INDUSTRIAL DESIGN ENGINEERING: AN INTERNATIONAL SCENARIO FOR AN INNOVATIVE DEGREE

Claudio José Benavent Montoliu[1], Pedro Fuentes Durá [2], and Enrique Ballester Sarrias[3]

Abstract ¾ Facing the social demand for industrial designers, the EUITI Valencia set up the Degree of Ingeniero Técnico en Diseño Industrial eight years ago. The main objective was the development of a top level professional profile, which enabled graduates to carry out tasks which had been usually undertaken by the industrial engineers, architects, fine arts graduates or industrial designers trained outside university. The current scenario is that of a highly dynamic degree, well equipped, with flexible teaching, remarkable number of industry professionals involved in teaching, and an outstanding demand among prospective students which results in a rather high access mark. Beside all these facts, internationalisation may probably be the most powerful characteristic of this degree.

Index Terms ¾ Design, Global, Innovation, Internationalisation.

INDUSTRIAL DESIGN AT EUITI VALENCIA

EUITI Valencia (Escuela Universitaria de Ingeniería Técnica Industrial de Valencia – Universidad Politécnica de Valencia) set up the Degree of Ingeniero Técnico en Diseño Industrial eight years ago The structure of this new curriculum consists of three years of courses with a final project work on top of them.

It comprises a basic background training in the physical-mathematical field and in the graphic and artistic disciplines. Moreover, it includes cultural aspects of Industrial Design, as well as technological training on the knowledge of materials, together with the different manufacturing processes which can be carried out nowadays. Finally, some knowledge on Design methodology and strategies is dealt with, and also some issues regarding economics and market technology.

Internationalisation may probably be the most powerful characteristic of this degree. As for the quantitative details, 75 students enrol yearly in the degree, while 65 graduates leave the School. Around 45 of them undertake an industrial placement in partner companies, where about 15 of them develop their final project work. Additionally, over 40 students take yearly study periods abroad in the framework of bilateral co-operation agreements established with institutions from over 15 different European and American countries:

AUSTRIA	Technische Universität Graz
	Universitat Wien
BELGIUM	Hogeschool Antwerpen
BRAZIL	Pontificia Universidade de campinas
	Universidade Federal Da Bahia
CANADA	Universite de Montreal
DENMARK	Ingeniering College of Copenhagen
FRANCE	École d´Architecture de Strasbourg
	École d´Architecture de Toulouse
	Ecole d´Architecture Paris-Malaquais
	École d´Architecture Paris-Val-De-Seine
	Ecole d'art de la ville de Lyon
	ENISE
	Ecole de Beaux Artes de Dijon
	Escuela de Minas Albi
	INSA de Rennes
	INSA Lyon
	UPMC Paris
	Valenciennes
GERMANY	Fachhochshule Erfurt
	FH Ilmenau
	RWTH Aachen. Fakultät Für Architektur.
	Technische FH Berlin
	Technische Universität Berlin. TU Berlin.
	Technische Universität Dresden
	Technische Universität Braunschweig

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[1] Claudio José Benavent Montoliu, Universidad Politécnica de Valencia, Escuela Universitaria de Ingeniería Técnica Industrial de Valencia, Assistant of Head of International Relations, Camino de Vera 14, E-46022 Valencia, Phone: +34-96-3877186, Fax: +34-96-3877189 relint@upvnet.upv.es
[2] Pedro Fuentes Durá, Universidad Politécnica de Valencia, Escuela Universitaria de Ingeniería Técnica Industrial de Valencia, Head of International Relations, Camino de Vera 14, E-46022 Valencia, Phone: +34-96-3877186, Fax: +34-96-3877189 relint@upvnet.upv.es
[3] Enrique Ballester Sarrias, Universidad Politécnica de Valencia, Escuela Universitaria de Ingeniería Técnica Industrial de Valencia, Dean, Camino de Vera 14, E-46022 Valencia, Phone: +34-96-3877181, Fax: +34-96-3877189 eballest@isa.upv.es

	Universität Hannover
	Universität Kaiserslautern
	Universität Stuttgart
GREECE	Vilniaus Gedimino Technikos Universitetas
ISRAEL	Bezalel Academic of Art and Design
ITALY	Istituto Universitario di Architecttura di Venezia
	Politecnico de Bari
	Politécnico di Milano-Bovisa
	Politecnico Di Torino
	Roma Tre
	Trento
	Università Degli Studi di Firenze
	Universitá degli Studi di Genova
	Università Degli Studi Di Palermo
	Universitat di Bologna
	Universtà degli Studi di Firenze
	Universtà Degli Studi Di Roma "La Sapienza"
MEXICO	ITESO. Instituto Tecnológico y de Estudios Superiores de Occidente
	UNAM
NL	TU Delft
NORWAY	NTNU. Norwegian University of Science and Technology
POLAND	Polithecnika Warsaswka
	Poznan University of Technology
ROMANIA	Transilvania University
SPAIN	E.U.Politécnica de Valladolid
	U Jaume I
	Universidad de las Palmas de Gran Canaria
SWEDEN	KTH, Estocolmo
UNITED KINGDOM	Anglia Polytechnic
	University of Bristol

Due to its particular features this degree has become especially attractive to international students from many related degrees. As a consequence, the composition of some of the courses offered has appealed an extremely valuable multicultural and multidisciplinary academic community, with more than half of its participants coming from

engineering, architecture and fine arts partner schools from all over the world.

**Outgoing Design Students EUITIV
SOCRATES ERASMUS**
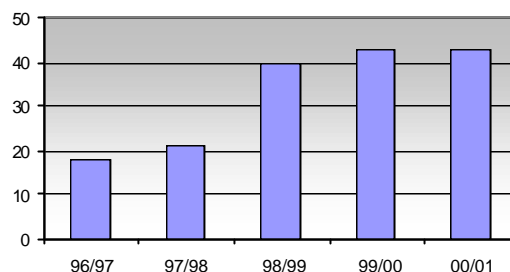
The EUITI has encouraged the involvement of both teaching staff and students, in order to offer a global suitable reply to this new challenging scenario, always efficiently directing all these emerging potentials.

The setting up of English speaking workshops both in regular courses and final project works, the increase in bilateral teaching staff mobility and issue of foreign diplomas through academic exchange are three of the most immediate and remarkable effects to be mentioned.

THE IDEA OF INTERNATIONALISATION

In the early years of internationalisation, what was meant was chiefly the (bi-lateral) co-operation between national institutions. This co-operation was predominantly mobility-based. Even now, many people seem to think that internationalisation is the same as mobility, though in reality the whole internationalisation paradigm has shifted. When one mentions mobility people tend to think of studying abroad. In other words, internationalisation was something that happened elsewhere, not at the own university. It was not present in one's own environment. Even the incoming students were not regarded as an international (internationalising) element. They had to conform and they were treated in pretty much the same way as the home students.

As a consequence, internationalisation was, and still is, regarded as something that addresses only a small minority of students and faculty.

It was never considered as mainstream, and certainly did not belong to the core activities of the educational project in most universities. As a marginal activity is was often considered a good way to improve one's foreign language skills. The consequence was that the internationalisation activities were run by a small group of dedicated individuals, who at a later stage would form an international office, though it remained understood that internationalisation never could belong to the mainstream activities. This can still be seen in many universities where often individual faculty

have their own personal networks, which are run besides the more official internationalisation activities.

A NEW FRAMEWORK FOR INTERNATIONAL HIGHER EDUCATION

There is the EU-policy that promotes all kinds of internationalisation processes, and there is the Bologna process, which will have far-reaching implications for the whole educational system of higher education, once the agreements are implemented.

There is also the political pressure at EU, national and regional levels to "Europeanise", so in our education students should be prepared for EU-citizenship.

We will therefore need relevant content and internationally relevant qualifications for all students. It goes without saying that, in order to accomplish this, also faculty and administrators will be pushed to adopt a number of changes. As was said earlier, our increasingly multicultural societies require a different approach to higher education. To give an eloquent example: what do we do with asylum seekers and refugees that come and live with us? Very often these people are highly qualified and highly skilled. How do we integrate these people in our society? All too often there is the need for money, so they will accept any job. It is our loss.

The globalisation and the decreasing birth rates in the western world are also factors with long-term consequences. Already do we see the emergence of international competition for students, faculty and financial resources. In many places there is still a complacency about this evolution as people seem to believe that there will be perpetual government funded higher education. The question is if this funding will be adequate to ensure high quality education. There is a real danger that specialised organisations will enter the market with very modern study programmes competing the traditional school out of the market.

MILESTONES OF INTERNATIONALISATION

As we have seen, internationalisation goes beyond mere mobility, but mobility remains one of the corner stones of the concept: inbound and outbound mobility of both students and staff. The latter should include teaching staff and administrative staff alike.

Multilateral (Transnational) Networking: a Must
Another evolution which should be pointed out is that in the first phase of internationalisation the mobility was organised by means of bilateral co-operation. We now see that there is a multilateral approach, networking being one of the key factors, which is more than a framework to organise inbound and outbound mobility. Other activities take place as well, such as curriculum development, with both international and intercultural content.

Quality Assurance: Recognition and Accreditation in an International Framework
Another major issue was defined in the light of competition and the implementation of the Bologna agreements: quality assurance. This can no longer take place in a national context. Already there are international accreditation pilots, e.g. the Flanders-Netherlands tests to develop a single accreditation agency for the two countries that will investigate the quality of all higher education.

The advent of the new and rapidly spreading information and communication technology caused new impulses. Because of the new possibilities and the improved connectivity trans-national educational schemes are being rapidly developed. Also Open and Distance Learning, Work Based Learning, Lifelong Learning became buzz words overnight.

INTERNATIONAL DESIGN : FUTURE PROSPECTS

Internationalisation wishes to bring everything together and offer as many opportunities to all people involved. In fact, the evolution in our globalised higher education should be that Internationalisation is to be implemented as a mainstream part of the educational system in such a way that people do not really realise that what they are doing is connected with the Internationalisation at Hope concept.

In order to obtain this result, we should ensure that there is internationalisation for all, i.e. beyond mere mobility.
We need to internationalise the course content. It is clear that this is easier for some courses than others, but we are not just looking at individual courses, either. It is the whole package that should be considered. With such an approach also curricula such as mathematics can be internationalised.
It is desirable that faculty also should be internationalised. All staff should be exposed to some kind of international experience and it is advisable that there are foreign guest professors.

Students and staff should be trained in new competencies. Our society in Europe needs people with a multicultural and intercultural awareness.

Language skills have to be improved. In some countries, foreign languages get a lot of attention, in others there are only few people who study foreign languages and cultures.
International recognition of curricula and degrees is on the agenda. The whole issue of international accreditation in Europe will be the consequence of the implementation of the Bologna-Prague agreements. There is a pilot project between Flanders and the Netherlands, and there are rumours that at a later stage other international partners would enter the scheme (North Rhine Westphalia in Germany, Denmark and Catalonia in Spain are prospective candidates).

In the wake of the EU-efforts to mobilise higher education in an international context it is felt that there is a real need for institutional, local, regional, national and transnational policies and governance.

This is quite something as an ambitious scheme goes, and it is early days yet, but we do see that a number of these issues will be dealt with at the 2003 Berlin Summit on Higher Education, cf. the official conference website

GLOBAL DESIGN AT EUITI VALENCIA

When market and users perspectives are global the possibilities of application in design projects can be both global or local. Our approach to Design from Valencia is to be as global minded as possible through information technology, but as pragmatic and realistic as our industrial network needs. Swedish Ikea, italian Chicco, anglo-american Ford, french Citroen and all our spanish partners demonstrate us than we can be global from periphery. Or we can transfer global view to local problems.

We feel that is one of the challanges for all the european regions: to avoid to be only in the core decission area, but to take benefit from an outside position.

That is why Valencia (as any other city or region) becomes global. When the focus is global can be useful for many other localties.

In Industrial Design area processes and trends are global. Application into projects are local because the problems or the needs of a company are unique.

Design Management Processes have become efficient tools to develop some Design Research tasks, which subsequently can be applied in Design Education.

We present here a Design Education Approach based on the experience acquired in recent years from different industrial sectors and companies. The methodology process describes the different working areas which connect the external and internal environments of an enterprise through different tasks and sources.

This methodology has been applied partially or totally in different sectors from toys to children´s playgrounds, and from home goods to furniture. In fact, in both fields the research started with the Annual Report on Design Trends made for the National Association of Furniture Manufacturers and the National Association of Toys Manufacturers and it has been based on the visit to some international fairs in the last years.

Such research gives a general overview of the market and the society, but it has mainly enabled us to propose briefs for product innovation that have been developed both for national and transnational companies as student assignments.

In the habitat field, we can mention some works developed for IKEA of Sweden Miniland, +7, Cosin & Cosin (Spain). In trasnsport area we have collaborated with TAM in alternative urban transport, and with Ford in the interior KA. Citroen is our partner this year and since five years we exchange students with Fiat Advanced Design. In the children´s area we can show our contribution for Chicco (Italy) and Popular de Juguetes (Spain).

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