Towards a New Language in Engineering Education

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Abstract – An education innovation project has been finished: “Flexible and competence based learning in a laptop room”, Subproject “Criteria optimising the learning conditions in flexible ICT environments” where the disciplines Visual Ergonomics, Lighting, Building functions, Safety, Health and Teaching methodology and e-Learning meet. “Sustainable School Buildings” is today our principal theme with in particular “Rational Use of Energy” and “Visual Performance and Comfort”.

A University Development Cooperation project “Enlighting Colombia : Education, Research and Services on Light and Lighting” at the “UNAL-Universidad Nacional de Colombia sede Bogotá” is illustrating the goal of sustainable development by activating local stakeholders as universities and industries. By way of this “Specialisation in Lighting” at Postgraduate level other secondary elements as the quality of life in the concerned global society are amazingly realised (at first sight components not directly related to these).

A common English Masters of Science in Engineering will be organised starting from the academical year 2011 on by the ULB-Université Libre de Bruxelles (the French speaking Brussels University) and the VUB-Vrije Universiteit Brussel (the Dutch speaking Brussels University) and are covering each precisely the half of the complete “English” cake, and are making it so a perfect match and balance between three languages: English, French and Dutch.

“Language” too is obviously playing an extremely pertinent role in every component of educational set-up, even in technological or technical matter. Our statement is to bring up this spirit to life through permanently putting the language and communication concepts as the basis for every layer.

Besides, common English Masters of Science in Engineering will be organised starting from the academical year 2011 on by the ULB-Université Libre de Bruxelles (the French speaking Brussels University) and the VUB-Vrije Universiteit Brussel (the Dutch speaking Brussels University) and are covering each precisely the half of the complete “English” cake, and are making it so a perfect match and balance between three languages: English, French and Dutch.

Index Terms – Engineering Education, Research and Society, Sustainable Development

INTRODUCTION

Engineering Education is becoming more and more competence based within a project oriented and problem based learning context. A holistic approach is becoming herewith clearly visible as a central pinpoint in the curriculum of the engineering sciences.

New education and learning tools are being implemented intensively and courses are being reoriented towards more self-employed didactics (a.o. simulations).

An education innovation project has been finished: “Flexible and competence based learning in a laptop room”, Subproject “Criteria optimising the learning conditions in flexible ICT environments” where the disciplines Visual Ergonomics, Lighting, Building functions, Safety, Health and Teaching methodology and e-Learning meet [1]. “Sustainable School Buildings” is today our principal theme with in particular “Rational Use of Energy” and “Visual Performance and Comfort”.

Lighting, and what is more important, daylighting, is used to create this environment and context.

The importance of daylight in a human and learning environment can never be underestimated!

TECHNOLOGY ON THE SCHOOL

In “Teacher Education”, maximising the active role of technology in basic courses as mathematics, physics and chemistry should be the main objective.

By means of the introduction of “Technology on the School-TOS21” by the Flemish Ministry of Education and the so-called WiIR “Wiskunde-Ingenieur” Mathematics/Engineering projects within the KA-Itterbeek secondary school in Brussels, the pure science “Mathematics” can be expanded over a wide range by letting the pupils participate in research laboratory “outside” the school and where they can elaborate laboratory sessions of “Technology”.

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THE “ENLIGHTENING COLOMBIA : EDUCATION, RESEARCH AND SERVICES ON LIGHT AND LIGHTING” PROJECT

Electrical energy is a scarce resource and lighting – which is a key element in developing a secure society consumes too much of this resource. Furthermore, Colombia has insufficient specialist knowledge on light and energy-efficient lighting, for instance to implement the new regulations on lighting in public buildings. The overall project objective is to set up sustainable education, research and service capabilities related to light and lighting in Colombia. To build such capacity, the project will concentrate on teaching (via a postgraduate course on light and lighting, partially based on the opportunity offered by an industrial-grade lighting laboratory at UNAL) and teaching its teachers. It will establish a research programme in lighting based on PhD student exchanges on joint projects, (leading to reduced lighting energy consumption for the region) to enable the laboratory to provide services to the Colombian stakeholders, finally realising a sustained interaction and cooperation between UNAL (Jesús María Quintero Quintero and Fernando Herrera), the laboratory, industry and Belgian universities.

In August 2008, a three-day so-called PCM-Project Cycle Management Workshop was held in Bogotá. “PCM” is a very comprehensive, clarifying, logical, adequate and universal tool with proper terminology and rules to work out and fill in in detail the planification matrix of a project. Taking into account the results of this PCM workshop, the project has put the best focus on developing a sustainable research capacity (rather performing specific research). During the PCM workshop the problem tree and the logical framework have been defined.
This is illustrating the goal of sustainable development by activating local stakeholders as universities and industries. By way of this “Specialisation in Lighting” at Postgraduate level other secondary elements as the quality of life in the concerned global society are amazingly realised (at first sight components not directly related to these). Much is endebted to Prof. Geert Deconinck of ESAT-KULeuven (Belgium) who largely contributed to the project as a copromotor and who also took the following pictures on the PCM Workshop in Bogotá.

FIGURE 1
WORKING OUT THE PLANIFICATION MATRIX OF THE PROJECT DURING THE PCM-PROJECT CYCLE MANAGEMENT WORKSHOP IN BOGOTÁ (AUGUST 2008)
FIGURE 2
WORKING OUT THE PROBLEM TREE OF THE PROJECT DURING THE PCM-PROJECT CYCLE MANAGEMENT WORKSHOP IN BOGOTÁ (AUGUST 2008)

FIGURE 3
WORKING OUT THE LOGICAL FRAMEWORK OF THE PROJECT DURING THE PCM-PROJECT CYCLE MANAGEMENT WORKSHOP IN BOGOTÁ (AUGUST 2008)

LANGUAGE CONCEPTS
“Words” and “Language” are in first instance “intuitive tools”, i.e. they can be seen as free or loose expressions of a bubbling up of basic thoughts that are coming up in mind. It starts in fact from a natural, individual, non-imperative theme or launched concept where afterwards people can build on further as a landmark. Examples are f.i. the words “light”, “energy”, “life”, “sustainability”, “future”, “humankind”, etc.

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In this context, Flemish dialect speaking people are actually using around 8000 words on average and on daytime basis, where Dutch speaking people are using around 5000 words on average. It shows the richness of dialects in vocabulary, pronunciation and accent.

REFERENCES
