IACEE World Conference on Continuing Engineering Education (16ᵀᴴ MONTERREY 2018).

QUALITY ENHANCEMENT OF LEARNING OUTCOMES IN LONG PROGRAMMES OF CONTINUING ENGINEERING EDUCATION.

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ABSTRACT

In Higher Education today, both in degree programmes and continuing education, the institutions are focusing in Quality Assurance (QA) based on management processes and documentation instead on allocating resources to the areas of Quality Enhancement (QE). Often the quality assurance element dominates as this is what is most closely linked to the measures identified by institutions and accrediting authorities to ensuring a high level and consist tertiary learning provision. Quality enhancement is often only identified in bespoke projects or it is left to the enthusiasm and energy of programme managers and individual teachers. In the European Union Erasmus+ project which gives the base for the session described in this paper, the focus is on continuous improvement, a subject very familiar to engineering practitioners. Using self-evaluation as a tool to reflect and then find the best possible cross-sparring partner, the process results in the generation of effective development plans that are focused on producing more dynamic, engaging and effective engineering education.

Keywords Quality development, critical friends, programme enhancement

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INTRODUCTION

Rankings and quality certificates are in many cases the driving force for improving processes of education. That might lead to solutions where the quality of learning is in the minor role as the focus lies on the individual indicators. To avoid that and instead support the educational institutions to enhance the programmes highlighting the customer focus, eight European Universities started a project. That project aimed to create an easy method to first get a realistic view of the present state of art, define improvement priorities and find relevant partner for cross-sparring or benchmarking and thus find solutions which can be tailored for one's own use.

The method keeps it simple as it is for internal use and thus nothing needs to be proved. Documentation is for the programmes own use, not for external bodies. Frank and honest discussion is enabled and there is no need to hide weaknesses.

RESEARCH APPRAOCH

The background is a European Erasmus+ project involving eight universities around Europe. The project created a new approach to Quality Assurance (QA) and Quality Enhancement (QE) for active learning in programme level undertaken with other programmes as "critical friends". The goal of this session is to use the approach to QA and QE to explore how this approach, which benefits from the diversity of accreditation and evaluation schemes used around the globe, can be applied across programmes, disciplines and countries - in this case in continuing education programmes.

The difference compared to other self-evaluations used is that this does not pay attention to management issues nor financing or organization - its focus is in developing the programmes from learners' viewpoint.

The objectives for the session is to:
- introduce the project and the self-evaluation framework developed therein
- allow participants to use the self-evaluation framework
- elicit feedback on the form, content and use of the self-evaluation framework
- give experience how of paring to find the "critical friend" can be done
- promote attendee interest in making use of the approach in their own institutions
- The critique part of the session will invite participants to offer their ideas for the development of the tool. The tool has been developed with a clear focus on the promotion of QE as well as serving the QA requirement within institutions.

The learning outcomes of the session will be:
- Gain experience of how the self-evaluation can be carried out in an effective and reflective manner.

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- Gain insight into how the framework and the subsequent pairing process can be developed to be of most value to institutions in their quality enhancement endeavors.

-The session participants will be introduced to the most valuable ways in which institutions can be paired in order to develop strong collaborative relationships. Particular features of the pairing that will be explored will consider the value of working across disciplines and across countries.

In the active learning part we will pick four different criteria for deeper study. Each of the participants will make an evaluation of his/her own institutional situation and then evaluate the definition of the criterion along with its rubric and scale. The paring will be done according to the self-evaluation. The critical friends will then meet together.

The final discussion will share the learning with the whole audience and explore questions around how the self-evaluation can then best be used to find appropriate pairings and how the learning from each other will happen.

THE FLOW OF THE EVALUATION AND CROSS-SPARRING

Session with the same format have been run with several different target groups - different level of higher education, different disciplines and different parts of the world. This session will add the continuing engineering education to that framework.

The earlier workshops and wider use in evaluating a programme in different universities have shown this method to be useful and timesaving.

Whole 28 questions of the evaluation were used in the development phase in 8 programmes in 8 different universities in Europe. According to those self-evaluations, paring was done and gross-sparring visits made. The following figure 1 clarifies the steps to be done [2].

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This is based on a prior self-evaluation, where the institution/programme identifies quality criteria it wants to improve.

The process is done in four steps:
1. **Self-evaluate**. Evaluate own programme/institution. This evaluation is based on 28 criteria. The criteria are a superset of different self-evaluation frameworks including the CDIO self-evaluation. When the self-evaluation is finished, you identify 3-5 criteria you want to improve (called learn-and-inspire criteria).
2. **Pairing**. Two institutions are pairied. A good match is two institutions where the difference between their self-evaluation scores on the learn-and-inspire criteria are rather large.
3. **Cross-sparring**. The two institutions visit each other to learn and inspire each other
4. **Enhance**. Based on inspiration and what is seen, actions to develop one's own programme/institutions are planned (and hopefully executed)

Figure 1. Steps for continuous improvement

That formed 4 pairs and 8 gross-sparring visits. The results of the visits were produced in the form of reports of suggestions of development actions and learning outcomes to both the host and the visitor.
According to that experiment:

- Firstly the programme had to identify the criteria they want to enhance.
- Important was that the gross-sparring partner had good experience on the matter that was the priority development target of the other one.
- The discipline played a diverse role - some of the participants were convinced that it is most beneficial to have the partner from the same discipline as the understanding is easier shared - but in some cases the experience was that it is easier to focus on the process of enhancement when you have totally other disciplines on board. This reflexes to the benchmarking practice between companies from different branches.

Metropolia University of Applied Sciences had as the gross-sparring partner Aarhus University. Both had the programmes in connection to medical engineering.

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QUESTIONS TO CONCENTRATE IN THE SESSION

In the session four questions will be covered, they are introduced in the figure 2. below.

1) **Appropriate learning outcomes (developed from required competences)**
   Rationale:
   Setting appropriate learning outcomes helps to ensure that students develop a foundation for their future careers. Specific and detailed learning outcomes for personal and interpersonal skills, and professional skills, as well as disciplinary knowledge need to be identified such that they are consistent with programme goals and can be validated by programme stakeholders.

2) **Faculty development (knowledge and teaching)**
   Rationale
   Actions that enhance faculty disciplinary competence, professional and teaching skills need to be undertaken. This ensures subject relevancy is maintained and that teaching practices promote learning and a positive student experience.

3) **Programme evaluation to promote continuous improvement**
   Rationale
   Programme evaluation is required to determine the programme's effectiveness and efficiency in reaching its intended goals. To achieve this, a system that evaluates the programme against defined criteria, and provides feedback to students, faculty, and other stakeholders for the purposes of continuous improvement is essential.

4) **Effective communication with students**
   Rationale
   In order to create a positive learning environment, effective communication with students is essential. To achieve this dialogue with students concerning their experiences as students need to take place formally and informally[1].

Figure 2. The questions in the session

The relevance and helpfulness of the methodology will be discussed. The participants will

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get the full set of material which they can use in their own institutions later on.

These same questions are already worked out in several workshops even outside the engineering like the ATICA 2017 conference held in Medellín, Colombia in South America which focused on using ICT based tools in distance education and the European University Association Quality conference which took place in Riga in Latvia. The workshops have generated valuable input to the development of the self-evaluation tool including the adaptability of the approach and the CDIO way of thinking in particular outside the field of engineering. In both conferences the audience was multi-disciplinary so the authors had an opportunity to gather wider input to their work.

CONCLUSIONS

As conclusions from these workshops and sessions the method will be further developed and an electric web based tool will be produced for the self-evaluation and paring cross-sparring partners. Especially interesting is to learn about the usability and need for tailoring when the target progrenemme is from continuing education, that applies both long courses and short courses.

Enhancement without the pressure of certificates and audits according to our experience leads to higher customer satisfaction - and gives evidence of systematic improvement. The systematic improvement might be appreciated additionally in the audits if the organization needs one.

REFERTENCES

[1] K. Schrey, et al: 'The Power Of Self-Evaluation Based Cross-Sparring In Developing   The Quality Of Engineering Programmes' in Engineering Education for a Smart Society, ed. M. Auer & K Sun Kim, to be published Springer (2017)

[2] Jens Bennedsen, Katriina Schrey-Niemenmaa: USING SELF-EVALUATIONS FOR COLLABORATIVE QUALITY ENHANCEMENT, A Case Study of Aarhus University and Helsinki Metropolia University of Applied Sciences, *Proceedings of the 12th International CDIO Conference, Turku University of Applied Sciences, Turku, Finland, June 12-16, 2016.*Reinalda B., Kulesza E., 2005, The Bologna Process - Harmonizing Europe's Higher Education