Centre of
Excellence in
Education

THE SFU MAGAZINE

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NOKUT

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Contents

Why do we need Centres of Excellence in Higher Education?

NOKUT is the proud manager of the prestige arrangement ***Centres of Excellence in Higher Education*** (in Norwegian, Sentre for fremragende utdanning, hence the term SFU). The arrangement aims to stimulate universities and university colleges to establish and develop academic communities that take their activities in education and teaching to a level of excellence. The centres thereby contribute to the enhancement of quality and innovation in education. The arrangement provides higher-education institutions with an arena where they may compete for a place they can be proud of within the field of education. The prestige of SFU status has led several institutions to intensify their efforts to enhance the quality of their educational provision.

The SFU arrangement was introduced in 2010, and in 2011 the pilot centre ProTed (Centre for Professional Learning in Teacher Education) was established. In 2013 three more centres were added to the portfolio. The road to SFU status is a demanding one: applicants must be able to document excellent research-and-development-based education, demonstrate innovation and present plans for further development and the dissemination of knowledge.

On the following pages you can get better acquainted with all our centres of excellence in higher education. Find out about MatRIC (Centre for Research, Innovation and Coordination of Mathematics Teaching), which works enthusiastically to raise the quality of teaching mathematics by, for example, making use of video as a teaching tool, and bioCEED (Centre for Excellence in Biology Education), which has introduced a species-identification app for use in the field by biology students. Read about ProTed and its work with “university schools”, and about CEMPE (Centre of Excellence in Music Performance Education), which prepares its students for a tougher job market by introducing them to new practice arenas.

NOKUT believes that the SFU arrangement has a knock-on effect. On page 22 you can read about TransARK (Transformative Learning in Architectural Education), which did not quite qualify for SFU selection but will nevertheless establish itself as a centre with the help of resources provided internally by their university, the Norwegian University of Science and Technology (NTNU). On page 21 you will meet Professor Anton Havnes, who applied the SFU criteria to the discussion of excellence in the training of professionals at a national symposium.

Centres with SFU status are academic communities that dare to think innovatively about education and teaching. It is our hope that the content of this magazine will inspire others to increase their ambitions and efforts in the field of education and teaching.

Happy reading!

Centre of Excellence in Biology Education

"bioCEED is our reward for our determined and long-term efforts to strengthen our educational activities," says Centre Leader Vigdis Vandvik. The centre will offer students practical experience through internships in research, commercial companies and public administration from their very first term.

Discipline, field and vision

The Centre of Excellence in Biology Education is a cooperative undertaking between the Department of Biology and the University Pedagogics Unit at the University of Bergen (UiB), UNIS (The University Centre in Svalbard) and the Institute of Marine Research.

New problem areas in the fields of nature conservation, marine biology and petrochemical activities, as well as major global challenges connected with environmental, climate and food-production issues, demand biologically founded solutions. This creates new demands concerning the content of biology courses and the way we educate the biologists of tomorrow

bioCEED will strengthen biology education so that future biologists will be highly qualified and well prepared for working life, irrespective of whether they work in industry, public administration, organisations, research or teaching. bioCEED will achieve this by providing excellent teaching in close cooperation with the students' future employers.

bioCEED
senter for fremragende utdanning i biologi

"We have considerable strengths in the area of teaching, particularly in fieldwork and involving students in research," states Pernille Bronken Eidesen, leader of bioCEED at UNIS. "bioCEED will work to raise the status of teaching and improve the learning culture in academia. In these areas I believe bioCEED will act as a vitamin injection," she affirms.

bioCEED have five main aims:

1. Help students to become optimally prepared for working life by finding new solutions to the question of how theory, practical work and societal relevance are best integrated in biology studies.
2. Employ the entire biological "triangle" in our teaching (theory, practical training and societally relevant tasks).
3. Move from a teaching culture to a learning culture.
4. Bring the best elements from research culture into teaching through cooperation, peer assessment, transparency and the reward of excellence.
5. Investigate and document the effect of practical training and other teaching methods and arenas.

Vigdis Vandvik

Centre of Excellence in Biology Education (bioCEED)

- SFU status 1 January 2014 – 31 December 2018.
- Centre launched 30 April 2014.
- Affiliated to the University of Bergen (UiB), UNIS (Svalbard University Centre) and the Institute of Marine Research.
- Centre leader is Vigdis Vandvik.
- The Centre receives NOK 3 million annually from NOKUT.

Read more about bioCEED here:

http://bioceed.no/

bioCEED

bioCEED develops app for species identification

Photo: Solrun Dregelid

Students in Biology (from left) Ardian Høgøy Abaz, Christine Østensvig, Kjetil Farsund Fossheim and Ine Moksnes trying to identify a plant belonging to the «Carex family.» By using ArtsApp the answer appears quickly on the screen: Carex nigra

Kjetil Farsund, an MA student in Biology, got the idea for ArtsApp during field training last year. – I wanted to develop a smart tool making it easier to identify species, he says.

Kilos of books mapping biodiversity in Norwegian nature may soon be history. The reason is a species-identification app, called ArtsApp, developed by an IT-smart biology student.

Good rainwear, sharp eyes and alert brains, iPads in plastic covers – the Bachelor's biology students at the University of Bergen are ready for the first day of term.

The location is the Lynghei Centre at Lygra, where the first week of term consists of fieldwork. Hunting among heather and grass, the students are about to identify different species of the plant genus Carex (Norwegian: starr; English: sedge), with the aid of their own keen eyesight and ArtsApp (see fact box).
"To identify the many thousands of species that exist in the Norwegian flora we would normally need a library that fills up the entire back seat of a car. With ArtsApp the aim is that any student, with some practice and a few simple taps on their mobile device, will be able to identify most species of Norwegian flora and fauna," says Professor Vigdis Vandvik, leader of bioCEED, the Centre of Excellence in Biology Education.

Students develop learning processes

The idea for ArtsApp came from Master's biology student Kjetil Farsund Fossheim. Since bioCEED has the aim of including the students in the development of learning materials, Fossheim's idea was received with open arms.
"I got the idea during a field course here at Lygra last year," says Fossheim. "I was looking for a smarter way of identifying species. It is great to witness how ArtsApp is now helping biology teaching become more modern. Also, I can see a great advantage in letting students take part in the development of teaching and learning. We see what is needed in a very different way," he says.

During the field week he will guide the students in their efforts to develop the app further. By the end of the week the app, which currently only contains information about Carex, will also provide information about various species of ground beetle (see fact box).

The fact that the progressive development of the app is taking place in the field is also in accordance with the aims of bioCEED.

"We are very keen for there to be a large element of practical work in our programmes, since biology is a very practical discipline," continues Vandvik. "We identify species, register biodiversity, splice genes and measure carbon contents in the forest. This requires practical skills, and we are convinced that learning by doing is better than learning by just reading about it."

She emphasises, however, that there is too little research on field-based learning. For this reason bioCEED will now hire two research scholars in educational science to do research on students' learning at bioCEED. They will investigate what and how students learn in different learning settings. The new insights gained from this research will contribute to make bioCEED programmes even better.

Learning in practical situations promotes learning outcomes – and a good social climate

Lack of research notwithstanding, the students have no doubt that training in practical situations is both inspiring and beneficial from a learning

ArtsApp:

- An application made for the identification of species.
- The app identifies species by guiding the user through a series of yes/no questions. As the user answers the questions the app eventually arrives at the correct species.
- The app is geographically smart: it "knows" where different species live.
- An illustration or photo accompanies a description of the species.
- The app's low-threshold functionality makes it possible for anybody to use it.
- The app is still at an early stage of development, and as of August 2014 it only contains information about the plant genus Carex. The aim is to increase its scope so as to include as many species as possible of Norwegian flora and fauna.
- ArtsApp is available for all and has so far been downloaded more than a hundred times. Most users are biology students at the University of Bergen but some are from other countries, mainly Sweden.
- bioCEED provides courses for schools and teachers who want to implement the use of this app into their teaching.

Photo: Pia Ve Dahlen © Bio, UiB.

BIO102 studenter på feltarbeid.

perspective. They have stretched the rain hoods over their iPads to find out which type of Carex they have in front of them. After a few taps the identification is made.
"There is nothing better than getting out in the field and learning directly from nature rather than sitting in an auditorium," says Bachelor's student Christine Østensvig. "This setting, while being beautiful and inspiring, also gives us a great opportunity to see how the different species function together and individually," she explains.

In addition, she points out that the congenial social climate is an extra bonus. At the Lynghei Centre the students live in *lavvus* (Sami tepee-like dwellings), and the evenings give them the opportunity to make new friends – often over the camp fire, accompanied by guitar playing.
"I have found friends for life here," says Østensvig.

Carex:

- These plants belong to the Cyperaceae family, known as sedges. Accordingly, they are closely related to grass.
- They are particularly common in mountain and bog environments.
- There are 112 different species in Norway.
- Biology courses start with this species because basic knowledge in biology enables one to see the differences between the many species. This gives students confidence and represents a good introduction to species identification.

Ground beetles, Carabidae:

- A family group of beetles with a large number of species.
- They share many characteristics with Carex: they have great diversity and ecological importance and can be identified by morphological features.

See the video about ArtsApp and bioCEED here (in Norwegian): http://www.uib.no/aktuelt/82002/app-gj%C3%B8r-biologiutdanningen-mer-moderne

bioCEED students receive practice training from their very first term

"Students on biology programmes without practice training are generally more uncertain about future careers, expressing the view that 'as a student of biology you know very well what to learn, but you have no idea what to become'. As a response to this, bioCEED offers biology students at UiB and UNIS internships and practice training periods," explains centre leader Professor Vigdis Vandvik.

Biology programmes aimed at specific professions, like fish health and fish-farming biology, have for a long time included vocational practice training as an integral element. This has provided the students with a clearer picture of occupational opportunities and their future role in working life.

Closer cooperation with industry and other stakeholders

An important step is the introduction of arrangements for closer cooperation between "users" of biologists, biologists engaged in occupational work and representatives of society in a wider sense, says Professor Vandvik. She states that the employers have responded very positively to bioCEED, and further cooperation and training projects are currently being fine-tuned along with employers.

This cooperation will take several forms, with the common purpose that from the very start of their studies the students will learn and experience what biologists are and what they do in working life and society.

In their very first term, students have their first encounter with a workplace through visits, presentations and practical experiments at bioCEED's partner organisation, the Institute of Marine Research. As early as this autumn, students at UNIS will be able to conduct practice training periods with local companies in Svalbard. In addition, the annual Biology Career Day will be held at UiB in February, bringing together a large number of companies, organisations and students.

A new project documenting the effect of practice training

The effect of practice training in biology education is poorly documented. bioCEED has therefore developed the PRIME project (How implementation of PRactice can IMprove relevance and quality in discipline and professional Educations). PRIME is set to develop modules for practice training in traditional discipline programmes in biology and explore the effects of such practice training on learning, motivation and study progression. PRIME will also try to determine whether recently educated biologists in occupational life are lacking (or feel that they are lacking) important skills or knowledge from their study programmes, and whether employers are finding that their newly recruited biologists are missing specific skills or knowledge.

This project is also financed by the Research Council of Norway's FINNUT programme.

Activities at bioCEED in autumn 2014

- **New teaching methods in the introductory course BIO 100 at the Department of Biology, University of Bergen**
  bioCEED has revitalised the introductory course BIO 100 at the Department of Biology to engage and activate the students from day one and prevent drop out.
  Among other things, the students are introduced to a perspective that popularises scientific biology (language, metaphors, etc.) through the book The Selfish Gene by the high-profile author Richard Dawkins. The course will also make use of new digital tools like Poll Everywhere to make lectures more interactive and will feature a "flipped classroom" where students follow video lectures.
  One of the aims of the course is to allow students a look into the everyday tasks of a biologist, and this is why the introductory course also includes a visit to the Institute of Marine Research to study the practical application of theory in fisheries management. The students also visit the lab, where they have an opportunity to experiment themselves.

- **November 2014 Teachers' Retreat**
  University teaching is often "private" and lacking in collegiality, which contrasts sharply with research activities at the same institution. bioCEED wishes to contribute to a transfer of the best features of research culture to its educational activities to foster a collegial learning culture among teachers.
  bioCEED will therefore arrange a two-day Teachers' Retreat for its lecturers in November to discuss and share experiences and ideas in teaching, learning and curricula. The aim is to find out how elements of research culture, such as collegial cooperation, continuous evaluation and development, plus the use of teaching teams, can be adopted as integral parts of the teaching culture.

Centre of Excellence in Music Performance Education

The Centre of Excellence in Music Performance Education at the Norwegian Academy of Music (NAM) aims to educate excellent musicians who are qualified for an international and competitive job market.

Discipline, field and vision

CEMPE aims to enhance music performance teaching and learning and students' instrumental practice. Students will gain a broad spectrum of experiences with individual teaching, group teaching and knowledge transfer between different music genres.
The project modules involve innovative forms of teaching and learning in music performance. The methods require broad participation from students and teachers.

By the end of their studies, students reach a high level of professionalism yet encounter tough competition in the job market. To a greater extent than ever before, musicians must be able to create their own employment to make a living from their music and their talent. Changes in the job market and increased international competition have encouraged NAM and CEMPE to think innovatively about content and work methods in the study programmes.

The NAM staff includes some of Norway's most prominent musicians, music educators and music researchers. Through CEMPE's status as a centre of excellence in higher education, NAM now has the opportunity to further develop and intensify its internationally recognised work in the field of music education.

CEMPE works with new practice settings and modules, where students must be innovative in encounters with new audience groups in order to prepare themselves for independent music careers.

The Centre has three main aims:

1. To enhance music performance teaching and learning by incorporating a wide range of individual and group experiences for the students.
2. To enhance the quality of the students' instrumental practice through a combination of individual and group teaching approaches, and by looking for transfer of practice knowledge between students in different genres.
3. To prepare the students for proactive action in a diverse and rapidly changing globalised music community.

Ingrid Maria Hanken

Centre of Excellence in Music Performance Education (CEMPE)

- SFU status 1 January 2014 – 31 December 2018.
- Centre opened 14 May 2014.
- Affiliated to the Norwegian Academy of Music.
- Centre leader is Ingrid Maria Hanken.
- The Centre receives NOK 3 million annually from NOKUT.

Read more about CEMPE here: http://cempe.no/en/

CEMPE

Twelve teaching development projects started

All photos: CEMPE

A substantial part of studies in music consists of teaching the principal instrument and the students' individual practicing. It is therefore important that this teaching functions optimally and that the students know how to practice the instrument on their own. Two project groups at CEMPE have now started up as many as 12 development projects. These are directly linked to principal instrument teaching at NAM, which means that experiences are gained in close collaboration with the students.

One of the groups has *Teaching Principal Instrument in Groups* as its theme, with six teachers from NAM taking part during the 2014–2015 academic year: Professor Svein Bjørkøy, Associate Professor Mona Julsrud and Associate Professor Kristin Kjølberg, who teach vocal performance, plus Professor Jens Harald Bratlie (piano), Professor Morten Carlsen (viola) and Professor Julius Pranevicius (French horn).

Project leader Ingrid Maria Hanken says:

"The aim is to explore various ways of combining individual and group teaching within the general context of principal instrument teaching. Typically, principal instrument teaching happens in one-to-one sessions, but group sessions also give the opportunity for students to be resources to each other. Several of the development projects are based on the idea that teaching is something that is developed in the interaction between students and teachers. Finding out more about active student participation will therefore be a central theme."

The second project group has *Teaching Practising* as its theme. Here too, six NAM teachers are involved: Associate Professor Jorunn Marie Bratlie (piano), Professor Morten Carlsen (viola), Professor Peter Herresthal (violin), Associate Professor Matz Pettersen (oboe), Professor Isabelle Perrin (harp) and Professor Julius Pranevicius (French horn). Together with some of their students they will investigate the physical and mental aspects of practising.

Project leader Emeritus Professor Harald Jørgensen explains:

"The concepts of 'body' and 'head' cover the scope of the projects, where the more narrow themes of 'preventing muscular injuries' and 'mental training' will be important. For the muscular aspects we will make use of experts in the disciplines of physiotherapy and naprapathy, for the links between muscular and mental aspects we have made contact with discipline experts in the Alexander technique, whereas a research scholar at NAM and contacts at the Elite Sports Centre and the Norwegian School of Sports Sciences are brought in to address mental training."

Both projects will continue for several years, which will allow new teachers to come in with new development projects in the next academic year. The aim is to discover new themes and teaching methods that may gradually become elements in the regular curriculum.

New practice training module at Master's level:

Music therapy and performing students meet residents at Borkenes Asylum Reception Centre

All photos: Kimm Saatvedt

The practice project is a collaborative arrangement between NAM, the Festival of North Norway, Borkenes Asylum Reception Centre and Kvæfjord local authority. For NAM this new module means an exciting opportunity to try new practice training arenas. The development of the module is an element in CEMPE's work on the theme* Preparing for working life*, and involves innovative thinking about the competence needs of the musicians of tomorrow.

The participants in this year's project were Master's degree students – six from the music performance programme and four from the programme in music therapy at NAM. These were told to conduct workshops with residents at the reception centre, culminating in a concluding concert that was included in the official programme of the Festival of North Norway. The project was directed by Rita Strand Frisk, Assistant Professor in music therapy at NAM, in cooperation with dissemination leader Alison Bullock Aarsten.

One of the aims of the project is to provide students with experience in communicating and interacting with people in new arenas. This gives the students important learning input that they can carry with them into their professional work.

Project leader Rita Strand Frisk says:

"The Borkenes project represents a unique teaching arena where the students get an opportunity to learn about planning for and using music in interplay with different cultures. When students from these two lines of study work together, good conditions are created for the mutual exchange of experiences and skills. At Borkenes they encounter many interesting people with musical talent who become their 'fellow performers'. The success of the project depends on the extent to which the students manage to stimulate, egg on and finally to commit the residents to perform in a shared setting."

On 26 June a sparkling and moving concert was presented to an audience of more than one hundred. The concert included group numbers, dance and song in the Western musical tradition and impressive performances with song and drum rhythms from various African countries.

More about the project can be found here: http://tv.nrk.no/program/ndtf10010314/festspillene-i-nord-norge#t=36m17s http://www.ht.no/kultur/festspillene/article9857715.ece

Centre for Research, Innovation and Coordination of Mathematics Teaching

MatRIC is a national centre and learning community working for excellence in mathematics teaching and learning in Norwegian universities and university colleges. The centre is hosted by the University of Agder.

Vision

MatRIC's vision is to be a national centre that enhances the quality of mathematics teaching and learning within the study programmes of other subjects such as engineering, natural sciences, economics and teacher education.

For many years mathematics education has been a priority area for development at the University of Agder. Through MatRIC the university will connect excellent mathematics teachers in universities and university colleges in Norway and collaborate to raise the quality of teaching in mathematics. In cooperation with other Norwegian institutions the MatRIC team will now support mathematics teachers and students to make mathematics more meaningful and enjoyable to learn and to use.

The centre builds much of its activity on a culture of sharing.

As a national centre MatRIC will bring together mathematics teachers in Norwegian and international higher-education communities to exchange experiences and ideas and investigate innovative methods for improved learning outcomes in educational programmes where mathematics plays an important role. It is necessary to explore what already exists and what actually works to ensure innovation is effective and cumulative. This involves students, teachers, researchers, administrators and employers.

All photos: MatRIC

Jo Røislien viser hvordan matematikk brukes i alt fra rehabilitering til musikkproduksjon og hevder «Vi er alle matematikere» på seminar med MatRIC.

MatRIC will:

1. Create, lead and support networks that enable development, sharing and analysis of effective use of video, digital and web-based technologies in learning, teaching and assessment in mathematics.
2. Initiate, support and disseminate research in the fields of teaching, learning and assessment in mathematics in order to identify, understand and evaluate innovative practices.
3. Bring together mathematics educators, scientists, engineers, computer scientists and economists in cross-disciplinary teams to produce authentic workplace simulations and realistic tasks for mathematical modelling.

Simon Goodchild

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

- SFU status 1 January 2014 – 31 December 2018.
- Centre launched 12 March 2014.
- Affiliated to the University of Agder.
- Centre leader is Simon Goodchild.
- The Centre receives NOK 3 million annually from NOKUT.

Read more about MatRIC here: http://matric.no

MatRIC

MatRIC distributes NOK 200,000 for research on the teaching of mathematics

Centre leader Simon Goodchild and project manager Line Eielsen Malde hope that financial resources from MatRIC will inspire researchers to carry their pilot projects forward into national and international research programmes.

MatRIC's aim is for teaching and learning in mathematics to be based on and informed by research and grounded in national strategies for education. In April MatRIC issued a call for applications for small grants to stimulate research into issues that will inform the development of teaching and learning mathematics in higher education.

The following projects received financial resources in the first round:

- Associate Professor Kjellrund Hiis Hauge, Bergen University College: Students' critical reflections on a graph on temperature anomalies.
- Associate Professor Christine Lindstrøm, Oslo and Akershus University College: Using a free online mathematics learning tool, Khan Academy, to strengthen the relevant mathematics skills of pre-service primary- and lower-secondary-school science and mathematics teachers.
- Associate Professor Marianne Maugesten and university college teacher Monica Nordbakke, Østfold University College: Testing and researching on "flipped classroom".
- Professor Said Hadjerrouit, University of Agder: Use of digital tools to improve teaching and learning.

The use of video lectures, "flipped classroom" and simulations is closely connected with MatRIC's core interests. This year's call for project proposals has attracted projects with a focus on digital tools in mathematics teaching, indicating the consistency between MatRIC's interests and innovative activity in Norwegian higher-education institutions.

"It is vital that we create a research base on what forms of teaching work well and what works less well, and how and why various innovative teaching methods influence student learning," says centre leader Simon Goodchild. "Today there is little Norwegian research in this area and that is why we invited applications for these financial resources."

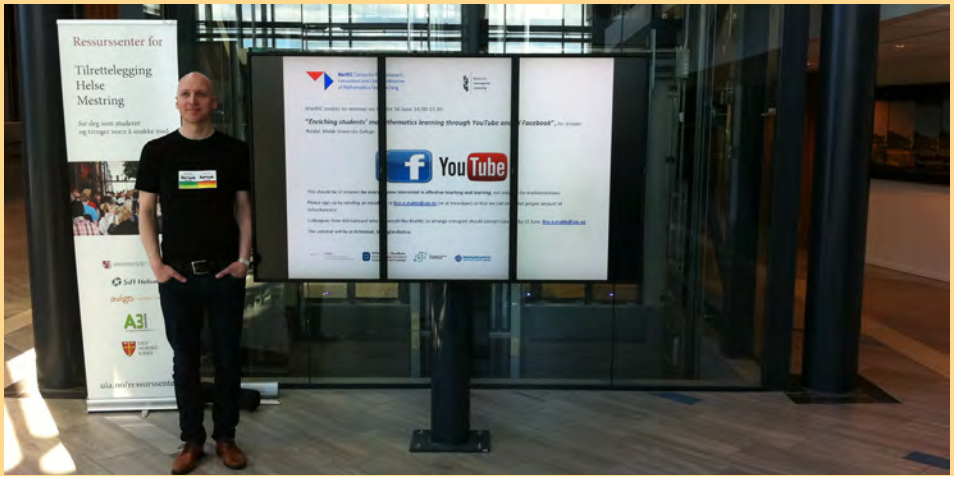
These financial resources have also helped to create interest in MatRIC. This is particularly useful in an initial phase and contributes to more and more people being included in MatRIC's work and its intention to make mathematics teaching in Norway world-leading.

Although the amount of research money being made available is relatively modest, MatRIC hopes that it will generate pilot studies that may also give inspiration to make applications to other national and international research programmes.

MatRIC seminars inspire

Photo: Press photo

Jo Røislien



Per Kristian Rekdal

Many students regard mathematics as a subject they "have to take" in order to be able to study what actually interests them. In addition, many find mathematics difficult and too theoretical. MatRIC wants to motivate teachers and students to help people discover the importance and usefulness of mathematics. In their seminars they involve speakers like the mathematician Jo Røislien to make the point that mathematics is better than rumour has it.

Last June, Per Kristian Rekdal arranged a seminar for teachers with the theme: "Enriching students' mathematics learning through YouTube and Facebook". The Rekdal seminar was the first in what will be a permanent series on mathematics teaching at university level.

MatRIC was made aware of Rekdal's work through economics students at the University of Agder who were using his video lectures on the website of Molde University College. In June he was invited to explain more about his innovative teaching techniques, inspiring many in the audience to debate and reflect on the theme of mathematics teaching.

On 18 August Jo Røislien, known from the NRK TV series Numbers, visited a packed Bluebox in Grimstad with the talk – and the statement – "We are all mathematicians". The audience were taken on a journey behind science and art, where he gave examples of the importance of mathematics in a number of academic disciplines. Røislien delivered his message with the aid of pictures, anecdotes and a twinkle in his eye.

Røislien also confronted the assumption that mathematics is nothing but the rote learning of rules: when a wild-haired maths nerd can pack the student forum Bluebox with listeners on a Monday night, this shows that there may be more to mathematics than the twisted image many people get from their school years. He thinks a cultural change is necessary and that MatRIC is making a contribution in this respect: "The mathematics that is needed to solve today's problems, be it in technology, healthcare, societal planning or entertainment, is getting ever more advanced. It is therefore very welcome that the focus is not only on primary- and secondary-school mathematics but that even mathematics teaching at the higher levels is also being addressed. We must find ways that enable more people to learn more at a quicker pace. It is a formidable challenge!"

Project manager Line Eielsen Malde was extremely satisfied with the event. "It is MatRIC's aim to make mathematics teaching more relevant and exciting to students. Jo is an excellent teacher who helps us to understand how useful mathematics is 'in the real world'," she says.

Malde feels that it is likely that the centre will continue its cooperation with Røislien. "In many ways we have a shared goal – that more students choose programmes that include mathematics and thus contribute to do away with the common 'fear' of mathematics. Guest lectures like this one bring students, teachers and others together and help create a changed attitude towards mathematics."

Conference in Bergen, 23–24 October:

The video revolution

More and more universities and university colleges are posting video lectures on their websites. Video has gradually become a popular tool in the teaching of mathematics, and MatRIC is working to ensure that Norwegian students benefit from the video revolution.

In Norway several universities and university colleges are now developing mathematics resources for the Internet, streaming lectures and making use of video in flexible educational programmes. Much of this work is being done internally at each individual institution, with varying resources.

"At MatRIC we applaud the enthusiasm and energy that many are demonstrating by making videos, but much of this work has so far been uncoordinated in Norway," explains project manager Line Eielsen Malde. MatRIC wishes to help coordinate these activities across institutions, and so in collaboration with Bergen University College the centre will arrange a conference on the theme of video production in Bergen on 23–24 October.

"There is a great drive for innovation in this field in Norway that demonstrates that we are keeping up with international developments," Malde continues. She goes on to mention some examples: at the University of Agder work is ongoing to develop what is known as a "flipped classroom" for engineering students; at the Norwegian University of Natural Sciences and Technology (NTNU) small video clips are already being produced for first-year mathematics students; while Molde University College is at work building a large database of maths films.

Building a network

- An important aim for the conference is to develop MatRIC's video working group, which consists of academics with expertise in mathematics and mathematics didactics from several universities and university colleges. MatRIC wants to build a network that can support the production of high-quality video lectures and encourage positive attitudes to their use in teaching sessions.

The conference is directed at teachers who already include video lectures in their teaching. Ten institutions have already committed to sending representatives to the event, which takes place at Bergen University College.

Please contact line.e.malde@uia.no if you would like to participate.

Read more about the conference here: http://www.uia.no/senter-og-nettverk/matric/activities/mathematics-video-tutorial-workshop

ProTed – Centre for Professional Learning in Teacher Education

ProTed, Norway's first centre of excellence in higher education, is a partnership between UiT – the Arctic University of Norway and the University of Oslo (UiO). The centre is linked to the five-year integrated teacher-education programmes at UiT (school years 1–7 and 5–10) and UiO (years 8–13).

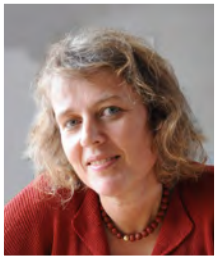
Discipline, field and vision

The vision of ProTed is to educate professional, knowledgeable, secure and internationally oriented teachers for a multicultural society. The centre will strive to enhance its teacher-education programmes in accordance with competence needs in a society driven by knowledge and technology and committed to collaborative relations and life-long learning.
So far, the centre has been a catalyst in about 20 projects that, in various ways, promote integration among the several knowledge fields that are included in teacher education. One of the core activities at ProTed is cooperation with our "university schools". The university, the schools and the school authorities have a shared responsibility for the students' learning outcomes in terms of the knowledge and skills they need in order to become good practitioners of their profession.

ProTed has five main activity areas at its centre:

1. To develop forms of collaboration with the occupational field, based on the university school model.
2. To enhance learning by conducting systematic experiments in teaching, learning and counselling, and by focusing on leadership in education.
3. To contribute to the building of a knowledge base in the field of excellent teacher education.
4. To further the integration of academic subjects and school subjects (application).
5. To strengthen ICT-based forms of learning in teacher education.

Andreas Lund



Rachel Jakhelln

Centre for Professional Learning in Teacher Education (ProTed)

- SFU status from 2012–2016.
- Centre opened 3 May 2012.
- Affiliated to the University of Oslo and UiT – the Arctic University of Norway.
- Centre leaders are Andreas Lund (UiO) and Rachel Jakhelln (UiT).
- The Centre receives NOK 4 million annually from NOKUT.

Read more about ProTed here:

http://www.uv.uio.no/proted/english/

ProTed

ProTed and the university schools – partnership for the future

Photo: ProTed

ProTed is hosting a conference on 6–7 November with university schools on the agenda. A previous presentation of this collaborative arrangement in Tromsø is shown.

International research on teacher education shows that one of the keys to excellent education is the development of effective and innovative collaboration arenas between schools and higher education. With the university school model the universities, the schools and the school owners/authorities take a shared responsibility for the students' learning outcomes in terms of the knowledge and skills they need to become good practitioners of their profession.

ProTed cooperates with 22 university schools to secure good integration of academic disciplines, disciplines as applied in professional education and practice training. The university schools will offer more than just good practice arenas for student teachers: they will also function as innovative arenas where students, school teachers and university teachers contribute to learning, research and development work.

Integration means added value

ProTed can give several examples of how this type of integrated model means added value. One example is *Research projects with triple value*, **i.e. value for students, the school and the researchers. Another is the project** *Investigative mathematics teachers*. **The centre's collaboration between UiT and UiO has resulted in good ideas travelling between the institutions. The dialogue seminars that started in Tromsø were later integrated into the five-year Master's programme in Oslo.**

6–7 November: "Partnership for the future" conference

Experiences and ideas about the potential for development will be shared this coming autumn at the national conference entitled "Partnership for the future", where the participants from teacher education and the schools will discuss, among other things, what a university–school collaboration actually implies, and will look at opportunities and challenges in this particular partnership. The first day of the conference is open to the public.

Read more about the conference here (in Norwegian):
http://www.uv.uio.no/proted/aktuelt/aktuelle-saker/partnerskap-for-fremtiden-2014.html
or here, via the Knowledge Centre for Education: http://www.forskningsradet.no/servlet/Satellite?c=Rapport&cid=1254001945841&lang=no&pagename=kunnskapssenter%2FHovedsidemal

Pilot in the North: Master's degree programmes for primary- and secondary-school teachers – the Tromsø model

Photo: Visualdays.

Anna Strand Andersen og Ingrid B. Wikeland

The Government is requiring five-year Master's programmes for primary- and secondary-school teacher education as from 2017. UiT – the Arctic University of Norway is at present the only institution in the country to have started a pilot project, with two Master's programmes aimed at years 1–7 and 5–10 of primary and secondary school. The first group of candidates will be ready to start work in Norwegian schools in the autumn of 2015.

ProTed as promoter of Pilot in the North

The centre has been involved in the development and formulation of the content of the pilot project. To ensure that the new teachers become professionally secure and development-oriented, important factors such as the principle of R&D-based education, dynamic practice arenas, systematic development of a digital learning environment and a consistent focus on the profession have been made central.

Experiences from the cooperation with the university schools have made important contributions to the definition of the pilot project. The university schools are a crucial part of the development of high-quality practice training and are vital in securing a cohesive educational programme.

ProTed is now addressing the issue of competence development related to academic counselling of large groups of Master's students.

Final Master's thesis

A five-year Master's programme of teacher education is important in order to attain the future quality aims of Norwegian schools. A Master's thesis offers the students an opportunity to study teaching and school development at close range.

The fifth-year students are now engaged in work on their Master's theses. Several of them are addressing basic skills related to specific school subjects, while others are investigating more overarching themes such as entrepreneurship, cultural pluralism or gender disadvantage. Still others have chosen to do research on organisational issues, such as how teachers' time is spent on different tasks or the integration of new employees.

In their project sketches the students demonstrate their understanding of systematic data collection, a critical and analytical approach to schools as organisations and activity arenas, with a clear orientation towards change and development.

A Master's thesis thus gives the students a better foundation for offering advice concerning school development in learning organisations.

ProTed: a pioneer in the field of digital forms of learning

Photo: Visualdays.

Marthe Skrivervik

One of the main projects of ProTed addresses digital forms of learning in teacher education, both as a tool for improving educational quality in teacher education and to prepare tomorrow's teachers for the application of such tools in their teaching.

A study conducted by the Centre for ICT in Education shows that there is a gap between the ICT skills of newly educated teachers and the skills that are demanded in their first years as practising teachers. ProTed wants to do something about this. The centre is working to develop digital forms of learning and to address questions related to teaching and learning in a digital learning environment.

Learning for the future

The work of ProTed builds on many years of research carried out at both UiT and UiO. The centre develops and applies technology-supported forms of practice training and examinations and integrates digital skills related to the profession in the teacher-education programmes. This is vitally important to enable tomorrow's teachers to educate their pupils for the Internet society.

The centre contributes to a national effort in the area of teachers' digital skills by:

- Publishing scientific and more popularised accounts of digital skills in the teaching profession.
- Cooperating with the Centre for ICT in Education on the development of a formative test to map students' digital skills. The test will be piloted among the students at the Master's programme for primary- and secondary-school teachers at the University of Tromsø in 2014–2015.
- Making contributions to the development of digital environments and forms of learning for the students through a series of projects associated with the educational programmes.

Digital exam

ProTed is one of the bodies behind the development of a "digital exam". Students will have to complete an assignment that closely exemplifies the challenges and opportunities that teachers encounter in the execution of their profession. With a digital video clip as a point of departure, the students will have to integrate pedagogical and subject-related didactic literature and their own experiences from practice training in their texts. The students may cooperate and complete the assignments either at home or on campus. This new type of exam has been met with enthusiasm among the students.

Former SFU applicant TransARK opens centre

Photo: TranARK

Centre leader Gro Rødne working with a student.

Transformative Learning in Architectural Education (TransARK) was one of the finalists that did not quite make it to SFU status in the 2013 application round. This November they launch a centre at the Norwegian University of Science and Technology (NTNU).
"The SFU arrangement has had effects far beyond those academic communities that were actually selected as SFUs," says centre leader Gro Rødne. "It is an important inducement to increase our efforts to enhance the quality of our educational provision."

SFU application gives shared vision

TransARK is a cooperative venture between the Faculty of Architecture and Fine Art and the University Pedagogics Unit (UNIPED) at NTNU. Several people on the TransARK team have experience from developing educational designs as course leaders in the Master's degree programme in architecture.

We asked Rødne about the motivation behind the application for SFU status in 2013. "I think there was a common wish to develop our teaching and to generally reform the programme, making it answer better the relevant issues of our own time," she explains. Right from the outset, the team had a fairly intimate knowledge of each other's work through different fora – both formal and informal – and a shared vision quickly materialised. "Work on the SFU application in weekly meetings led us to systematise our efforts, particularly concerning phenomena that all work packages have in common and that are relevant to all learning. An increased awareness grew out of these meetings, where our different discipline perspectives gave mutual inspiration to keep finding out more," says the centre leader.

Vital backing from NTNU leadership

Rødne believes that support from the NTNU leadership motivated the team to start working on the application. She reports: "At a steering dialogue meeting with the rectorate where we were invited to explain our teaching methods and our findings, we received powerful encouragement to apply for SFU status from the Vice-Rector for Teaching, Berit Kjeldstad. It was important for us to have leadership backing."

Development of plans continued after announcement of winners

"Through our work on the SFU application we noticed that more energy was being released compared with when we were working in isolation. It was quite a kick for us to qualify among the finalists," says Rødne.

At NOKUT's decennial conference the centre leader was particularly inspired by the leader of the SFU selection panel, Duncan Lawson.
"He argued that those who did not quite make it to the top must carry on the good work: 'Start planning now! Develop local excellence! Work with others! Identify problems that need solving! Involve students!' The entire team were determined that this work must be continued irrespective of success in the SFU competition. We have made Lawson's words our own and will launch our centre in November," Rødne concludes.

National symposium:

Educating the professionals of tomorrow

Photo: HIOA

Organiser Professor Anton Havnes

On 3rd and 4th of June this year a national symposium on excellence in educational programmes qualifying for the professions, was arranged for the first time. The initiative came from the Centre for the Study of Professions (SPS) at Oslo and Akershus University College. The symposium gathered many participants from universities and university colleges in Norway.
- One of the aims of the symposium was to help strengthening academic communities in the field of education for professions with regard to future applications for SFU status, explains professor Anton Havnes, organiser of the event.

SFU criteria as starting point

The symposium, lasting for two days, was organised as a working seminar where the participants cooperated in formulating characteristic features of excellent educational programmes for the professions and in defining current status and challenges. The aim was to provide the basis for a brief, pointwise agenda for the strengthening of quality in education for the professions, using the criteria for the awarding of SFU status as a point of departure.
Havnes explains why the SFU criteria were a useful reference:

- One can expect that an institutionalized standard for good education will be developed through the SFU arrangement. This means that we should take these criteria seriously. For the symposium we picked some key themes in the SFU criteria, like R&D-based education, innovation, vocational practice training, the documentation of quality and the integration of disciplines. The themes correspond well with the way we work at SPS to develop quality in educational programmes for the professions.

University colleges need success in the competition for SFU status

Apart from lifting the discussion of quality in education for the professions out of institutional contexts and on to the national academic arena, the participants at the symposium wanted to prepare a foundation for successful applications for SFU status in the future.

- In the two application rounds so far, only the universities have succeeded. The university colleges have failed. However, I am not quite convinced that educational quality is so much better at the universities than at the colleges, but they are far better at writing good applications. We have to develop a higher degree of professionalism that enables us to compete better in this respect.

The idea behind the symposium is to create an arena for communication among the institutions in order to enhance the opportunities for collaborating in the filing of SFU applications in the future.

Does not rule out the idea of another symposium

Haves got the inspiration for this working method during a study visit to Oxford Brooks University, where they had a Centre of Excellence in Teaching and Learning (CETL).

- We have had very positive feedback about the method. Quality and development in education for the professions is a field where much work has been done, but researchers rarely meet across discipline boundaries for extensive discussion and collaboration. Havnes does not rule out the possibility of similar events in the future, but the first task now is to piece together an agenda based on the current discourse, at this year's symposium

Facts:

Sentre for fremragende utdanning (SFU)

The Ministry of Education and Research launched Centres of Excellence in Higher Education in 2010 as a national prestige arrangement for educational activity in higher education.

The status of Centre of Excellence in Higher Education will be awarded to academic communities that can already demonstrate excellent quality and innovative practices in their educational provision. A crucial requirement is the ability to disseminate knowledge and results that have been achieved. The centres must have specified plans for further development and innovation.
The SFU arrangement, which is managed by NOKUT, is a parallel to Centres of Excellence in Research (SFF) and other similar arrangements in research.

Aims of the SFU arrangement

The SFU arrangement entails a concentrated, focused and long-term effort to stimulate the development of teaching and learning methods in higher education at the Bachelor's and Master's levels.

The overarching aim of the arrangement is to contribute to the development of excellent quality in higher education and to demonstrate that teaching and research are tasks of equal importance for universities and university colleges. An important aim is to stimulate the development of excellent R&D-based education.

In particular, the SFU arrangement must promote and reward work that is carried out in interaction between students, teachers, support services and the educational knowledge base.

Organisation and duration of the centres

An SFU is attached to an educational institution or a host institution that remains responsible for its activities. Host institutions may be universities, special field universities or university colleges.

Calls for applications are in principle open to all educational areas, but the Ministry of Education and Research may issue specific priorities for specific application rounds. It is the intention to announce new centres every three years.

The award of SFU status is given for five years, with the possibility of a further five-year extension. Centres will be evaluated after they have been operative for three and a half years. After this evaluation it is decided whether centre status will be prolonged beyond five years.

Read more about the arrangement here: http://www.nokut.no/en/Universities-and-university-colleges/Centres-of-Excellence-in-Higher-Education/

NOKUT