Education Assessment Exercise (EAE) 2011

EVALUATION FOR QUALITY DEVELOPMENT AT KTH
– A PROJECT SUMMARY

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Increasing demands on higher education

In Sweden as elsewhere, there are growing demands on higher education institutions. Students require a good foundation for future careers; employers need qualified employees; politicians want higher education institutions to be both engines for growth and creators of knowledge. Nowadays, higher education institutions also have to be competitive and operate in a global market.

Meanwhile, Swedish higher education institutions have been given increased freedom. Many aspects that were previously nationally regulated are now left to the individual institution to decide upon. However, with this increased freedom comes greater responsibility, not least in relation to the quality of courses and programmes offered.

KTH responds to demands

KTH is Sweden's largest technical university with a clear international profile and almost 14,000 full-time students at first and second-cycle levels. It is an established ambition at KTH to compete on high quality.

Realising this objective requires robust internal quality assurance.

The strategy of KTH is to be proactive by initiating its own quality assessments rather than waiting for external actors to conduct reviews. For example, a comprehensive evaluation of research at KTH, entitled Research Assessment Exercise (RAE), was conducted in 2008. Another RAE is being conducted during 2012. In this process, KTH research receives great exposure as well as thorough review.

The first RAE resulted in the idea of conducting a corresponding assessment in the area of education. Thus, an Education Assessment Exercise (EAE) was launched in 2011.

EAE - a project with high ambitions

The core idea behind the EAE was that the assessment would contribute to making education at KTH even better. By creating platforms for discussion at operational level, important issues would be brought to light and problems would come to constructive solutions. It was therefore vital that as many educational coordinators, teachers, students, and stakeholders as possible be involved. This would also give positive ancillary benefits in the form of improved communication and increased knowledge of one another's work. The EAE was therefore designed as a comprehensive project and included all degree programmes at KTH. As the main focus was on development needs, newly established programmes and programmes under revision could also benefit from the project.

Another thought behind the EAE was that KTH would operate one step ahead of the national review cycle.

By conducting its own evaluation a year ahead of the Swedish National Agency for Higher Education, KTH would be prepared for the coming external evaluation. It was therefore decided, for example, that the EAE project would include a quality assessment of student degree projects, which are a focus of the national review.

While the Swedish National Agency for Higher Education only evaluates educational outcomes, EAE adopted a holistic approach and also focused on the prerequisites of education delivery, such as student characteristics and teacher competence, and on educational processes, such as teaching and assessment methods. As an international university, KTH chose to conduct the project in English in order to be able to invite external reviewers from leading foreign educational institutions.
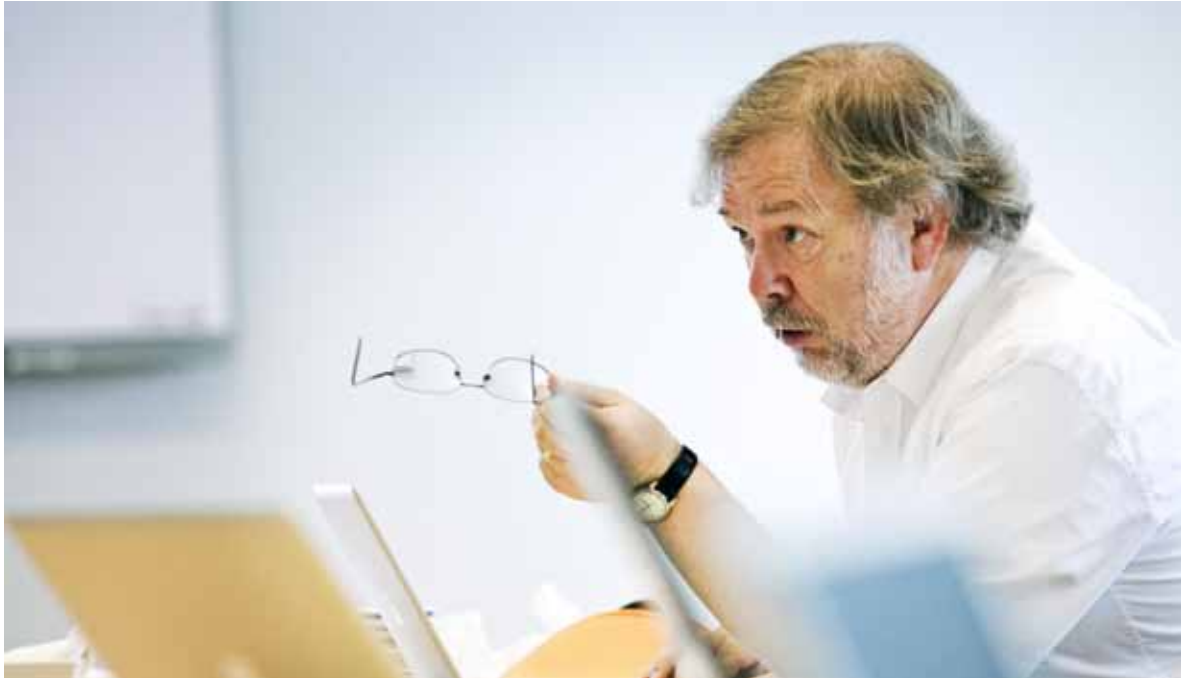
EAE - how it happened

A three-stage model consisting of self-evaluation, external review and follow-up is the international standard method of assessment within higher education. This model was chosen for the EAE. The project was designed as follows:

SELF-EVALUATION

The evaluation involved all degree programmes at KTH leading to a Master of Science in Engineering, Master of Architecture, Bachelor of Science in Engineering, Bachelor of Science and Master of Science; a total of 90 programmes. Each programme, or groups of several programmes, was represented by a group conducting a self-evaluation of prerequisites, processes and educational outcomes. Each self-evaluation group consisted of 5-12 people, including students and stakeholders.

The self-evaluation was conducted according to a specific manual with a set of questions. The groups concentrated on analysis rather than description, so that the programme's strengths, weaknesses, opportunities and threats became clear. During the self-evaluation period, the self-evaluation groups were offered process support from KTH educationalists by way of seminars, reference material, open days and feedback on the draft report. The groups also gained access to a statistical database that could be used in the analysis.

Despite self-evaluation being demanding, many groups commented in their reports that they found the process to be useful. Many appreciated the opportunity to think strategically about the degree programmes and then receive external feedback. Some of the self-evaluation questions, however, were considered difficult, not least those concerning intended learning outcomes and how to ensure that students reach the objectives.

THE EXTERNAL ASSESSMENT

A panel of experts from different fields of technology, teaching and learning, and evaluation, was appointed to perform the external assessment. Students and stakeholders were also included in the group. Educational coordinators at KTH had made nominations to the assessment panel, which was to consist of a total of 50 members divided into 8 sub-panels, broadly matching the KTH school division. Reviewers from Sweden, other Nordic countries, several European countries and, in one case the USA, were involved. English was used as the common language.

The starting point in the assessment was, primarily, learning outcomes: the nationally established ones as well as those applicable to each KTH programme. The self-evaluation reports, along with samples of student degree project reports, served as the main basis for the reviewers' work.

In August 2011, the assessment panel visited KTH in order to meet with KTH management, teachers, programme coordinators and students. The logistics of the visit were complex and dependent on a significant commitment at all levels, from student unions and teacher teams to the Management Group and the central project team. Many constructive discussions were held.

Before the group departed, the reviewers provided verbal feedback regarding their impressions of the various education programmes at KTH. Later, they also provided written comments.

EAE - results

A variety of different types of programmes were affected by the EAE project and the evaluation results vary as a result of this. However, some general conclusions can be drawn.

MANY STRENGTHS IN KTH PROGRAMMES

The evaluation highlighted many strengths in KTH programmes. Worth mentioning is the fact that graduates are in high demand which means that, in principle, all KTH graduates find relevant jobs that they enjoy. In general, both students and alumni are satisfied with the education they have received at KTH.

Another strength is a solid academic base thanks to KTH being a research-intensive university - an advantage that in some cases could be put to even better use in programme delivery. The majority of KTH students want their studies to be challenging, and most of the time they find this to be the case.

In the EAE, many examples of good practice are highlighted: individual initiatives as well as continuous quality work. KTH was one of the founders of the CDIO Initiative, through which a methodology for supporting student learning and acquisition of engineering skills has been developed. In the EAE process, it became clear that programme teams that have a put a lot of work into CDIO have a head start. They are now quite used to working systematically with intended learning outcomes. In this area, there are many examples of good practice to disseminate both within and outside of KTH.

BOLOGNA IMPLEMENTATION ONGOING

The educational reforms implemented at KTH and other Swedish higher education institutions as a consequence of the Bologna process are both extensive and, in an educational development perspective, still new. At KTH, a 3+2 structure has been implemented which means that the last two years of the five-year engineering programme are delivered by way of a Master's programme, which can also be taken independently. After three years on the engineering programme, the student should be eligible for a Bachelor's degree.

One conclusion drawn from the EAE project is that this complex implementation process is far from complete. Uncertainty surrounding the educational structure can make it difficult to work with intended learning outcomes, including ensuring that the students reach the objectives.

THE PARTS WORK WELL, LESS SO THE WHOLE

Another general pattern that emerges from the EAE is the difference between course level and programme level. At course level, the necessary conditions normally exist for creating a positive educational environment. Teachers have a good overview of course objectives and work actively with course development. Students also have the opportunity to give feedback through course evaluations. Normally there are opportunities for informal contact between students and teachers. This makes students feel noticed and, consequently, more motivated.

The same conditions do not always exist at programme level. Although there are positive exceptions, programme responsibility is often not clearly defined; many of those appointed as coordinators feel that they do not have the resources or tools necessary to perform the task as they would like.

STUDENT RETENTION IS A QUALITY ISSUE

Like most other technical universities in Sweden, KTH has relatively low student retention rates. The EAE project confirms this picture. The problem manifests itself in several ways, from early drop-outs to disinterest in applying for the degree certificate. Sometimes, it is a case of KTH students being so sought after in the labour market that they are recruited before their education is complete. However in the EAE project, most self-evaluation groups take the issue seriously and view unfinished higher education credits as poor management of student places. An important conclusion is that student retention issues cannot be treated in isolation but instead need to be linked to other quality issues, such as teaching and assessment methods.

SUSTAINABLE DEVELOPMENT - AN AREA REQUIRING ATTENTION

In the national descriptors for all qualifications covered in the EAE project, intended learning outcomes are specified which in some way concern the environment and sustainable development. This is also an area in which KTH has declared an ambition to invest.

To a certain extent, this is visible in the self-evaluation reports; several reports address efforts to do with integrating sustainable development and environmental issues in education delivery. However, there is relatively little discussion regarding the extent to which students actually achieve the objectives.

The EAE clearly shows that sustainable development aspects of education delivery require more attention.

IMPORTANT TO GIVE MORE CREDIT TO TEACHING

Although the focus of the EAE was on intended learning outcomes and how to ensure these, part of the discussion dealt with the conditions of education delivery, such as the situation of teachers. Good career paths for those wishing to specialise in teaching, as well as paths between academia and the surrounding community, are deemed essential for the capacity to deliver high quality education. Many calls are made for according education the same high status as research. The EAE project is in itself a step in this direction.

EAE - to be continued

When the external assessment panel departed KTH after the site visit, the most visible part of the EAE project was over. The most important work, the follow-up, then took precedent. In the coming years, the evaluation results will be followed-up within regular processes, e.g. within the framework of the operational assignments that KTH schools receive from the President.

Most of the follow-up work will be conducted at an operational level within the schools, but certain issues are common to all parts of KTH and require supplementary initiatives at central level. In 2012, the KTH Faculty Council has engaged in an active dialogue with school management teams and educational coordinators in order to find common solutions.

Among the measures taken, it was decided that the roles of the programme coordinators would be clarified in KTH regulations and that a support forum be established for this important group. Another measure is the continued efforts regarding environmental integration and sustainable development in education programmes. The recently established advisory council KTH Sustainability, led by a Vice-President and acting as support to the Faculty Council, has an important role to play in this regard.

The EAE also has a natural follow-up mechanism, through the external evaluation conducted by the Swedish National Agency for Higher Education in 2012. Having implemented the EAE, KTH has instigated a discussion and gathered information, e.g. on the quality of degree projects and on the efforts to ensure that students meet the intended learning outcomes, which will be valuable in the upcoming external evaluation.

Continued high ambitions in future quality assurance

Quality assurance at KTH now faces new challenges. The second round of the Research Assessment Exercise (RAE), engaging a large part of KTH faculty, is being conducted in 2012.

Both on the research and the education side, the idea is for evaluation projects to be conducted cyclically with 4-5 year intervals. A meta-evaluation of the EAE was initiated in order to assess how well it lived up to its objectives and to provide suggestions on which method should be used the next time a corresponding evaluation is conducted. The first phase of this meta-evaluation has been completed. Here, it was noted that KTH faculty generally were positive about the project, particularly the self-evaluation phase including the process support. However¨, it was also noted that the purpose and potential consequences of the evaluation could have been communicated more clearly.

Quality assurance is much more than large-scale evaluation projects. The most important quality assurance work is that which takes place on a daily basis, creating good practices and fostering a culture of quality amongst students and employees. There is good reason to highlight initiatives and systems that normally might not be considered quality-driving but may be very important. Therefore as of 2011, KTH has chosen to produce an annual quality report where such initiatives are brought forward as examples of good practice.

For KTH, quality assurance signifies a drive towards continuous improvement. This is true within education, but also in the areas of research, supply of skills and cooperation with the surrounding community. The high ambitions of KTH, along with increasing external demands, mean that quality assurance will play an even more important role in future.

Appendix 1. EAE Panel of Assessors

Iréne Agerkvist, Diamyd Medical AB

Erik Back, Linköping University *(student representative)*

Torsten Braun, University of Bern

Erik Bruun, Technical University of Denmark

Michel Cassir, Chimie ParisTech

Martine Cazier, Ecole Centrale Paris

Kristoffer Danielsson, Lund University *(student representative)*

Harry Dankowicz, University of Illinois

Monica Divitini, Norweigan University of Science and Technology

Susan Eisenbach, Imperial College London

Kalevi Ekman, Aalto University

Mikael Enelund, Chalmers University of Technology

Carl Johan Fogelholm, Aalto University

Helena Glantz, Urban Design

Lars Hammar, Vattenfall AB

Lars Harrie, Lund University

Jørgen Hauberg, The Royal Danish Academy of Fine Arts

Kas Hemmes, Delft University of Technology

Martyn Hill, University of Southampton

Rune Hjelsvold, Gjøvik University College

Jonna Holmgren, Uppsala University *(student representative)*

Jan-Olov Höög, Karolinska Institutet

Arieh Iserles, University of Cambridge

Kjell Jeppson, Chalmers University of Technology

Kerstin Johnsson, Lund University *(student representative)*

Kenneth Järrendahl, Linköping University

Björn Klöve, University of Oulu

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Åsa Lindberg-Sand, Lund University

Erika Löfström, University of Helsinki

Lauri Malmi, Aalto University

Johan Malmqvist, Chalmers University of Technology

Fiona Martland, Engineering Professors' Council

Peter Munkebo Hussmann, Technical University of Denmark

Teresia Olsson, Lund University *(student representative)*

Werner Osterhaus, Aarhus University

Anna-Lisa Osvalder, Chalmers University of Technology

Kristian Ranestad, University of Oslo

Alejandro Rodriguez Gómez, UPC Barcelona Tech

Norma Ryan, University College Cork

Ann Segerborg-Fick, Scania

Göran Sjöberg, Volvo Aero

Olle Söderman, Lund University

Clara Tholin, Chalmers University of Technology *(student representative)*

Tim Torvatn, Norweigan University of Science and Technology

John Tucker, Swansea University

Esko Turunen, Tampere University of Technology

Jos Vander Sloten, Katholieke Universiteit Leuven

Martin Västermark, Uppsala University *(student representative)*

Michael Williams, Ericsson