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## Editorial

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**Biographical notes:** Chris McMahon is a Professor of Engineering Design at the University of Bath, and the President of the International Design Society. He has been active for many years in design education conferences.

Bill Ion is currently the Director of the Advanced Forming Research Centre at the University of Strathclyde and a Professor in the Department of Design, Manufacture and Engineering Management. He has been involved for over 20 years in product and engineering design education curriculum development.

Peter Hogarth is Emeritus Professor of Product Design Education at Bournemouth University. He was the Founder in 1993 of the original Product Design Education Conferences and has continued with the link ever since.

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In many parts of the world design is increasing in importance as a taught subject. Design projects and taught course elements are mandatory in engineering programmes throughout the world. Interest in product design and in product innovation is burgeoning, spurred on by competition in a globalised society and by the challenges of sustainability and the needs of society. This special issue was inspired by this importance and especially by the growing emphasis in recent years on research in design education: both research into education as an activity, and incorporation of the results of design research into the education process.

The editors of the special issue have been involved with the Engineering and Product Education (EPDE) Conference (which has been held each year since 1999) and with the Design Education Special Interest Group (DESIG) of the Design Society, which runs the EPDE conferences in collaboration with the Institution of Engineering Designers. The papers that are included in the issue have all been developed from papers presented at

recent conferences that have focused wholly or partly on design education (especially EPDE08, held in Barcelona), and have been chosen to reflect some of the important issues in the field, but with a concentration on those concerning people in the education process: teachers and students, in and post-education.

The first paper in the issue, by André Liem of the Norwegian University of Science and Technology, is very apposite in placing research in design education in the context of the global university research and education system. Dr. Liem introduces the challenges faced by the educational researcher, then presents a strategy on how design and design related research can gain more leverage within the university system through hierarchical and collaborative learning. Integration of design involves redefining the three cornerstones of the university system, 'teaching', 'research' and 'administration' into respectively 'mentorship', 'scholarship' and 'service', and introducing also the concept of vertical studio teaching and learning.

The next two papers concentrate very much on students. Johanna Thieme and Annemiek van Boeijen of the Delft University of Technology first present the results of their study of the diversity in styles of learning in the context of product design education, based on data collected from first year bachelor design students. They observed a dominant style of learning among the students, but with variations, and found that students who are aware of their personal learning style are more able to use appropriate personal learning skills in each step in the design process. Furthermore, design tutors can support students more effectively by understanding both their own dominant learning style and that of their students.

Stacey Birkett, Peter Lloyd and Steve Garner of The Open University also present results based on a study of product design students, in this case exploring how students' notions of design responsibility develop through their education and beyond. The paper investigates design responsibility in design education and practice by exploring the way designers' perceptions mediate the interpretation and application of responsibility in their practice, especially how concepts of responsibility change with level of expertise. This paper presents findings of this development through results from first year design students, graduating students and practising designers.

The remainder of the papers in the issue each concentrate on various aspects of teaching practice – from the development of skills to the imparting of theoretical concepts. Ian de Vere of Swinburne University of Technology starts the discussion with his paper on the use of furniture design to not only impart skills specific to a particular vocation, but also to develop educational agendas essential to any design discipline. These agendas can range from knowledge of materials, structures, construction and human interaction to wider issues of sustainable design and social responsibility. Ian also makes the point that furniture prototyping offers a rare opportunity for students to evaluate designs in a number of respects such as aesthetics and ergonomics, strength and stability, user safety and structural integrity.

C.S. Lebbon, S. Davies and J. Shippen of Coventry University concentrate more on the teaching of research methods that underpin the design activity, and in particular explore the teaching of user centred research methods as part of an MSc course programme. The methods are taught in a research methods and analysis module that prefaces project activity. This covers quantitative and qualitative approaches and there is an emphasis on ethnographic processes and data analysis and interrogation techniques. The paper discusses the effectiveness of methods for use in student projects, both in

terms of informing the approach itself but also in terms of the practical constraints that students face in conducting their work.

Frido Smulders, again of the Technical University of Delft, writes about a teaching approach developed to pass theoretical concepts from the field of corporate new product development to large groups of students, especially seeking to answer the question ‘How to teach corporate innovation to students who have not been in any company yet?’ Smulders contends that innovation theories are not yet robust enough and therefore traditional classroom teaching approaches will not be able to do the job properly. The approach taken was to blend teaching innovation (practice) and teaching about innovation (theories) through classroom teaching of a theoretical element and project work.

Yong Se Kim and colleagues from Sungkyunkwan University provide the final paper, which concerns the development of exercises to address the cognitive elements of creativity such as fluency, flexibility and originality. The authors describe an exercise programme comprising five activities – making stories, negation, filling black boxes, sensitisation and diverse classification – each activity being designed to foster particular aspects of creativity. The paper presents the results of experiments using the programme that show that fluency and originality are particularly developed by the exercises.

The seven papers presented here are a small fraction of the design education publications presented in recent conferences and together with those publications are indications of the health of the discipline and of the range of issues being currently addressed. The editors of this special issue hope that its publication will encourage educators to submit their design education research papers to the *Journal of Design Research* in the future, and that this may also be the first of a series of design education issues.