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Knowledge Management in Educational Engineering Design Projects

This paper describes an approach to a more systematic and goal directed way of handling knowledge in educational Engineering Design projects. The following questions and problems are addressed in this paper: How do you and your students access the right knowledge at the right time? How can individual resources of knowledge be delivered and held accessible to a project team? How can information be exchanged effectively and easier? How can the organisation of knowledge be integrated into the organisation of a problem-based course or project? This contribution is based on experiences in problem-based teaching in Engineering Design projects at the Technical University of Berlin as well as on experiences in implementing knowledge management into industrial practice.

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Design and Mechanical Engineering: How Good is the Link?

Design of modern products, which have to be competitive in the market, is a great challenge. The time period between the market demands a new product and this product should appear in the shop is very short today. Only the united effort of people carrying extensive knowledge and skills in multiple disciplines will lead to design of high quality products. This paper deals with interaction between designers and mechanical engineers. Unfortunately this interaction is not perfect today. This leads to design mistakes and reduction of product quality. Finite element analysis and mechanical analysis in general are discussed in this paper as a part of design process. Some recommendations with respect to the educational process are given.

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Introducing IT in Teaching the Engineering Design Graphics at the Faculty of Graphic Arts, University of Zagreb, Croatia

Until 3 years ago, the only teaching aids in curriculum were blackboard, drafting triangles and compass. Assignments were made by technical fountain pen on tracing paper. Since, a lot of changes were introduced: exercises in computer lab; assignments in AutoCAD® published on students' own web pages; e-book made free downloadable at web-site created as a support to the Chair; lectures on 2D/3D CAD systems and principles held using LCD projector for demonstrating exercises and making assignments, and displaying virtual simulations. Problems that appeared were numerous. The results of exams shown that applied IT helped in easier coping with curriculum, developing space perception, encouraging creativity and enhancement of informatics literacy.

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Education for Engineering and Designing

Education in engineering can usefully be structured according to the theory of technical systems. Considerations of the didactics and pedagogics of educating (teaching and learning) are discussed.

Particular emphasis is placed on the limitations of science, on the values and needs of society, and on the distinctive tasks of engineering B designing new and modified technical systems for human use. Such technical systems should be optimal for their intended conditions of use. This involves many humanistic, cultural and societal properties of the technical systems which can hardly be described by the existing conventional sciences. The theory of technical systems, and Design Science, provide guidance for these aspects.

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Learning Processes in Group Designing

Engineering practice employs design teams. In an experiential learning process the separate learning cycles of team members are linked. Capable designers have to be trained at universities. The paper focuses on civil engineering design education at Delft University of Technology. The CE design projects provide a major input in the training of students, but two main concerns have been identified. First, the learning environment of projects and courses differ. Second, learning a well-defined design approach is not sufficient to become a successful designer. To gather insight in the activities of students in their projects, a small pilot research project was set up.

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Learning and Practicing Basic Design Concepts. A Knowledge Model

Teaching design techniques is an intensive knowledge based activity. There are three main different models involved: a matter model (their schemes are trespassed into the learning process), a model of the learning process and, finally, a model of the student. This work shows a methodological proposal for the application of this sort of techniques to a Computer Aided Design course for engineers. In this work, we describe the characteristics of the three knowledge models, detailing the high level elements of the matter model (Fundamentals of CAD), which were modeled using an extension of CommonKADS. Main conclusions include the convenience of modeling the design knowledge formally, previously to the deployment of a web design course.

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The Impact of CAD Technologies on Engineer's Education

Main goal in an education of mechanical engineer is to deliver ready master to enterprises, prepared to deal with increased use of computer technologies. One of very basic technology that engineer encounters in production is Computer-Aided Design (CAD) technology. Therefore, in this paper is observed actual syllabus on Mechanical Engineering Faculty in Slavonski Brod, Croatia, but also are partially considered syllabuses on other Croatian faculties. Recent examples of requests for additional education and thence demands on improvement of syllabus are pointed out. On that basis are proposed tendencies in syllabus in purpose of harmonization with demands in production.

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Short Term Workshop: An Alternative Strategy in Architectural Design Education

This paper aims to focus on potentials of short-term workshops within architectural curriculum. Key concepts for the study could be summarized as proposing the implementation of short-term workshop as an alternative educational strategy, integration of unique local potentials to a global curriculum, exposing students to real life situations in order to highlight looking versus seeing and emphasizing analysis in accordance with creative synthesis. The objective of the experiment can be summarized as to trigger perceptive and creative skills of the students through off-campus experiments within the urban context.

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Inclusive Design - Review of Student Projects

The notion INCLUSIVE DESIGN is referred to process of designing artificial and visual environment suitable for all persons regardless of age, health conditions, education, skills and other. It was conceived as part of research explored at The Helen Hamlyn Research Centre, Royal College of Art in London. Human life expectancy is getting longer and average age is getting higher. So does understanding the need for better quality and safer products and environment for all people including those who are unjustly and unnecessarily separated or even totally excluded from many forms of everyday life because of their physical or sensorial disabilities.

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Simulating Design for Production: The University of Botswana Experience

There is substantial consensus among today's manufacturers that integration between design and manufacturing is a prerequisite for competing in a global economy. Whereas industry is often responsive to the changing dynamics of commerce and industry resulting in the adoption of new methods and strategies for competitive advantage, design education is often rigid and non-responsive to these hard realities. Traditional teaching methods are not suitable for imparting such real-life design concepts. This paper discusses how Design for Production was simulated in an academic setting, using 'competitive tendering' concept as a catalyst variable to accelerate the learning process, preliminary study results, lessons learned and the way forward.

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Efficiency of Design Studies in Zagreb

DESIGN 2002 is giving us opportunity to present results of research on School's efficiency. These results should draw attention of professional designers because they give information about high education of professionals who will soon contribute to the progress of design as a profession.

Since this paper contains many indicative information it is necessary to take these information into account while making corrections in organization and educational programme. It is also important to understand that this paper is going to show state-of-the art of design students during winter semester, but research includes students of all four years of the academic year 2001-2002.

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Conversations on Interaction: Exploring the Interplay Between Theory, Research and Practice in Design Education

In this paper I address a number of recurring issues for design educators: the value and applicability of theoretic discourse to design practice; the value and applicability of design research to design practice; the potential for multidisciplinary approaches to design. I consider how these issues might be meaningfully explored in postgraduate design education. The paper is based on the module Conversations on Interaction on the MA in Design for Interaction, University of Westminster, London. The paper begins by providing intellectual context before outlining the curriculum and illustrating some themes with reference to a student project.