

SFU Interim Evaluation

Report following site Visit

MatRIC

The site visit to MatRIC was helpful in gaining a clear sense of the progress of the centre, the challenges that it faces, and to formulate clear advice about how the Centre might develop in the second period of funding. The panel welcomed the clear support by senior institutional leaders for the work of the Centre.

Progress on stated aims

MatRIC aims to lead research and innovation in mathematics ‘user programmes’ by networking mathematics teachers, conducting research into innovation in the teaching and learning of mathematics, developing teaching resources that simulate workplace applications of mathematics and support mathematical modelling and disseminating research and innovation in mathematics teaching. This is very important work given that difficulties with mathematics are a significant cause of drop out in Norwegian undergraduate education.

The panel felt that the Centre had made good progress on a number of these aims. The Centre had set up good national networks of mathematics teachers and had conducted some useful research into the teaching and learning of mathematics. The students and teaching staff, as well as the national stakeholders, that the panel talked to were very positive about the work of the Centre and clearly felt it had supported their engagement with mathematics education. Students were positive about the innovations, such as the flipped classroom, that the Centre had supported. The Centre had developed a number of useful resources including those on MatRIC TV and had made good progress in disseminating their work. The international networks of the Centre were also impressive and this was underlined by the participation of a number of the international partners in the site visit.

The panel were also impressed by the high level of institutional support for MatRIC by the senior leadership of the University of Agder. The senior leadership clearly stated that the Centre will play an important role in future institutional development of teaching and learning and were very committed to the future development of the Centre.

Challenges

The panel identified five main challenges for the centre. In setting out these challenges it is important to be clear that in trying to support mathematics as a service subject, MatRIC is working in a very challenging area. This means that it is not surprising that it faces many challenges in undertaking its work and the challenges outlined are highlighted to support

MatRIC in developing its plans for the second phase of funding rather than as criticisms of MatRIC's progress in the first phase.

First, the Centre's vision for mathematics education was not clear. Part of the challenge of mathematics education appears to be that it is taught separately from students' main subject or professional area. The panel were not clear to what extent the Centre saw itself as challenging this separation or simply trying to ameliorate the problems that are caused by it. Using the terminology of one of the students the panel met, if the Centre is to turn mathematics from a 'no subject' to a 'yes subject' then students need to be able to see how it is relevant to their main subject of study. The panel felt that the Centre needed to develop a clearer narrative of the kind of changes it wants to support, and how it wants to support such changes.

Second, the panel were not clear how the overall whole of MatRIC's work was greater than the sum of its parts. This was because the panel were unsure about how the individual elements were mutually connected and contributed to MatRIC's overall strategy, and how this strategy was being applied in different disciplinary contexts. For example, the panel were not clear what strategic role MatRIC TV played in the work of the Centre. This was particularly as some of the videos produced seem to be based on traditional approaches to mathematics teaching and thus appeared to undermine the Centre's commitment to supporting innovative teaching practices. Similarly, it was not clear how the drop-in centre provided a sustainable model of development given that it was focused on supporting individual students to solve individual maths problems. To be clear, the panel wished to see *how* these initiatives contributed to the overall strategy rather than suggesting that these initiatives do not contribute to the strategy.

Third, the panel felt that MatRIC's change strategy could be developed further. The approach appeared to be to work with the enthusiasts and support them to be change agents. However, the panel were not clear how this would lead to systematic and sustained change given the institutional and disciplinary norms that often play a key role in reproducing traditional teaching practices. The panel also wondered whether this strategy would be more effective if it also focused on developing relationships with institutional partners as well as with individuals. Similarly, it was not clear how much the Centre was focused on supporting all mathematics education and how much it planned to work on a subject-by-subject basis. The panel heard how Engineering was a main focus of the first round of funding and that Economics was due to be a focus of the second phase of funding. The panel wondered whether a more systematic approach to supporting mathematics education might be more sustainable than working with each subject in turn.

Fourth, the panel felt that there was a lack of evidence provided to show how the Centre had met its overall aims. There was also a need to develop a more evidence-based approach to developing and evaluating initiatives. In developing a vision for mathematics education, the Centre should pay close attention to how it will evaluate its success in realising its vision.

Finally, the panel was concerned that the success of the Centre was too dependent on the Centre Director. For the second phase, it is important that a more distributed approach to leadership is developed and that the Director is supported by both the Centre and the University to develop and implement a clear strategic vision for the Centre. Related to this, whilst there was strong institutional support for the Centre, the panel were less clear about the role that MatRIC was expected to play in the University of Agder itself. For example, while MatRIC cooperates with BioCEED in a project aimed at strengthening mathematics education for biology students at the University of Bergen, it is unclear how mathematics education for biology students at the University of Agder will benefit from this project. It would be helpful to develop a clear account of how MatRIC enables the University to deliver key aspects of institutional strategy aimed at strengthening educational quality at the University.

Looking forward

In developing their action plan for the second funding phase, the panel recommends that MatRIC :

1. Develops an explicit vision for its contribution to Mathematics Education internationally, nationally, as well as institutionally. This should provide a clear sense of how the Centre plans to manage the tension between supporting mathematics as a service subject and supporting the integration of mathematics teaching into the teaching of the discipline or professional area.
2. Develops more specific overall objectives for the Centre and a clear sense of how these will be measured and evaluated.
3. Develops a more coherent and sustainable strategy for supporting change across mathematics education as a whole. This is likely to involve focusing on a smaller set of goals that are more connected to the overall vision for mathematics education
4. Develops a more distributed model of leadership, which involves sharing responsibility for leading different aspects of its strategy more widely across the Centre. This needs to be achieved in practice as well as incorporated into strategy documents.
5. Works with the University to clearly articulate the strategic role in educational development that MatRIC will play in the institution in the second phase of funding.
6. Overall, these recommendations should be read as strongly suggesting that MatRIC is more strategically focused on what it does and how this relates to its overall vision rather than as an encouragement that MatRIC should increase its level of activity in the second phase.