

The 34th IGIP Symposium, Yeditepe University Istanbul, 12th – 15th September 2005

Report of the Working Groups

Robert Ruprecht, Coordinator of working groups

The 34th IGIP Symposium was entitled Design of Education in the 3^d Millennium. This may sound a little fully mouthed, yet Design of Education is really what we are to deal with at the beginning or the 3rd millennium. Accordingly, the symposium had two main topics the working groups had to deal with: The Bologna Reform and its impact on engineering education and the completion of the accreditation papers of which the new Ing.Paed.Curriculum is the corner stone although it only figures as 'annex four' to the whole document.

1. Activities throughout the year

Over the past years, the *Technical Teacher Training* (TTT) working group has been working at this project. In a meeting, members of that group and affiliated ones came together in Biel to finalize the document that was to be discussed later at a *Group of Experts* meeting in Prague, held in April. (The *Group of Experts* was founded at the end of the Fribourg Symposium 2004 with the task of formulating the whole set of accreditation papers to be enacted at the 34th symposium by the general assembly.) In Prag, the positions of the two central players in the process seemed quite unreconcilable, however, a subcommission managed to point out the similarities between the two existing projects which led to a possibility of merging them. This is a main achievement towards a new Ing.Paed.IGIP regulation process. By this activity, the TTT group headed by Vera Zirot-Gut is the first IGIP working group to have found a personality of its own and thus influencing the overall policy of IGIP. The TTT group thus is the first to respond to the wish of the IGIP president and the coordinator of working groups: that they should act on a more independent base.

There were some other tentatives to do so; yet both of them did not come to satisfactory results. An initiative by the group *Knowledge management and computer aided technologies* did not attract enough participants to attend the planned virtual seminar, the group *Languages and Humanities* was not more successful with its own attempt. However: its chairperson was quite active in spreading the gospel of humanities in engineering education by participating at conferences in Mittweida, Taiwan, Santos and Freiberg (at the latter only by sending in a paper that was presented to the attendance by Jan-Peter Domschke).

Languages as well as some other groups were involved in the TTT project: *Working with Projects, People and Technology, Women in Technical Careers*. Thus, we can say that activities between symposia are developing quite well.

Unfortunately, a meeting of SEFI and IGIP working group chairpersons planned in the context of the Istanbul symposium could not come off. Closer contacts with SEFI working groups are still waiting for coming into effect. It looks as if the synergies were not as important as we had imagined them to be. Still, we are going on exchanging informations through the channel of Steffen Bohrmann, SEFI vice president.

One thing helping to encourage contacts would be an exchange of addresses so that all the SEFI and IGIP invitations would automatically go to all the members. A further step could be that the members might get the right to participate in events of the sister organisation on the base of membership fees.

2. Activities during the conference

2.1. General remarks

The policy of the program committee is to accept only a certain limited number of papers. Since it was introduced, this policy has led to quite satisfactory results. The number of papers submitted but not presented has been sharply reduced through a severe evaluation under the guidance of the working group chairpersons and a strict financial discipline. Thus, most of the papers, in some groups even all, were presented. Still, the quality of the actual presentations needs some improvement. Future contributors will be asked to apply even stricter discipline. To that effect some guidelines shall be worked out and given to the authors together with the instructions about the writing of papers and the use of didactical means.

The evaluation process shall become even a little stricter, the presentation rules more clearly set. In Tallinn we may only accept strictly spoken (not read) presentations and only a limited number of slides projected.

At this point I would like to express my thanks to all the chairpersons of working groups for their engagement and their punctual response to my requests.

2. Future activities

During the TTT seminar in Biel (Switzerland) a suggestion for a change of the IGIP statutes was made aiming at the integration of the International Monitoring Committee in the IGIP as one of its branches. This suggestion was intended to be brought to a decision at the Istanbul symposium. For some reasons unknown to the reporter, the move was made just in time, and proved to be more complex than it was originally believed. Therefore, the matter could only be presented to the assembly. A team of four people was then designed to propose a general overhaul of the statutes to the next assembly.

In this context, the role of the working groups and their representation in the Executive Committee shall be discussed by the chairpersons of the working groups. A meeting to that effect was originally planned for early November. In the meantime, some working group leaders proposed to postpone it till January. The meeting will be held in Hamburg. The working group chairpersons will present their findings to the team that overhauls the statutes.

3. Reports by the working group chairpersons

Each report begins by a short general statement; some then proceed to a more detailed report. Please note that this report only covers the ten standing IGIP working groups. For this year's Yeditepe special working groups please refer to the proceedings of the symposium.

3.1. Curriculum Development

- Chair:* SCHELKER, Traugott
e-mail: traugott.schelker@shl.bfh.ch
- Aims:* Development, evaluation and implementation of new curricula in general engineering education .
- Activities:* Actual discussion: Aspects, influences, changes, and consequences of the Bologna declaration on curricula in engineering education

Results of the discussion: In most European countries the Bologna Declaration and the Bologna process play an important role and are topical themes. For these reasons, the general topic of the working group was “Bologna Declaration and curriculum development”.

On Tuesday afternoon, all the nine proposed papers were presented. The discussions were very lively, yet time, as usual, was very restricted.

All the presentations in the wide field of curriculum development were interesting and of high quality in their content and didactical form. (See proceedings)

3.2. Continuing Education

- Chair:* ZAHARIA, Sorin
e-mail: sorinz@ump.kappa.ro
- Aims:* Discussing aspects of lifelong learning in a changing educational environment
- Activities:* The group has become somehow smaller as the traditional concept of continuing Education is changing. The chairman has been quite active in keeping up international contacts.

The Continuing Education Working Group discussed the challenges resulting from the knowledge society namely the growing instability of the social and economical environment and the increased demand for higher education. Here, they see new expectations and new opportunities: Education is no more the prerogative of the state; there is a need for improving the learning capacity of organizations. They discussed the opportunities offered by the Lisbon Strategy for universities, due to the specific approach of competitiveness. Here, engineering education must play a crucial role.

Some types of training projects were then presented. The group came to the conclusion that interaction with industry is a must. Industry will no longer use and manage the knowledge produced by universities and research units, but will become more involved in research and education planning. Universities will profit from industrie getting inputs, management tools and through the transformation of their organizational behaviour. Industry, on tis side, will profit from the competence of universities and research units and thus enhance its competitiveness.

3.3. Engineering Education in and for Developing Countries

- Chairs:* DA ROCHA-BRITO, Claudio
e-mail: cdrbrito@copec.org.br

CIAMPI, Melany
e-mail: melany@copec.org.br

Aims: Discussion about mobility and exchange aspects of engineering education worldwide.

Activities: Promotion of international conferences and recently working on a NMC in Brazil as the first one in South America.

In the session, six papers were proposed, five of them were presented. They discussed new strategies in education in developing countries, application of modern pedagogy in Russia, collaboration between the New World and the Old World, Double Graduation, Engineering Pedagogy, and University reform.

There was a lot of discussion among the participants; the exchange of ideas was very lively. (For contents: See Proceedings)

3.4. Language and Humanities in Engineering Education

Chair: RUPRECHT, Robert
e-mail: robert.ruprecht@bfh.ch

Aims: Evaluation and implementation of languages and humanities in the context of engineering education

Activities: A planned group meeting could not be realized, the chairman participated in several international congresses with contributions to the group topic.

The working group centred on two subjects. The first part of the presentations dealt with overall problems humanities are facing in engineering curricula. On one side, one states the decline in language capabilities and insists rightly on the necessity of a broader view, on the other side one does everything to hinder a broader approach by reducing the scope of humanities in engineering education.

The second half of the parallel sessions was dominated by presentations of ways out of the quagmire. Two colleagues from Czechia explained how they could position themselves better in their context (for their English teaching), one Russian colleague reported on a survey about the needs for the usage of foreign languages. More and more, we may be forced to introduce humanistic topics indirectly and seek for ways to do so even beyond the strictly humanistic subjects. Next year's discussion may centre on exactly that topic.

The quality of the presentations was quite convincing. Unfortunately, two papers could not be presented for health reasons.

3.5. Knowledge Management and Computer aided Technologies

Chairs: WOYAND, Hans-Bernhard
e-mail: woyand@uni-wuppertal.de
DORNINGER, Christian
e-mail: christian.dorninger@bmbwk.gv.at

Aims: Evaluation and implementation of computer aided technologies and knowledge management including e-learning techniques.

Activities: A virtual group meeting based on a classroom software could not be realized because of lack of interest. Dr. Dorninger participated in

several international congresses with contributions to the group topic. Some members of the working group postulated for the EU-Minerva project in 2004.

3.6. Natural Sciences and Mathematics in Engineering Education

- Chair: GROS, Leo
e-mail: gros@fh-fresenius.de*
- Aims: To exchange information and experiences about the application and didactics of mathematics, physics and chemistry in Engineering curricula.
To help make these subjects interesting and relevant/practice oriented for the respective engineer.
To contribute to the development of engineering courses in which one of these subjects is the main subject (e.g. Chemical Engineering).*
- Activities: Tuesday, Sept. 13th Workshop on European Aspects of Chemistry Curricula in the Bologna Context, with special emphasis on practice oriented courses and industrial placements, with participants from Turkish universities, industry and government officials.*

As its name implies, the topic of the working group covers a wide range of problems. That leads to some heterogeneity of the contributions. It also reflects the precarious position natural sciences are confronted with in the context of engineering education, if they are “auxiliary” subjects in the context of e.g. mechanical engineering courses. The group had a very good start in its first session; the second session was not quite on the same level: Some papers could not be presented due to absences, of some, the level of presentation was not really satisfactory, among others, due to language problems. This is, by the way, a topic to be followed up to in our future policy. On the other hand, a workshop on chemical education in Turkey, with special emphasis on practical work experience, organized during the conference, proved to be a real success. There were some 20 student participants from Yeditepe University Chem. Dept., 5 colleagues of Istanbul universities and an industry representative. The results of the EU-project FACE, <http://face.fh-fresenius.de>, were presented. The educational system of Turkey and chemistry studies in the country were described and discussed, as well as needs of Turkish industry. It was clear that practical work experience during chemistry studies is an important asset for employability. The presentations and the results will be published separately. Thanks goes to the organisers of this workshop, the team of Prof. Suheyla Uzman, Yeditepe University.

3.7. People and Technology

- Chair: HOEFELE, Achim
e-mail: ahoefer@swissonline.ch*
- Aims: Ethical aspects of scientific research, technology, engineering education curriculum development, and trends in the higher education.*
- Activities: Participation in TTT Project, networking with related groups. Cooperation in a SOCRATES human rights project how to implement ethical aspects in technical teaching.*

3.8. Technical Teacher Training

- Chair: LÜBBEN, Bernd
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ZIROFF-GUT, Vera
e-mail: ziroff.gut@freesurf.ch*
- Aims: Proposals of IGIP guidelines for sustainable engineering pedagogical competences in accordance to teaching and learning processes in engineering education*
- Activities: Presentation of a new IGIP Frame Curriculum with modular structures, goals/competences, contents, ECTS/examinations*

The Technical Teacher Training working group has focussed on the presentation and discussion of actually established educational concepts in IGIP countries. Due to the clearly defined center of interest to improve engineering education, WG TTT started collecting proposals together with other working groups concerning IGIP curriculum elements in 2001. The actual results are presented in the form of IGIP Guidelines, IGIP Module List, IGIP Module Structure and IGIP Module Handbook referring to international prescriptions. This new TTT Curriculum establishes the context of an overall reference curriculum, i. e. ING.PAED. IGIP Frame Curriculum. Its core is now set; yet it will be developed in further discussions next year.

The group is quite satisfied to see that the new curriculum finds a widespread positive reaction. – Most of the proposed papers were presented (eleven of thirteen).

3.9. Women in Technical Careers

- Chair: KAMMASCH, Gudrun
kammassch@tfh-berlin.de*
- Aims: „Equality of opportunities“ for boys and girls, men and women in studies and careers either in „hard“ or in „soft“ technical subjects.*
- Activities: Discussion and development of suitable measures to foster the aim of equality during school and technical studies, when starting the job and following the career – including the compatibility of family and profession.*

3.10 Working with Projects

- Chairs: DREHER, Ralph
e-mail: dreher@biat.uni-flensburg.de; igipamp@aol.com
SPÖTTL, Georg
e-mail: rspoettl@t-online.de*
- Aims: Discussion and development of concepts for project work in engineering education.*
- Activities: The group took part in the elaboration of the TTT Ing.Paed. Curriculum project, in which it played a central role. It goes on developing the project work approach in engineering education.*

In its discussions in Istanbul, the group centred on the problem of linking the inputs of the Bologna process (modularisation) with the need for a more complex educational environment.

It became quite clear, that a curriculum can only be satisfactory ('berufsbefähigend'), if the learning process applies a holistic approach. This can be very well realised by applying the project work method. Here, each Project should correspond to one module. The discussion centred on the content of such modules, the problem of evaluation and the order of the modules in the curriculum.

This discussion based mainly on examples of 'best practice' that made clear, how holistic learning and project work go hand in hand. The Tradition of the group, the presentation and discussion of praxis examples has proven fruitful once more.

The attendance was satisfactory. One paper could not be presented, and there was no time slot for the discussion of the group work. Thus, the central topic for next year's symposium could not be fixed yet.

To the group, the keynote by Fritz Kath was a special highlight. He is the founder of the group and was its chairman for many a year. He has given project work a solid theoretical base. The group wishes to express their deep felt thanks to Fritz Kath for his work. For Fritz Kath this was the closing stone of his active IGIP time. All the members of the group express their best wishes to him their hope that he, in his retirement, will be no less successfully active than before.