SUSTAINABLE ENGINEERING EDUCATION OF IGIP BETWEEN EQF, DQR AND EQARF

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GUIDELINES OF ENGINEERING EDUCATION

Engineering pedagogues are experts in teaching and learning, discovering and developing, team-shaping and team-influencing, controlling and evaluating, etc. in their respective technical specialisations. They initiate learning processes and co-operate in teams. They know the importance of sustainable education as well as personal experience in their technical specialty. They are living models for continuous improvement processes towards teaching and learning as well as for the development of subjects, methods and social competencies. They teach and learn due to a common sustainable development. Future-oriented responsibility means a humane, socially and environmentally compatible team-shaping of society, the working world and its technologies. Good engineering education is therefore effective over a longer period of time. It includes ethical assessments as well as technical and pedagogical estimations of future consequences.

1 BASICS OF THE IGIP RECOMMENDATIONS

The IGIP Frame Curriculum calls for a sustainable education in Engineering Pedagogy due to vocational and/or university teaching as well as additional continuing education of teaching [1]. In general, teachers and learners are sustainably connected via guidelines such as “Taking part in shaping engineering work” and “Joining together in responsibility for the common good”. The ING-PAED IGIP curriculum communicates engineering competencies in the sense of a triad consisting of knowledge, a repertoire of teaching methodology, and valued ethical attitudes. It enables teachers in engineering courses and studies to realise a future-oriented education and training program in engineering. It prepares them to take responsibility for a sustainable, humane, socially and environmentally compatible contribution in shaping the society, the world of work and the development of technologies.

2 EU PROPOSALS FROM "BOLOGNA" VIA "LISBON" TO "COPENHAGEN"

Since 1999, the Recommendations of the Bologna Process have accompanied changes in the European Higher Education Area into unifying study structures (BA, MA, ECTS). Starting in March 2000, the European Union has implemented the Lisbon-Process as a strategic goal set of education and training programs: the EU should "... become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable
economic growth, with more and better jobs and greater social cohesion ....” Within the Copenhagen Process, the EU has enlarged its economical influence over all parts of education and training in public and private institutions. The implementation of a universal European Qualification Framework structure (EQF) for all possible outcome levels (in the sense of Life Long Learning) has to
- support a better match between the needs of the labour market (for knowledge, skills and competencies) as well as education and training provisions;
- facilitate the validation of non-formal and informal learning;
- facilitate the transfer and use of qualifications across different countries and education and training systems as individual mobility.

3 EQF AND DQR AS UNIVERSAL OUTCOME CONCEPTS

National education and training concepts are guided by the subsidiarity principle. They should be transformed from a National Qualification Framework (NQR) into the EQR set of eight reference levels describing what learners know, understand and are able to do. Learning outcomes serve as knowledge, skills and competence, describing the personal state of the art at the labour market. The National Qualification Frame DQR of Germany includes special properties of the Dual System of Vocational Education [2].

4 EQARF AS STRATEGY FOR EVALUATING "LIFELONG LEARNING"

The EUROPEAN PARLIAMENT and COUNCIL of the EUROPEAN UNION of 18 June 2009 have recommended establishment of a European Quality Assurance Reference Framework (EQRF) for Vocational Education and Training (and LLL) [3]. First proposals are in discussion since 2003. It looks like an all-embracing strategy of evaluations and certifications for all levels of EQF und LLL.

5 PROPOSALS DUE TO SUSTAINABLE ENGINEERING EDUCATION

Learning outcomes are actual figureheads on the job market. Teaching and learning processes need longtime personal efforts. Sustainability in engineering education means to combine humane attitudes with future-oriented progress in engineering sciences and educational work.

REFERENCES

