

SFU | MAGAZINE

NEWS FROM NORWAY'S LEADING EDUCATIONAL COMMUNITIES

AUTUMN/WINTER 2015

GLOBAL DROUGHT THREAT

Biology students participating in international research project

STUDENTS RECEIVING MATHEMATICAL FIRST AID

READY FOR THE CLASSROOM

First cohort of teacher education students with a master's degree under their belts

WHAT HAPPENS WHEN YOU HAVE TO START ALL OVER AGAIN?

Teacher challenged violin student



Centres of
Excellence in
Education

NOKUT

About the Centres of Excellence in Higher Education (SFU)

THE CENTRES OF EXCELLENCE IN HIGHER EDUCATION ARE

a national national prestige arrangement for higher
education established in 2010.

THE CENTRES OF EXCELLENCE IN HIGHER EDUCATION SHALL

develop quality initiatives relating to higher
education and teaching and highlight the equal
value of education and research.

THE CENTRES OF EXCELLENCE IN HIGHER EDUCATION HAVE:

given universities and university colleges a new
arena for competing in quality in higher education.



Centres of
Excellence in
Education

SOME QUICK FACTS ABOUT SFU:

- ▶ SFU status is awarded to educational communities that offer excellent quality of higher education and that are connected to a university or a university college
- ▶ The centres are granted NOK 4 million each year
- ▶ SFU status is awarded for a period of five years with possibility of an extension for five more years
- ▶ As of 2015, there are four centres
- ▶ The SFU arrangement is administered by NOKUT

CENTRES ARE TASKED WITH:

- ▶ Disseminating knowledge and research about education and teaching
- ▶ Inspiring other communities.
- ▶ Promoting and using R&D-based teaching.
- ▶ Testing new and innovative methods in teaching and education.
- ▶ Involving students.

The SFU arrangement is administered by NOKUT
Read more at www.nokut.no/sfu

CONTENT AUTUMN/WINTER 2015



Apply for status as a Centre of Excellence in Higher Education	4
Launching mathematics TV	7
What are the universities doing to develop excellence in teacher education?	11
ArtsApp goes coastal	13
The reshaping of a violinist	17
News from the SFU arrangement	21
Five tips about learning from Professor Stephanie Marshall	22



Terje Mørland
Director General, NOKUT



Apply for status as a Centre of Excellence in Higher Education

We in NOKUT couldn't have been more pleased when we read the item in the national budget that concerns the Centres of Excellence in Higher Education (SFU) arrangement. Here, we could read that the government proposes to increase the allocations to the Centres of Excellence in Higher Education to NOK 45 million.

This increase of NOK 25 million is a well-deserved declaration of confidence in the arrangement, which was established in 2010. It is a tribute to the existing SFU centres and the work they are doing to increase the prestige of higher education and teaching. Furthermore, it is an important prioritisation that shows the sector that investing in education should also pay off. The increased funding means that NOKUT can initiate a new call for applications for status as a centre of excellence in higher education.

We can begin this winter. I therefore issue the following challenge to universities and university colleges: If you have excellent communities at your institution that deserve attention and SFU status – apply!

The report of the Nordic Institute for Studies in Innovation, Research and Education (NIFU) on the ripple effects of the SFU arrangement concludes that the arrangement has contributed to raising awareness about the issue of quality in education. With SFU in mind, the educational institutions have prioritised resources for developing and improving education. Several universities and university colleges have set themselves the goal of

achieving centre of excellence status for one of more of their communities in their long-term strategies.

This is their chance to realise these plans. We in NOKUT believe that it is useful to discuss current practice and what must and should be prioritised. That is why we are now revising the criteria for SFU status in close collaboration with universities and university colleges. This will be discussed at a seminar on excellence in education on 4 and 5 November, among other things, and I am really looking forward to this work.

Now for this edition of the SFU magazine. This time, you can read about Sander, a student who, at master's level, suddenly had to relearn how to play the violin. This learning process would not have been possible without the close collaboration of his teacher Morten. You can learn more about MatRIC's new drop-in centres in mathematics and about what happened when ProTed organised the Knowledge Parliament.

One of the ideas behind this magazine is to inspire others to work on education by showcasing our centres of excellence. Our hope is therefore to plant the seed for new ideas in our readers – perhaps for an SFU application?

Enjoy the magazine!

Terje Mørland

MatRIC

Centre for Research,
Innovation and Coordination
of Mathematics Teaching



Simon Goodchild and Anne Berit Fuglestad, at the opening of MatRIC's drop-in centre in Kristiansand.



Centre for Research, Innovation and Coordination of Mathematics Teaching (MatRIC)

- SFU-status 2014-2018
- Affiliated to the University of Agder
- Simon Goodchild is the director of the centre



MatRIC's vision is to be a national resource centre that encourages and supports excellence in teaching and learning mathematics in natural sciences, engineering, economics teacher education and other higher education programmes with significant mathematical content.



> www.matric.no



MatRIC Centre for Research,
Innovation and Coordination
of Mathematics Teaching

Opened support CENTRES

This autumn, MatRIC opened two drop-in centres for mathematics at the University of Agder's campuses in Kristiansand and Grimstad. The centres' target group is students who want help with maths.

POPULAR SERVICE

It was clear from day one that word had spread about the centres, and many students were present when the Campus Kristiansand centre opened on 31 August. One of the students who had stopped by the centre, was first-year finance student Katrine Heinecke.

'I've never been very confident about maths, so this is a fantastic service for students who want a little help. It's also great that this is a low-threshold service. Every student who struggles with maths assignments can come here,' she says.

Another student who had stopped by the drop-in centre was finance student Tore Knutsen.

'I haven't studied maths for years, so it's

good to be able to come here to brush up my skills,' he says.

MATHEMATICAL CHALLENGES

Experience from Norway and elsewhere in Europe shows that for many students, is their biggest challenge. This is particularly the case in study programmes where mathematics is only one of many subjects, such as in engineering or finance.

'We see that many students find the transition from upper secondary school to university difficult. A poor understanding of mathematics is often behind low progression rates and students dropping out in the middle of their studies. We want to be a resource centre for all students studying mathematics as part of their study programme,' says Line Eielson Malde, project manager for MatRIC.



Many students have already started using the drop-in centres.

” We want to be a resource centre for all students studying mathematics as part of their study programme.

Line Eielsen Malde, project manager

INSPIRATION FROM ENGLAND 'The Norwegian University of Science and Technology (NTNU) has a similar service, but I think we are unique in the sense that we are a resource centre for all students at the University of Agder whose study programmes include mathematics, and not just for students in individual programmes. The inspiration for the drop-in centres mainly comes from England, where up to 90 per cent of universities have similar services. We try to learn from the best,' she says.

EXPERIENCE TO DATE Anne Berit Fuglestad, who is responsible for the academic side of the Kristiansand centre, is very pleased with the development thus far. 'There has been a steady flow of students already from day one,' she says. 'Of course, we would like even more students to visit the centre. But similar centres in England have emphasised that it takes some time before such centres really become established in the student community. We therefore believe that our numbers will increase as well. Meanwhile, both teachers and students report that they are satisfied with the service,' she continues.

'It's the same in Grimstad. We are getting good feedback



from students and teachers alike. We're very pleased that the teachers also think helping students at the centre is a positive experience. They say it inspires their own teaching,' says Svitlana Rogovchenko, who is responsible for the academic side of the Grimstad centre.

STUDENT POLITICIANS VERY POSITIVE TO THE DROP-IN SERVICE The student organisation in Agder has generally called for greater variation in teaching at the university. Deputy chair Helene Vedal is therefore pleased that MatRIC has opened the drop-in centres. 'This is a good supplement to more traditional teaching. The drop-in centres enable students to have a dialogue with the teacher, as opposed to the traditional one-way communication from a lecturer. The students meet an expert they can talk to. That's positive. Students who study mathematics come from very different backgrounds, and, at the centres, they will get help at their own level. This is a very positive measure for students at the University of Agder. We know that many students think mathematics is hard, and there is a high fail rate in this subject,' she says.

Launching mathematics TV Norwegian students struggle with mathematics when they go from upper secondary school to universities and university colleges. One solution: mathematics TV MatRIC wants to gather good teaching videos in one place, and the goal is to help students all over Norway.

'Students learn in different ways, and many find it useful when learning mathematics to be able to see a video that they can stop to have explanations repeated or something explained in a different manner,' says centre director Simon Goodchild.

This autumn, the centre launched mathematics TV, or MatRIC-TV (MTV), where students all over Norway can find good, short mathematics videos online, recorded in collaboration with teachers from several of the country's universities and university colleges.

The main target group is students going from upper secondary school to higher education. Surveys show that students in study programmes in Norway in which mathematics make up a substantial part only master 51% of the mathematics syllabus from upper secondary school at the start of the study programme. 'As a national centre of expertise, MatRIC has been concerned with finding ways of easing students' transition from upper secondary school. MTV will be available to everyone and the videos can be seen in whatever order you wish,' the centre director explains.

GATHERS VIDEOS IN ONE PLACE He also believes that MTV will be an important supplement to ordinary teaching. 'There are several common resources

available at primary and secondary school level. Now we want to ensure that students at university and university college level have the same resources.'

Many teachers at universities and university colleges post videos, but MatRIC wants to use MTV to create a website with high-quality teaching videos that students from all over Norway can easily navigate. Today, finding good learning resources isn't always easy. 'Mathematics videos prepared by teachers at university college level – all in one place – it doesn't get much better than that,' Goodchild concludes.

FROM ENGLAND AND NORWAY MatRIC TV has been launched with two tracks for interested students. The first consists of programmes from a MOOC (Massive Open Online Course) at Loughborough University in England, which MatRIC coordinator Morten Brekke has translated and recorded. 'These videos discuss mathematics at a very basic level, but it's important that students at our level really understand the basics.' The other track is a project assignment managed by MatRIC under the auspices of Higher Education Institutions. A group chaired by Professor Tom Lindstrøm of the University of Oslo has prepared videos that

explicitly aim to ease the transition from upper secondary school to university and university college level. 'A working group of six people have prepared the script and recorded the videos. This has been a collaboration between several institutions, and the group has worked together and agreed on a common method for recording the videos. We are actually quite proud of this in itself as well. It's splendid that we can work together in this manner, particularly considering the future. And it's a lot of fun,' says Simon Goodchild, who is convinced that the project has great potential.

Morten Brekke recording videos for MatRIC-TV.



WORKING TOGETHER TO EDUCATE THE BIOLOGISTS OF THE FUTURE

Mathematics is challenging and not very popular among biology students. In a new project, two centres of excellence in higher education are working together to reverse this trend.



Many of the big questions in biology require good knowledge of mathematics, and it is therefore important that students choose to study more mathematics. At the same time, we see that the majority of biology students drop mathematics at an early stage of their studies.

The collaboration between the MatRIC and bioCEED centres aims to introduce biology students to modelling activities during their first year of studies, thereby increasing their motivation to continue with mathematics.

'We hope that the project will contribute to more students recognising the usefulness of mathematics in their own field, thereby inspiring them to understand and work more with mathematics. Perhaps they will also go on to study mathematics longer than most of today's biology students,' says initiator and coordinator in MatRIC, Yuriy Rogovchenko.

POSITIVE STUDENTS

After the first meeting in April, the trial students at UiB were very pleased with the arrangement. After two meetings in September, the students are also happy: 'I really like seeing how mathematics and biology are mixed together into one subject, instead of two separate subjects,' one student said. Another stated: 'Oh, I've finally realised why

we have to include mathematics in our bachelor's degree in biology.'

MADE POSSIBLE BY THE SFU ARRANGEMENT

The pilot project makes it possible to show alternative approaches to teaching and learning that can be incorporated in ordinary subjects. The project came about as a direct consequence of the SFU arrangement, both because of the network established between the centres and the financial opportunities provided by the arrangement.

Rogovchenko is very glad that his colleagues at UiB have demonstrated such a high degree of confidence in MatRIC.

'The possibility of conducting a pilot study on mathematic modelling in a biology study programme at another university is really valuable, and the students' response to the activity should be less affected by the usual teacher-student relationships in which the teacher is responsible for evaluating and grading the students' work.' Øyvind Fiksen from bioCEED is also happy with the collaboration.

'Knowledge about mathematics and modelling has recently become far more important to biologists, and we must have a strategy in place for motivating our students in this regard. MatRIC's experiment is of great interest to us,' says Fiksen.

PILOT PROJECT ON MODELLING IN BIOLOGY EDUCATION PROGRAMMES

- ▶ **Who:** A group comprising mathematicians, mathematics education researchers and biologists from the University of Agder and the University of Bergen (UiB) have worked together for 12 months.
- ▶ **What:** Prepare mathematical modelling assignments for first-year biology students at UiB.
- ▶ The assignments are connected to population density and population change and sustainable harvesting in fisheries, among other things.

AN EXAMPLE OF AN ASSIGNMENT THE STUDENTS WERE GIVEN

You are driving through Nevada and count 97 dead, but easily identifiable rabbits along a 200 km-long stretch of Highway 50. Along the same stretch of Highway 50, 28 cars pass you, driving in the opposite direction.

What is the approximate density of the rabbit population to which the dead rabbits belonged?

ProTed

Centre for Professional Learning in Teacher Education



Centre for Professional Learning in Teacher Education (ProTed)

- SFU status 2012-2016
- Affiliated to the University of Tromsø - The Arctic University of Norway (UiT)
- Andreas Lund (UiO) and Hilde Sollid (UiT) are the directors of the centre



ProTed's vision is to educate professional, knowledgeable, confident and internationally oriented teachers for a multicultural society.



> www.uv.uio.no/proted/



ProTed



Master's theses with relevance to schools

Vegard Dørum believes that the experience of writing a master's thesis has given him an advantage in his job as a newly graduated teacher.

Dørum is one of a total of 61 students who in spring 2015 completed the five-year master's programme in teacher education at the UiT. This is the first cohort to have completed this integrated master's programme, and ProTed has followed the study programme closely.

Dørum wrote his master's thesis in Norwegian didactics on the use of metaphors in texts written by minority language pupils at lower secondary level. He believes that the master's thesis prepared him for his job as a teacher.

'The process of writing a master's thesis served as method training. It has given me a repertoire of tools that I can use to further develop my own practice. Change

and development competence is crucial to teachers if we are to succeed in educating young people to function as active members of the knowledge society of the future – in a rapidly changing society that constantly makes new requirements of its members.'

EMPHASISES PRACTICAL ASPECTS IN THE MASTER'S PROJECT

In June, Dørum and the other master's students presented their theses at a conference at UiT. Minister of Education and Research Torbjørn Røe Isaksen also participated at the conference. He highlighted the fact that the students have studied what takes place in the classroom and in everyday life at school.

Dørum agrees with this. 'For me, the master's project has been relevant to how I relate to the class and



PILOT IN THE NORTH

- The master's programmes in teacher education for years 1-7 and years 5-10 was approved by the Ministry of Education and Research in 2009, and the programmes were awarded status as a national pilot project for five-year integrated teacher education programmes for the period 2010-2015 (Pilot in the North).
- In spring 2015, the programmes had been fully implemented, and 61 students submitted their master's theses.
- In the master's programme in teacher education for years 1-7, the students write their theses on the subject of professions.
- In the master's programme in teacher education for years 5-10, the students write their theses on the of subject didactics.
- In June 2014, the government decided that all primary and lower secondary teacher education programmes in Norway shall be offered as five-year integrated master's degree programmes.
- ProTed designs and tests strategies, models and quality indicators for the development of five-year integrated teacher education programmes.
- Ever since it was established in 2012, ProTed has followed Pilot in the North and is cooperating closely with the Department of Education at UiT.

Minister of Education and Research Torbjørn Røe Isaksen was there when the first cohort of master's students from UiT presented their master's theses in June 2015.

individual pupils. It has made me very conscious of my choice of words. I don't try to avoid metaphors, but when I'm able to spot them, regardless of who expresses them, I try to explain what the expression means. Increasing pupils' vocabulary is demanding in general, not just in relation to metaphors, and it requires an awareness of communication in the classroom as a multifaceted learning process.'

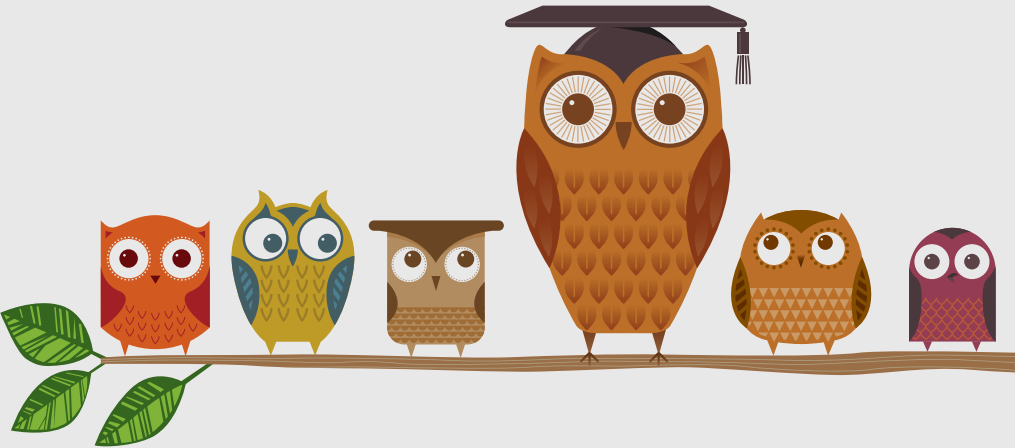
GENERALLY POSITIVE ASSESSMENTS

Rachel Jakhelln, associate professor and former director of ProTed in Tromsø, interviewed 23 of the new teachers who graduated in spring 2015 as part of an interview survey. The interviews reveal that students are generally positive in

their assessment of the relevance of the competence they acquire through the master's programme. Although she is at an early stage of analysing the material, Jakhelln says that one clear result is that the students view their master's theses as a synthesis of the knowledge they have developed over five years of study, and that this is important to their professional practice. In-depth knowledge, R&D knowledge, methodological knowledge and the ability to read research literature are emphasised as relevant to working in schools.



WHAT ARE THE UNIVERSITIES DOING TO DEVELOP EXCELLENCE IN TEACHER EDUCATION?



This was the principal question when the first Knowledge Parliament was held at the House of Literature in Oslo on 22 September. Most of the stakeholders in the field of teacher education and all regions were represented.

"The intention behind the Knowledge Parliament is to bring research and the policy and practice fields together to discuss how the teacher education programmes can help to form the schools of the future," says Sølvi Lillejord, director of the Knowledge Centre for Education.

– ProTed and the Knowledge Centre for Education both play a role in the national arena. The Knowledge Centre compares research results, while ProTed has extensive contact with the teacher education field and the schools.

Prior to the parliament meeting, all the universities that offer teacher education programmes were asked to respond to five questions about what they are actually doing to meet the requirements for the teacher education programmes of the future. The purpose of asking these questions was to facilitate an exchange of experience about good practice rather than good plans and principles.

MANY COMMON CHALLENGES

The input from the institutions shows that the teacher education programmes would benefit from exchanging experiences about many of the common challenges they face. In the discussions in the parliament meeting, the relationship between

academic knowledge and practical knowledge was thematised in different ways, both as regards the relationship between the teaching subjects and other parts of the teacher education programmes, and how teaching practice schools and teacher educators can cooperate in new ways. Attention was also given to the R&D dimension in the teacher education programmes, especially to how R&D assignments in education contribute to students' professional development. The latter question is particularly relevant now that primary and lower secondary teacher education programmes are to be developed into master's programmes, and the University of Tromsø has a lot of experience to share in this regard.

NORWEGIAN TEACHER EDUCATION PROGRAMMES IN AN INTERNATIONAL PERSPECTIVE

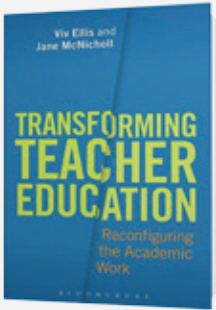
Viv Ellis and Sven-Erik Hansén, who are both familiar with important development trends in Norwegian teacher education, helped to put the discussion at the Knowledge Parliament in perspective.

Viv Ellis, professor at Brunel University, opened the Knowledge Parliament with a talk that put the changes in teacher education into context. The public



SVEN-ERIK HANSÉN

- Sven-Erik Hansén is professor emeritus at Åbo Akademi University
- Hansén has published books and articles about teacher education over many years.
- He is very familiar with Norwegian teacher education – both from his experience as a member of the NOKUT committee that evaluated general teacher education in 2005 and as a key contributor to 'Pilot in the North' at the University of Tromsø.



VIV ELLIS

- Viv Ellis is a professor of Brunel University, London and an adjunct professor of Bergen University College.
- Recently published the book *Transforming Teacher Education: Reconfiguring the Academic Work* together with Jane McNicholl. They ask what the teacher educators at universities and university colleges are actually doing to improve teacher education.
- Based on own research, literature studies and an analysis of historical and cultural development trends, the book describes original perspectives that also encompass future practices in the reshaping of teacher education.





Somni Olsen (UiT) pointed out that the Knowledge Parliament meets a need for cooperation between the teacher education institutions a time when school reforms are affecting teacher education programmes and the universities seem to be placing teacher education higher on their agendas.

discourse about the teaching profession and teacher education is often characterised by two opposite positions. One argues in favour of reform and asserts that the existing models for teacher education are not good, based on different types of statistics that indicate that teachers and schools are not 'insufficient'. The other position is a defensive position that criticises the 'reform movement' of overlooking the values of the existing models. In his book *Transforming Teacher Education*, Ellis argues in favour of a third approach whereby the practice field itself defines the road ahead for teacher education. This means that we must reorganise the way educational research and the practice field interact, and develop a collective, creative profession. The Knowledge Parliament and, not least, the university/school collaboration represent different ways of approaching this.

In his talk, Sven-Erik Hansén, professor emeritus at Åbo Akademi University, de-

scribed important principles of the Finnish teacher education programmes and the differences between the Norwegian and Finnish teacher education traditions. For example, he placed particular emphasis on the importance of R&D assignments to the students' professional development, which the participating teacher education communities confirmed.

ProTed and the Knowledge Centre will synthesize the input received before and during the Knowledge Parliament in writing. There was a broad agreement among the participants about the need for such an arena in order to discuss and exchange best practice. The agenda for the next Knowledge Parliament will be drawn up once the input has been compared.

Upcoming anthology *Veier til fremragende lærerutdanning*

The anthology *Veier til fremragende lærerutdanning* ('Roads to excellence in teacher education') is a result of the scientific work of and around ProTed, Norway's first centre for excellence in teacher education. The editors have gathered contributions from very many teacher educators who have investigated what can be defined as excellence in education, and how to develop and win support for meaningful, innovative and well-functioning practices in the teacher education institutions.



The book collates and summarises some of the valuable knowledge production that takes place in the field of teacher education. It aims to inspire the exchange of experience and productive and future-oriented changes in an education that is undergoing rapid development in its encounter with the knowledge society. The anthology thereby contributes to the formation of a new knowledge base for future teacher education.



ProTed to host international conference on teacher education

ProTed and the research project CATE (funded by the Research Council of Norway) will host an international conference from 6-8 June 2016. The conference will elucidate national and international research conclusions about how we can bring teacher education forward. Registration opens on 1 November, and information is available at ProTed's website and the conference website:

> <http://bit.ly/1O78iiO>

bioCEED

Centre of Excellence in Biology Education



Centre of Excellence in Biology Education (bioCEED)

- SFU status 2014-2018
- Affiliated to the University of Bergen (UiB), the University Centre in Svalbard (UNIS) and the Institute of Marine Research (HI)
- Vigdis Vandvik (UiB) and Pernille Bronken Eidesen (UNIS) are the centre directors



bioCEED aims to strengthen biology education to ensure that the biologists of tomorrow are highly qualified and well prepared for a professional career.



> www.bioceed.no



Students at this autumn's field course in Organismal Biology searched the shore at Lygra for species to include in the ArtsApp.

ArtsApp goes coastal

Students on field work further develop app.

In the first edition of the SFU magazine, we met biology student Kjetil Fossheim, who had developed an app to make it easier to identify species in nature. Now, Fossheim hopes that life by the shore can also be identified using a mobile phone. 'So far, ArtsApp has only targeted species that live on land, but during the field courses at Lygra this autumn, a group of students worked by the shore. They were looking for species that they later made identification keys for. We are now using these to further develop the app,' says Fossheim. This means that the students' field work is helping to further develop the ArtsApp and test it in practice. That will improve the app even more. 'The students seem to be enjoying working on this,' says a pleased Fossheim.

Read more about the ArtsApp in the first edition of the SFU magazine: > http://issuu.com/nokut/docs/nokut_sfu_magasin_print

- ArtsApp:**
- ▶ Is an interactive identification key that can be used to identify species.
 - ▶ Provides information about the species' special characteristics.
 - ▶ Is different from traditional keys in that you do not have to go through the key sequentially, but can rather select which characteristics to use.
 - ▶ Was developed in collaboration with bioCEED, the University of Bergen, the Centre for Science Education and the Norwegian Biodiversity Information Centre.





Biology students participating in global drought experiment

The goal is to understand how the world's different landscapes will be affected by a future climate characterised by more extreme weather.

Students Kristina McGrory and Hanne Wilhelms study the marked plots of the IDE project at Lygra together with Postdoctoral Fellow Amy Eycott.

'What characterises this type of plant?' Postdoctoral Fellow Amy Eycott asks the biology students Kristina McGrory and Hanne Wilhelms, who are lying on their bellies among heather, straw and grass in the heathland, eagerly identifying and counting different plants.

The bachelor's students in biology are at the Heathland Centre at Lygra, where they conduct field work for the whole first week of the semester. The students have selected different projects to work on, and the group that is describing the vegetation in the heathland is also making preparations for

a research project called the International Drought Experiment (IDE).

IMPORTANT RESEARCH PROJECT
The goal of IDE is to find out how different landscapes, or 'terrestrial ecosystems', to be precise, react to extreme drought. The researchers are conducting a field experiment to study this. They are exposing different areas all over the world to extreme drought over a four-year period and measuring how the ecosystem's plants, animals and microorganisms react. The students at Lygra have selected their areas and measured and marked out

experimental permanent plots in line with the detailed method descriptions from IDE. 'It's very interesting and fun to be able to participate in something that will actually be used in research in the time ahead,' says student Hanne Wilhelms.

THE SAME PHENOMENON IN DIFFERENT PLACES
'It is driest on the ridges, so this is where we select the areas for the project,' Amy Eycott explains to the students.

Later, some of the plots will have roofs built over them so that they can dry out properly. 'All the participants will conduct the exact same experiment, and we measure the same responses. Finally, the results are compared. This will enable us to investigate the same question in many different places in the world,' says centre director for bioCEED, Vigdis Vandvik.

She thinks it is fun to involve students in a real research project, especially one that is important far beyond Bergen's and Norway's borders.

MORE EXTREME WEATHER, MORE DROUGHT
Vandvik points out that to an outsider, it may seem a bit strange to study the effect of drought in Western Norway in a time characterised by heavy precipitation. 'However, while we will have more precipitation in the future, climate variation will also increase. We will have more extreme weather. This includes an increased likelihood of extreme precipitation and floods, but also of drought. Winter 2014 was such an "extreme" year. There was a long period of drought along the coast of Western Norway, which led to extensive heather death, which in turn resulted in uncontrolled heather fires in several places the following summer with extensive damage to forests and buildings,' Vandvik reminds us.

THE INTERNATIONAL DROUGHT EXPERIMENT

- ▶ The International Drought Experiment (IDE) is a coordinated, multi-site experiment whose objective is to increase knowledge about the effects of drought on the world's ecosystems. How much drought can they withstand, how do they react to drought, and how do tolerance and effect vary between ecosystems and regions?
- ▶ IDE started up in January 2015 (Southern Hemisphere) and May 2015 (Northern Hemisphere). Drought treatments will begin in 2016.
- ▶ The project has between 50 and 100 participants on all continents, and bioCEED is one of them.
- ▶ The project participants use the same research protocols, measurements and methods.
- ▶ The project will provide additional knowledge to that acquired through previous drought experiments, by including many different ecosystems and making the experiments available to as many researchers as possible. It will also be able to avoid many of the limitations on individual drought experiments (for example a lack of coordination and differences in approaches and methods).

Source: <http://www.drought-net.org/>

RETHINKING TRADITIONAL TEACHING

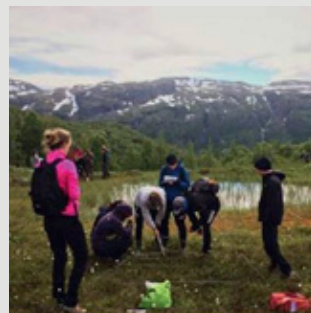
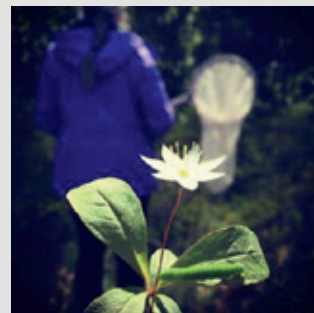
The message was simple but ambitious when bioCEED started up a teacher course this autumn: abandon the traditional teaching culture in favour of a learning culture, in which the main focus is on the students and their learning and learning outcomes.

'To put it bluntly, we are largely using the same teaching methods that have been used for centuries. The professor stands at the front of the auditorium lecturing on their subject, while the students are passive observers who at best take a few notes,' says Head of Education Øyvind Fiksen, who is participating in the teacher course 'Collegial Teaching and Learning in Biology' at the University of Bergen (UiB) and the University Centre in Svalbard (UNIS) this autumn.

LOOK TO RESEARCH
Teaching is often a private and lonely practice, which distinctly different from the other side of a professor's job; research. Regardless of the field, research is often characterised by open processes based on critical thinking, reflection and continuous communication with and feedback from others, from the coffee break with colleagues to peer reviews before publication in journals. 'We not only wish to inspire reflection on teaching, but also to start creating an environment among teachers where the development of teaching is more collegial, and where we can

learn from each other,' says Fiksen. 'Why is it so easy to cooperate on research, but not on teaching and teaching methods?' he asks.

COMPREHENSIVE AND INNOVATIVE THINKING ABOUT TEACHING METHODS
Sigrunn Eliassen teaches basic courses at the Department of Biology at UiB and will also be participating in the teacher course. 'We spend a great deal of our time teaching, but tend to discuss research questions more frequently than teaching goals and methods. The teacher course gives us a good opportunity to develop our own teaching, but also to focus on the importance of cooperating on teaching,' Eliassen says. Eliassen believes that more collegial collaboration will enable comprehensive and innovative thinking about both teaching methods and content. 'Examining my own teaching is a bit scary, but I'm sure that I will benefit, as will the students I teach.'



#LearningBiology2015

What is studying biology really like? Through the photo competition #LearningBiology2015, we get an impression of what the bioCEED associated students are up to.

For biology students, the world is a gigantic teaching laboratory, whether they are in the mountains, on a research cruise or in the kitchen or garden. The photo competition challenge students to document what they learn in their everyday lives in the world of biology, whether in the field, the laboratory, at lectures or other situations that lead to increased motivation and learning. The competition runs all year round and the winners are announced every quarter.

NOT JUST A PICTURE
Students who are interested can also further develop their own communication skills on the basis of the com-

petition. Anne-Laure Simonelli, postdoctoral fellow at bioCEED, is working on transferable skills and takes the photo competition contributions one step further: 'The students are invited to write a brief and clear text to accompany the photo. They are free to be creative and can write whatever they like, but the text must be able to be understood by the broadest possible audience. The idea is for the students to act as if they were photo journalists for a popular science magazine. The goal of this is to see whether students use their creativity in telling the photo's story, as a measure of the use of the transferable knowledge they acquire through varied experience during their course of studies,' says Simonelli.

'Collegial Teaching and Learning in Biology'

- ▶ Main focus: Replace the teaching culture with a learning culture
- ▶ Offered to all teachers at the Department of Biology at UiB and the University Centre in Svalbard (UNIS), but it has a limited number of places.
- ▶ Runs for the first time in autumn 2015-spring 2016 with 15 participants.
- ▶ Course leaders are Roy Andersson (Genombrottet LTH) and Arild Raaheim (Department of Education, UiB)

From the left: 1st, 2nd and 3rd place in the photo competition #LearningBiology2015 for the third quarter of 2015.

Photo: [valeriyaandrevina@Instagram](#) [hildesofief@Instagram](#) [agajulie@Instagram](#)

You can follow #LearningBiology2015 at bioCEED's website (www.bioceed.no) and see all the contributions on Instagram, Facebook and Twitter.





PHOTO: Elvind Semmeset

”

We who teach should be able to engage our researcher minds and systematically find out what leads to good learning, and how we should change our practice from year to year to achieve that goal.

NAME:
Øyvind Fiksen
AGE:
47
EDUCATION:
Dr. scient.

WHAT IS YOUR ROLE IN BIOCEED?

I am in charge of the part of bioCEED that works on learning culture (work package 1). It is closely related to my function as head of education at the Department of Biology at the University of Bergen, and is about building a culture where we learn from each other and develop as teachers and learning environments.'

WHY IS IT IMPORTANT TO ALSO INCLUDE A RESEARCH PERSPECTIVE IN THE WORK ON EXCELLENCE IN HIGHER EDUCATION?

'Primarily because we should bear in mind that the concept of "research-based teaching" doesn't just mean that those who teach also conduct research, but that they should also be familiar with relevant research about teaching and be capable of using it in their own

practice. Furthermore, all teachers should be capable of analysing how their own teaching affects students' learning and what they do. We who teach should be able to engage our researcher minds and systematically find out what leads to good learning, and how we should change our practice from year to year to achieve that goal.'

WHAT IS BEING AN 'UNDERCOVER EDUCATIONALIST' IN THE BIOLOGY COMMUNITY LIKE?

'It can be a bit of a struggle sometimes, but it's fascinating to witness the enthusiasm for teaching that's out there. It's the one thing we have in common and that everyone has an opinion about, but it's actually surprisingly rare for discussions to be based on research on learning. We have to change that!'

DESCRIBE A TYPICAL WORKDAY.

'That's not easy, as no days are alike. The day is typically split up by meetings and appointments, but I always look forward to the communal lunch with the research group.'

WHAT IS YOUR CONTRIBUTION TO EXCELLENCE IN BIOLOGY TEACHING?

'I read research literature – for example Carl Wieman – and inspire others to test it.'

WHAT IS YOUR BEST TEACHING TIP?

'Lecture less – communicate more.'

CEMPE

Centre of Excellence in Music Performance Education



FOTO: Kimm Søtveit



Centre of Excellence in Music Performance Education (CEMPE)

- SFU-status 2014–2018
- Affiliated to the Norwegian Academy of Music (NAM)
- Acting centre director is Bjørg J. Bjøntegaard



CEMPE's goal is to develop knowledge and experience that can support performance students in their search for artistic excellence. CEMPE also aims to qualify the students for a career in a rapidly changing globalised music community.



> www.cempe.no

CEMPE

Centre of Excellence in Music Performance Education

ALLE FOTO: Ingrid H. Solle, NMH



A VIOLINIST IS transformed

Is it possible to relearn how to play a musical instrument? This is the story of how violin student Sander Tingstad and his teacher Morten Carlsen went back to basics.

THE STUDENT'S STORY

I started my master studies in violin performance with Professor Morten Carlsen in autumn 2014. I had struggled for a long time with issues concerning unnecessary movement and excessive use of energy while playing. These movements got in the way of both the technical and musical aspects of my playing.

Different teachers had suggested numerous solutions, but I had a feeling that they were only addressing the symptoms, not the cause of my problems. I felt that my problems were first and foremost linked to my desire to express something. The more involved I got in my performance, the more I would move around.

When Morten and I started working together it quickly became clear that my bad habits were more deep-seated than I had thought. I had been assimilating them over a number of years and performed without conscious mind control. I could hardly do a thing on the violin without the problems manifesting themselves in one way or other.

"I could hardly do a thing on the violin without the problems manifesting themselves in one way or other."

Sander Tingstad

STARTING FROM SCRATCH

Morten wanted to go into more detail than I had expected, but I soon realised it was necessary. For about a month I put most of my repertoire to one side and focused on exercises that in themselves were basic but for me posed significant challenges in the beginning. Thinking that there is so much repertoire and more complex technical challenges that you could be working on can make it difficult to accept that going back to basics in this way is the right thing to do.

PROGRESS

Once I got into it, I actually found it quite inspiring. In the beginning we worked on specific exercises, and I could see where Morten was going. I soon made good progress and found satisfaction in mastering the simpler exercises.

It is important to note, however, that most of the things we did were intended as experiments. The focus was not on achievement but rather on observing and discovering. We were really looking for light bulb moments.

Even after the first few months I felt as if I had improved in leaps and bounds. I was able to perform with a much greater sense of calm, both physically and mentally, and I had acquired useful tools for developing a healthy pattern of movement.

"We were really looking for light bulb moments."

Sander Tingstad

THE TEACHERS STORY

Sander had of course acquired great skill on the violin with the help of my colleagues at the Academy by the time we started working together. The problem was that he was unable to apply this skill properly. You could compare it to a gymnast trying to perform a floor exercise on ice. Every detail was laboured, with the result that the flow of movement was interrupted.

We needed to find firm ground to stand on and then piece his violin playing back together again, first in terms of basics such as balance and breathing and then regaining the fluency of arm movement.



UNLEARNING AND RELEARNING

I have helped several students go through such an unlearning and relearning process, and I know it is challenging for those involved. Suddenly Sander suffered a relapse, almost taking him back to where he had started. Paganini was replaced by basic movement, breathing and co-ordination exercises.

Crucial to a process like this is that it must be built on co-operation between student and teacher. Sander describes how he had to muster up the motivation to succeed. I am also impressed by the way in which he adopted the principles of the methodology and continued to refine them.

He posed constructive questions and made reflections that helped me develop new exercises and ways of addressing his violin technique. In other words, by putting me on the spot he helped me teach him better.

"By putting me on the spot he helped me teach him better."

Morten Carlsen

RAW POWER

The more confident Sander became about his basic technique, the more he was able to apply his virtuosic skills without falling back into his old habits. However, we still had to be on the alert when five months later we started working on Brahms' violin concerto, which was Sander's big ambition. Even with his reflective approach to playing, a certain amount of raw power could easily create obstacles when facing the huge musical and technical challenges that this work poses.

The fact that he now feels comfortable studying one of the greatest works in the violin repertoire tells me that he has succeeded in this challenging process. I should like to congratulate both him and myself!

See more at cempe.no.

WHAT SANDER WORKED ON:

- ▶ **BALANCE.** "When your co-ordination is not optimal the signals from the brain to the muscles become muddled."
- ▶ **IMPULSES.** "In the moment before the bow hits the string I had a tendency to tense my muscles and control the stroke instead of giving an impulse at the outset and letting the bow strike the string as part of an overall movement."
- ▶ **LISTENING.** "I think if you try too hard to create the expression you are looking for, you can easily fall into the trap of listening more to how you want it to sound rather than how it actually sounds."
- ▶ **EXPRESSION.** "I had to learn that creating an expressive sound does not depend on tensing a whole load of muscles."
- ▶ **MUSICAL PERFORMANCE.** "Having a clear idea about how the music should sound means I automatically perform in a way that allows me to produce this sound. However, I need to allow these automated processes to happen."
- ▶ **CONTROL.** "We worked on completely removing my focus, and exercises such as counting backwards in a language I don't know – whilst playing – had an astonishing effect."

CEMPE'S FIRST LADY STEPS DOWN:

Our goal has been to share knowledge across disciplines and traditions

Ingrid Maria Hanken is due to retire this autumn and will step down as Director of the Centre of Excellence in Music Performance Education (CEMPE) at the Norwegian Academy of Music. She has been a key figure during the inception and early days of the centre. In this interview she reflects on what it means to set up a new centre and on what CEMPE has achieved to date.

WHAT WAS THE NORWEGIAN ACADEMY OF MUSIC'S MOTIVATION FOR APPLYING TO BECOME A CENTRE OF EXCELLENCE IN EDUCATION?

I was a member of the management team at the Academy and felt that this was an opportunity to make a concerted effort to strengthen the quality of higher music education. There were four reasons why we felt this was important:

Firstly, performing musicians are facing growing competition over jobs and gigs. This is international competition taking place right here – in Norway. In many countries musicians begin to specialise from a young age. This is not how things are done in Norway. We must therefore ensure that we provide the best possible training once the students enter higher education.

The second reason is that much of the knowledge about teaching and learning acquired by those working in higher education is kept private. It is not shared with colleagues to any significant extent. We therefore saw a need for developing a more collective knowledge base and for encouraging a culture in which colleagues share their knowledge.

Thirdly, there is a risk of this private master-apprentice tradition becoming stale. We felt there was a need to involve those teachers who adhere to this tradition in a more systematic

investigation into new ways of working. And fourthly, there is now fairly extensive research literature on higher music education, and the Norwegian Academy of Music is of course a world leader in this type of research. However, we realised that transferring this knowledge to the practitioners would be a challenge.

We have therefore tried to organise the centre to ensure that knowledge is shared across different disciplines and traditions. The centre should encourage new methodologies to be tried out, and it should help strengthen ties between researchers and teachers.

WHICH MILESTONES WOULD YOU LIKE TO HIGHLIGHT FROM YOUR TIME AS DIRECTOR OF CEMPE?

– I see it more as a process where you build stone upon stone. Still, one important milestone is that we will now be involving teachers from other institutions in CEMPE development projects. This creates engagement across the country. We are a centre not just for the Norwegian Academy of Music, but for higher music education generally. This also provides us with additional contexts in which to try things out.

WHAT WERE THE BIGGEST CHALLENGES WHEN SETTING UP THE NEW CENTRE?

When we started it was essential to get teachers to participate in projects. We



INGRID MARIA HANKEN

Ingrid Maria Hanken holds a PhD in pedagogy and is Professor of Music Education at the Norwegian Academy of Music. Between 2006 and 2013 she served as the Academy's Deputy Principal with particular responsibility for study programmes and the learning environment. She has been Director of CEMPE since 2014. In her research and leadership roles she has focused especially on teaching and learning in higher music education and on how the quality of education can be safeguarded and improved.



Ingrid M. Hanken reflects on the start-up of a centre of excellence in education. She is now retiring.

spent some time working out how to recruit the most prominent teachers in their respective fields. But this proved to be easier than I had expected – plenty wanted to take part, and we even had waiting lists.

Another issue was that we are working with musicians who are good at performing and teaching, but who do not necessarily think of themselves as researchers or writers. We have tried to resolve this by having our project managers work closely with the participating teachers and letting them take care of the writing. The challenge here has been to prevent the teachers feeling sidelined or feeling that they are losing ownership and control of their own projects.

Keeping track of all the projects and participants has also been a major task. We are running seven main projects with multiple sub-projects, and there are a large number of teachers and students involved. It has been quite an arduous task to put in place good structures and procedures for co-ordinating the projects to ensure that we keep on top of things.

WHAT HAS BEEN CEMPE’S BIGGEST CONTRIBUTION SO FAR TO IMPROVING MUSIC EDUCATION?

– We are starting to see that developing and sharing knowledge about teaching and learning is becoming part of the agenda. Being given the opportunity

to explore own practices and sharing experiences with colleagues has created a sense of enthusiasm amongst our staff. The conservative master-apprentice tradition adopted in higher music education is being relaxed – we are seeing growing interest in thinking differently and courage to try out new things. That said, changing ingrained cultures takes time.

WHAT ARE YOUR HOPES FOR THE FUTURE OF CEMPE?

– One key task is to supplement the master-apprentice tradition with an exploratory and sharing culture. We should not replace existing cultures, rather we should inspire practitioners to refine and share good practices. Hopefully the knowledge that we develop and the sharing culture we are trying to create will spread like ripples in water to other institutions.

We have launched initiatives with the association of European higher music education institutions and its 270 or so members, and I have a legitimate hope that CEMPE could become a sort of European hub for developing and sharing knowledge about teaching and learning in higher music education.

Written by Marie Strand Skånland

APPRENTICESHIP

The concept of apprenticeship is often used to describe the learning of a particular trade or handicraft, but it can also be extended to music education. It involves the apprentice observing and copying the work of the master and other students. Learning thus takes place through action in a professional partnership in which the apprentice gradually begins to take part in production. Ongoing evaluation takes place as the apprentice gets to try out his or her skills and receives feedback on the results..

HOW CAN YOU MAKE A LIVING FROM MUSIC?

It is not enough to be a good musician. This year, CEMPE will host a series of breakfast seminars in which students can get tips on how to develop an idea into a complete stage performance, marketing, how to apply for funding and how to control their own finances.

The next breakfast seminar is on Thursday 19 November. It will be a practical workshop where the participants will explore the relationship between creative identity and cultural value, how to attract and retain an audience, and market potential. It is specially adapted for musicians who curate their own musical projects, but it is also suitable for everyone working in the creative industries.

See more at: cempe.no/nyheter/frokostseminar-om-entreprenorskap/

CEMPE TO HOST AN INTERNATIONAL CONFERENCE ON PRACTISING

CEMPE will host the conference Teaching of Practising at the Norwegian Academy of Music from 2–4 December. The goal of the conference is to disseminate new knowledge and inspire changes in higher music education. The topics of the conference include:

- How do the students perceive their own practising?
- Teaching practising in higher music education
- Planning and setting objectives for practising
- Practising across genres
- Mental practising
- Sports psychology and practising
- Health aspects in higher music education

For more information: cempe.no/nyheter/teaching-of-practice-international-conference-2-4-december-2/

News from the SFU arrangement

New call for applications for Centres of Excellence in Higher Education tentatively planned in March

A new analysis shows that the SFU arrangement contributes to more strategic work by developing quality in education. Now, The government now wishes to increase the appropriation for the arrangement by NOK 25 million. That means that new centres can be established.

‘How frequently and how many will be a matter for consideration, and we will probably review aspects of the system, but the SFU arrangement is here to stay.’ The news about the SFU arrangement becoming a permanent fixture was announced by State Secretary Bjørn Haugstad on 9 September during the NOKUT breakfast meeting. He was present when the Nordic Institute for Studies in Innovation, Research and Education (NIFU) presented the ripple effects of the arrangement, five years after its start-up.

In his talk, he pointed out that during this period, the arrangement has had a very positive effect on the work on quality in education at Norwegian universities and university colleges. *‘There is still a prevailing notion that as long as you know your field, you can teach it. The SFU arrangement brings us a step closer to defining quality in education. It gives the sector a clear incentive and helps to change attitudes relating to education and teaching.’*

NEW CALL FOR APPLICATIONS IN 2016

Less than a month later, the State Secretary’s promises were followed up in the national budget:

‘The establishment of more (SFU) centres will help to draw attention to knowledge-based work on quality in education in more academic environments and institutions. The Ministry therefore proposes to increase the appropriation to the SFU arrangement by NOK 25 million to around NOK 45 million in 2016 to establish more centres.’

The news about the increased funding for SFU was well received by NOKUT’s Director of Analysis and Development Ole-Jacob Skodvin:

‘We are very pleased that the Ministry of Education and Research has decided to further develop the SFU arrangement. A permanent and stable system of calls for applications means that more institutions will dare to invest in achieving centre status in future. With the proposed funding from the government, we expect to be able to initiate a new call for applications as early as March 2016, with a deadline for applications in May.’

More information about the process surrounding the new call for applications will be posted at www.nokut.no shortly.

CONNECTING RESEARCH AND EDUCATION

The Norwegian University of Life Sciences (NMBU) is one of the universities that aims to achieve SFU status. During the NOKUT breakfast meeting on 9 September, Rector Mari Sundli Tveit stated that the SFU arrangement is perfect

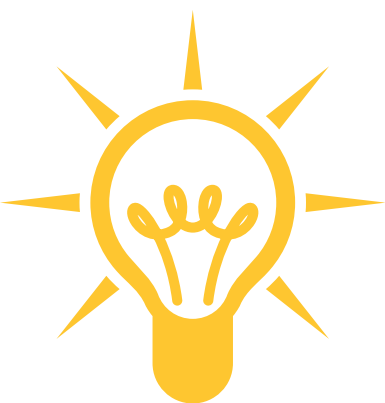
for the university’s joint initiative to cultivate excellence in research and education. *‘It’s one joint initiative because it’s all connected! We have to think and talk about education and educational theory in connection with research. The SFU arrangement gives us something to reach for, and NMBU has allocated funds with a view to establishing at least one centre.’* She was very pleased about the clear signals from the Ministry of Education and Research, but points out that the SFU arrangement must maintain its status: *‘SFU has to be a prestigious arrangement if we are to succeed in lifting education to the level of research. There’s a gap there. Many people are concerned with facilitating good learning, but, unfortunately, that does not confer sufficient merit in the current situation.’* Sundli Tveit believes that the SFU arrangement is a step in the right direction, but that the institutions must also take more initiative themselves.



Ole-Jacob Skodvin
Director of Analysis and Development, NOKUT



Rector Mari Sundli Tveit at NMBU (left) is aiming for SFU status. State Secretary Bjørn Haugstad (right) is continuing the SFU arrangement.



Do you want to improve your teaching?

Here are five key pointers for teaching and learning in higher education from Professor Stephanie Marshall:



STEPHANIE MARSHALL

Professor Stephanie Marshall is Chief Executive of the Higher Education Academy.

She is also co-editor, with Heather Fry and Steve Ketteridge, of *A Handbook for Teaching & Learning in Higher Education* (Routledge, 2014).

The handbook reflects on the changing landscape of higher education and encourages those who teach to reflect on how they can improve teaching and learning in their practice.

1 DO YOU ENGAGE IN PROFESSIONAL DEVELOPMENT TO ENHANCE YOUR TEACHING?

Continuing professional development is vital in all professions and teaching in higher education is no exception. Up-to-date teaching practice leads to a great experience and better outcomes for students, and professional pride and satisfaction for those who teach them. In the UK, evidence such as The 2015 Student Academic Experience Survey shows that students increasingly value training for those who teach them.

2 IS YOUR TEACHING APPROACH ACTIVELY ENGAGING STUDENTS?

Partnership can be defined as a relationship in which all involved are actively engaged in, and stand to gain from, the process of learning and working together. Student engagement through partnership is important because it enables and empowers students to engage deeply in their learning and enhancement. For staff, working in partnership with students can help transform thinking about learning and teaching practices. You may find the Framework for Student Engagement through Partnership.

3 DO YOUR STUDENTS ENGAGE IN 'DEEP LEARNING'?

Evidence, including from Professor Graham Gibbs, author of the influential *Dimensions of Quality*, shows that students' level of engagement is the biggest factor in their learning outcomes. Whether students are taking a 'deep approach' to learning (intending to make sense of material rather than only remember it) can be measured in various ways, including by National Surveys of Student Engagement such as the UK Engagement Survey.

4 IS CURRICULUM DEVELOPMENT IN YOUR INSTITUTION AN INCLUSIVE PROCESS?

By giving students agency in their own learning, for example by involving them in curriculum development, they gain ownership of their learning experience. Engaging students to consider the different means by which the curriculum can best be delivered in order to be meaningful and so that it meets the needs of the diverse groups of students with diverse learning preferences, is key to this. The Framework for Student Engagement through Partnership may be used to promote discussion of this.

5 BE CREATIVE... AND PROMOTE YOUR STUDENTS CREATIVITY!

There are many ways to promote creativity through teaching methods and innovations. For example:

- Provide stimulus through the learning space. The University of Salford's MediaCityUK campus promotes trans-disciplinary education through a dynamic and technologically advanced environment for learning and teaching.
- Involve students as co-creators. The Student as Producer project at the University of Lincoln is a good example of this.
- Independent learning. Broadly defined as learning which takes place outside the classroom and in which students are guided by curriculum content, pedagogy and assessment, independent learning can encourage creativity. Key research in this area includes *Effective practice in the design of independent learning opportunities* by Professor Liz Thomas.

By Stephanie Marshall

NOKUT contributes to securing, developing and providing information about quality in education



NOKUT is short for 'Nasjonalt organ for kvalitet i utdanningen' (Norwegian Agency for Quality Assurance in Education).



NOKUT is an independent expert body under the Ministry of Education and Research with approximately 90 employees divided between five different departments.



NOKUT's main task is to document and provide information about the situation in higher education, tertiary vocational education and recognised foreign education.



NOKUT supervises, provides information about and contributes to developing the quality of Norwegian study programmes and institutions.



NOKUT has several recognition schemes for foreign education, which aim to contribute to enabling people with foreign education to use their expertise in Norway.



NOKUT is, among other things, responsible for the national student survey *Studiebarometeret*, the incentive arrangement Centres of Excellence in Higher Education, and the *Utdanningskvalitetsprisen* award (prize for quality in higher education).

Do you want to learn more?
Go to www.nokut.no



**THE SFU MAGAZINE
AUTUMN/WINTER 2015**

PUBLISHED BY:
NOKUT in cooperation with the SFU
centres bioCEED, CEMPE, MatRIC
and ProTed

EDITOR:
Ingvild Andersen Helseth

CO-EDITOR:
Emilie Valebjørg

FRONT PAGE PHOTO:
Photo: Kimm Saatvedt, NMH

LAYOUT:
NXT/A2N