, Ivar	John-Arvid, Lawrence, Aage, Richard, Vigdis	Are, Sigurd, Heidrunn, Sigurd, Andreas, Ivar

Materiale:

Program og emneskildringar (BIO Studiehandboka – delast ut på samlinga)

Biggs & Tang: Teaching for Quality Learning at University

[Vision and change in undergraduate biology education – a call to action \(2011\)](#)

[Future Fisheries Education \(2016\)](#)

[Fakultetets nettside om programrevisjon](#)

[Fakultetets nettside om læringsutbytte](#)

[Nivå-inndeling og utbytteskildringar NKR](#)

19:30: Middag

Torsdag 1. desember

09:00-11:30:

- Plenum - **Intro til workshops: Arbeid med studieprogram og emne 2016-2017**
Innleiing v/ Øyvind: Læringsutbytte i studieprogram og emne – kva skal studentane kunne etter at dei har studert hos oss?

Case: Bruk av læringsutbytte i vurdering og tilbakemelding 200- og 300talsemne v/ Audrey

Workshop 1 : Læringsutbytte og meningsfylt samsvar (Constructive alignment)

Bachelor i biologi	Master i biologi – Marinbiologi, Fiskeribiologi og forvaltning, Havbruksbiologi	Master i biologi – Mikrobiologi, Miljøtoksikologi, Utviklingsbiologi og fysiologi	Master i biologi – biodiversitet, evolusjon og økologi	Integrert master: Fiskehelse og HavSjø
Har LU en form og et innhold som gjenspeiler kjernen i vårt fagområde, og på en god måte beskriver det vi vil at studentene skal sitte igjen med				
Er LU formulert slik at de tydelig viser hvilket nivå programmet ligger på (bachelor eller master)?				
Er programmet med de ulike emnene bygd opp slik at det legger til rette for en hensiktsmessig progresjon og sammenheng?				
Er det variasjon i vurderingsformene fra emne til emne slik at studenten i løpet av programmet får prøvd ulike former for LU?				
Sikrer vurderingsformene at ferdigheter og generell kompetanse blir vurdert?				
Er vurderingsformene egnet til å finne ut om kandidatene/studentene har oppnådd LU ?				
Legger programmet og emnene opp til arbeidsformer med studentaktivitet og undervisningsformer som bidrar til at kandidatene/studentene oppnår læringsutbyttet?				

Gruppene (v/studieretningskoordinator) lagar ei oppsummering av diskusjonen og ein tabell med oversikt over samsvar mellom mål og faktisk innhald i programma som Programstyret og studieretningskoordinatorane kan bruke i vidare arbeid. Notatet kan gjerne innehalde forslag til endringar både i emna og i sjølve læringsutbytte for programmet.

11:30-12:15 Lunsj

12:15-15:00

- **Plenum: Presentasjon av resultat frå to av lærarkursprosjekta 2015/2016:**
- «Skriveferdigheter» i BIO sine emne og program
- «Numerisk kompetanse» i BIO sine emne og program
- bioSTATS – ein god ressurs for BIO-emne – og program

12:45-14:45

Workshop 2:

Overførbare ferdigheter : skrivning		Revisjon av emneskildring
Grunnemner - rapportskrivning: bioRAPPORT. Målet er å utarbeide ei plan for «arbeidsfordeling» og felles mal.	Skriving i BIO-emne og program - bioWRITE	Ditt emne - Undervisnings- og vurderingsformer og samsvar med LU. Mindre grupper jobbar med emneskildringane i emne dei underviser

14:45 Oppsummering

15:15 Bussen går til Bergen

Gruppearbeid 1 – Curriculum mapping

Curriculum mapping is a method to align instruction with desired goals and program outcomes. It can also be used to explore what is taught and how. The curriculum map is a table with one column for each learning outcome (LO) and one row for each course or required event/experience (or vice versa: each row contains a course and each column lists a learning outcome). Nyttig lesing: <http://simpson.edu/wp-content/uploads/2012/08/Creating-a-Curriculum-Map-Jan-2012.pdf>

	Program Outcome 1	Program Outcome 2	Program Outcome 3	Program Outcome 4	Program Outcome 5	Program Outcome 6
Course 1	X		X		X	X
Course 2	X	X	X	X	X	
Course 3	X				X	X
Course 4		X				X
Course 5		X		X	X	
Course 6		X		X	X	
Course 7	X			X		X
Course 8					X	X
Course 9	X				X	
Course 10		X		X	X	X

Ev nivå:

"I" to indicate students are introduced to the outcome

"R" indicates the outcome is reinforced and students afforded opportunities to practice

"M" indicates that students have had sufficient practice and can now demonstrate mastery

"A" indicates where evidence might be collected and evaluated for program

Hjelpespørsmål:

Coherence questions¹:

- Does each course contribute to the program learning outcomes (LOs)?
- Do we offer students enough learning opportunities for each program LO?
- Does any course try to do too much?
- For programs with many elective courses: is it possible some students won't be exposed sufficiently to an outcome?

¹ frå Yael Harlaps presentasjon og

https://manoa.hawaii.edu/assessment/workshops/pdf/facilitating_decisionmaking_handouts_2013-10.pdf

- Nivå 6 (bachelor): Which courses already use assessments that align with program outcomes?
- Nivå 7 (master): Where in the curriculum can we assess for mastery of the outcomes?

Er det læringsutbytter i programmet som ikkje er skildra i læringsutbytteskildringane (LU)?

Er det læringsutbytter i programmet som ikkje er oppfylt gjennom emna i programmet?

Er det manglar i læringsutbytteskildringen som vi meiner ein kandidat frå dette programmet bør kunne?

Design, data, and statistics - numerical competence and quantitative skills for BSc-students in biology

Sigrunn Eliassen, Jeppe Kolding, Jenny Smedmark, and Vigdis Vandvik

Report for the Collegial Teachers' Course 2015-2016, Department of Biology, University of Bergen, Norway

ABSTRACT

Biology as a natural science subject is becoming increasingly quantitative in approach, description and methodology. Numerical procedures and mathematical models are now commonplace features in the process of studying life and Nature. This development of the field has been partly neglected in the education of new practitioners. An increasing number of undergraduate biology students of today are perceived as lacking the necessary quantitative skills for making learned use of numerical methods. The problem is epistemological and has roots in tradition, teaching, preconceptions and motivation. Here we investigate the patterns and trajectory of envisaged learning outcomes in undergraduate biology teaching at the University of Bergen, Norway, with regards to basic numerical competence. We use surveys of course descriptions and interviews with students and teachers to map and illustrate the structure of explicit and implicit learning outcomes, teaching and expectations. We find that numerical proficiency is under-communicated and partly neglected in biology courses compared to general expectations. We also find a distorted alignment in the curriculum trajectory, where abstract theoretical concepts are taught before practical data handling and collection. We think that the lack of motivation for learning numerical methods observed among some students can be traced back to the distorted alignment and neglected emphasis on importance. In order to remedy the widening gap between practice and education we suggest a set of concrete learning outcomes with a more structured alignment and integration of the present curriculum. This approach has the added value of allowing the development of a personal 'numerical pedigree', which documents the acquisition of important job-relevant skills, for each student.

Writing as an integrated learning activity in BIO's Bachelor Programme in Biology: current status and recommendations for change

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Abstract

Writing is an important academic skill and an essential element of any university degree. Employers and graduate advisors expect students with a bachelor's degree in biology to be able to communicate persuasively in writing with both scientists and the general public. Although the employers of our candidates emphasize communicative skills, our bachelor programme has no strategy for assuring that biology graduates write well. Here we summarize how often and in what format writing assignments are given during our 3-year Bachelor Programme in Biology. Our main emphasis has been on the first 2 years of the programme, common to all students, but we have also looked into the 3rd year for all programme directions. We found that (1) there is limited writing activity during the two first years, but more during year three; (2) almost all writing assessments in the first two years are in the form of laboratory or field reports; (3) there are few signs of individual-level feedback, particularly from faculty, on writing assignments (with some the notable exceptions). We provide a rationale for a coordinated strategy to incorporate writing training in our programme, suggestions for improving writing, a timetable for developing specific writing skills, and also some specific advice to the basic courses in biology.

A Vision for Implementing Change

The recommendations discussed in this report include the following action items aimed at ensuring that the vision of the conference becomes an agenda for change:

1. Integrate Core Concepts and Competencies throughout the Curriculum
 - Introduce the scientific process to students early, and integrate it into all undergraduate biology courses.
 - Define learning goals so that they focus on teaching students the core concepts, and align assessments so that they assess the students' understanding of these concepts.
 - Relate abstract concepts in biology to real-world examples on a regular basis, and make biology content relevant by presenting problems in a real-life context.
 - Develop lifelong science-learning competencies.
 - Introduce fewer concepts, but present them in greater depth. Less really is more.
 - Stimulate the curiosity students have for learning about the natural world.
 - Demonstrate both the passion scientists have for their discipline and their delight in sharing their understanding of the world with students.

2. Focus on Student-Centered Learning
 - Engage students as active participants, not passive recipients, in all undergraduate biology courses.
 - Use multiple modes of instruction in addition to the traditional lecture.
 - Ensure that undergraduate biology courses are active, outcome oriented, inquiry driven, and relevant.
 - Facilitate student learning within a cooperative context.
 - Introduce research experiences as an integral component of biology education for all students, regardless of their major.
 - Integrate multiple forms of assessment to track student learning.
 - Give students ongoing, frequent, and multiple forms of feedback on their progress.
 - View the assessment of course success as similar to scientific research, centered on the students involved, and apply the assessment data to improve and enhance the learning environment.

3. Promote a Campuswide Commitment to Change
 - Mobilize all stakeholders, from students to administrators, to commit to improving the quality of undergraduate biology education.
 - Support the development of a true community of scholars dedicated to advancing the life sciences and the science of teaching.
 - Advocate for increased status, recognition, and rewards for innovation in teaching, student success, and other educational outcomes.
 - Require graduate students on training grants in the biological sciences to participate in training in how to teach biology.
 - Provide teaching support and training for all faculty, but especially postdoctoral fellows and early-career faculty, who are in their formative years as teachers.

4. Engage the Biology Community in the Implementation of Change
 - Promote more concept-oriented undergraduate biology courses, and help all students learn how to integrate facts into larger conceptual contexts.
 - Ensure that all undergraduates have authentic opportunities to experience the processes, nature, and limits of science.
 - Provide all biology faculty with access to the teaching and learning research referenced throughout this report, and encourage its application when developing courses.
 - Create active-learning environments for all students, even those in first-year biology courses.
 - Encourage all biologists to move beyond the "depth versus breadth" debate. Less really is more.