

MatRIC Leader Report March 2016

Programme for 2016

Since the last Management Board we have fixed some events in our programme for this year.

1. Seminar: Flipped Classroom approaches Narvik 9 June 2016. We hope to host Matt Voigt a PhD fellow from San Diego State University (SDSU), (June-September). Matt's PhD has similar focus to Helge Fredriksen (MatRIC PhD fellow) on flipped classroom approaches. Matt's supervisor from SDSU will be here at this time to contribute to the third and final session of the teaching/induction course in Trondheim. The coincidence of these events prompted the idea of the seminar on the topic of Matt's and Helge's PhDs, at Narvik where Helge is employed part-time. We intend to extend the seminar into a workshop for PhD fellows – focusing on analyzing video data, and the final event of the METMAS project (Mathematics Education Through Modelling Authentic Situations a collaboration with Brno University of Technology funded by a EEA Norway Grant).
2. Centre visit to MEC Loughborough – combine with the CETL-MSOR conference, 5-9 September. This will be the third visit of MatRIC to MEC Loughborough. We had intended to host the meeting in Kristiansand or Grimstad, but since MEC was hosting the Centre of Excellence in Teaching and Learning – Mathematics, Statistics and Operations Research (CETL-MSOR) conference on 6-7 September we decided to combine the events.
3. MatRIC Annual Conference 19, 20 October at Gardermoen (Conference programme committee). Line set up a small programme committee (Inger Johanne H. Knutson (UiA), Ragnhild Johanne Rensaa (UiT) and Helmer Aslaksen (UiO) to decide dates and speakers for the conference. The keynote speakers who have agreed to come are Professor Michael Dorff, Brigham Young University, Utah; Associate Professor Inger Christin Borge (UiO); Professor Knut Mørken (UiO); and Professor Carl Winsløw (Copenhagen University). The theme of the conference is: *“Addressing the challenges faced by teachers and learners of university level mathematics.”*
4. A mathematical modelling workshop is being planned for August.

Visiting Professor: August 2016

We applied for and received funding for a guest researcher stipend for Professor Chris Rasmussen to come in August. He will contribute to the modelling workshop. This is a follow-up from our failed INTPART proposal last year. Prof. Rasmussen received a small grant from his institution to visit us, we have augmented this with a university guest stipend. He will be with us for ten days 7-18 August.

Visits in and out and meetings.

Members of the MatRIC team have been involved in a number of visits so far this year. These are included in the calendar. Of particular note is a three week visit by Yuriy Rogovchenko and Simon Goodchild to the USA highlights from this are included below. Also Claire Vaugelade Berg attended a meeting in Oslo with NOKUT at which the Minister of Education and Research spoke. **The theme of the meeting was: “The way ahead for the teacher education.”**

Visit to USA

SG and YR visited USA for three weeks, 8-29 February 2016. The visit included visits to two universities, a conference and an ‘invitation’ workshop.

1. The 'invitation' workshop at the Mathematical Sciences Research Institute in Berkeley was advertised as focusing on university level mathematics education research. In the event there was more focus on school level research. The main focus was on analyzing video. One idea emerging from this that could be worth exploring and introducing to Norway are teachers' 'video clubs'. This is a form of professional development in which teachers contribute with a video recording from their own classroom and then view and discuss this with other teachers 'in their club' and a mentor/coach.
2. The next stop was San Diego State University. There we had the opportunity to observe several classes and sit in on research group meetings. There are perhaps three things which stand out and will contribute to our work in MatRIC.
 - First, one lecturer working with a small group of undergraduate students on real problems they had been given by local industry and research institutes. The important part of this work is the process in which the students are engaged rather than any 'solution' to the problems. This is part of a national project to broaden the minds of students of mathematics to how their degree might be used. We could see such an idea hitting several targets (student engagement, research based education, engagement with industry) and we were put in touch with the programme's national leader – Professor Michael Dorff. We follow up this with YR attending a workshop in Utah in May, and Professor Dorff speaking at our conference in October, and visiting UiA at the same time.
 - Another very interesting experience was how a physics professor was approaching the challenge of teaching very large classes. He taught in a room with between 20 and 30 students present, he thus had quite intimate contact with these. The remainder of students on the course were following on-line, but in touch with the class through a discussion forum. A teaching assistant followed the on-line discussion and brought to the professor's attention questions and comments that could be followed. All students on the course were obliged to attend physically at least three sessions within the classroom.
 - The third experience of note from SDSU is an approach to producing mathematics tutorial videos. In these the video is produced not as in MatRIC TV with just the teacher at a document camera, but there with two students present so there could be an active dialogue between the students and the teacher.
3. The next stop was Tempe/Phoenix, to visit Arizona State University. Here we were introduced to the work Professor Pat Thompson has pursued over many years developing a tool for evaluating students and teachers 'mathematical knowledge for teaching (MKT).' This could be of considerable interest to us in MatRIC and UiA. We want to find the right opportunity to bring Professor Thompson to Norway to share his work. Also we hope to get some masters students using his MKT tool in their dissertation work.
 - We also were introduced to the work of Professor Marilyn Carlson who is developing pre-calculus bridging courses. This work is relevant to MatRIC's interest – in the development of bridging courses for teachers, engineers, and the pre-calculus content of MatRIC TV. We are looking into the possibility to bring Professor Carlson to UiA and Norway to share her insights, innovation and research in this field.
4. The final stop on our visit was the Research in Undergraduate Mathematics Conference (RUME), which was held in Pittsburgh. This conference had about 200 participants, a majority of these being PhD fellows who are working in the field of undergraduate mathematics education research. It was a very interesting, lively and friendly conference. This is where we

want our MatRIC PhD fellows to be to network and be inspired in their research. We want to support our MatRIC PhD fellows to attend this conference next year (in San Diego).

The second session of the Teaching/induction course took place as planned at NTNU, 9-10 March. The main speaker was Trevor Hawkes, and experienced university mathematics teacher and now leader of a mathematics support centre in the UK. Other speakers included Svein Olav Nyberg, Folke Haugland, and Simon Goodchild (UiA) and Frode Rønning NTNU. Only 8 of the participants from the first session attended (those absent – one was on a research visit in Spain, one explained that he felt he had missed too much – due to family commitments in the first week, the third provided no reason). The third session of this course will be held 13 June.

In the new round of SFUs it seems there could be new partners for MatRIC – NMBU (statistics), NTNU (basic education for engineering), HSH (teacher education), and UiA (Rhythmic music). As I am approached by others in the process of writing proposals my general position is to be supportive and willing to indicate an intention to collaborate if the proposal is successful. SG presented experiences from MatRIC's proposal at NOKUT's national 'søkerseminar' at Gardermoen on 8 March.

New opportunities for proposals for external funding have been announced (INTPART, FINNUT-innovation). We will revise the INTPART (International Partnership) proposal that was not successful in 2015. We are in discussion with the company developing our web pages with a view to making a proposal based on an integrated learning resource including interactive video, text, visualization and digital self-assessment.

MatRIC TV: There are now over 50 videos available on MatRIC TV. There was a meeting of the production group with some 'external' critics on 14 March. The meeting confirms my feeling that in terms of impact the process is more significant than the product. Mathematics teachers and mathematics education researchers from several universities (UiA, UiO, NTNU, HiOA, HSN) met and discussed teaching mathematics – content, didactics and presentation were all considered.

Line is in the process of establishing student – user panels, the following have been suggested as tasks for the student panels (one in Kristiansand and one in Grimstad)

- Make suggestions for developing and improving and possibly implementation of suggestions about MatRIC Drop-in.
- Disseminate information about MatRIC drop in amongst the student population.
- Support MatRIC's student representatives on the MatRIC Board, for example to discuss issues in advance of meetings.
- Discuss and come with suggestions about how mathematics teaching could be improved.
- Give feedback on the content of matric.no
- Represent students at SFU network gatherings and MatRIC events.
- Contribute to the development of MatRIC's strategy and programme
- Offer a students' perspective of MatRIC's impact within the university

March 30 –April 2 is the first 'INDRUM' conference – Montpellier. This is a new group focusing on undergraduate mathematics education research that has emerged from the European Congress of Researchers in Mathematics Education. SG is on the Scientific Committee, MatRIC will be represented by several colleagues presenting their research (Olov, Said, Helge, Ninni Marie, SG). About 100 participants are anticipated, between 60 and 70 papers and posters have been accepted following a peer review process. We are pleased that MatRIC has strong representation at this event.

MatRIC Drop-in continues. There is need for continued work amongst the student population to get the Drop-in know, especially in Kristiansand. The Drop-in support was established as a pilot project with temporary contracts for the Centres' leaders. It is necessary to establish a firm and sustainable framework for the Centres. MatRIC leadership is currently in discussion with Faculty leaders to explore the way forward.