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ISSUES CONFRONTING ARCHITECTURAL EDUCATION IN AUSTRALIA

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ABSTRACT:

This paper reports on a major research project, in progress, which aims to develop an understanding of the key teaching and instructional challenges facing the architecture discipline area across Australia. The project has allowed the development of benchmarking strategies to align Australian and international 'best practice'. The specific objectives of the project included:

- ☐ Identify the challenges for Australian architectural education in maintaining and improving its quality, responsiveness and competitiveness in a global educational environment/marketplace.
- ☐ Set in place an agenda for future research and dissemination strategies to undertake detailed investigations into specific topics.

- ☐ Suggest how these challenges should be addressed by architectural education units and their staff, by university vice-chancellors, professional associations, government bodies and business organisations.

While the primary motivation underlying this study is to promote innovation and 'best practice' in architectural education, a substantial component of the study involved gaining a broader perspective of the environment in which architectural education is situated.

The state of the art of architectural education has been explored by situating it within a broader context of higher education in Australia. The study specifically focuses on the academic units that educate architectural graduates in universities across Australia. This will involve considering aspects of a range of associated discipline areas. Thus, the outcomes of the study provide relevance to architectural education but will also have wider relevance in related design (interior, industrial) disciplines.

With the changes in Australian universities bought about by the higher student intakes and more efficient teaching modes as well as the integration of many IT initiatives, the educational landscape has changed. The opportunity now exists to re-establish leadership through creative approaches to education which redefines itself in the current Australian educational context. To achieve this leadership a comprehensive analysis needs to be undertaken; the outcome of which will be a sector-wide renewal and reinvigoration of the delivery of design education in the Architecture and associated disciplines. The identification and sharing of best practice within the discipline area will provide the impetus to reassert its international leadership.

INTRODUCTION

Architecture education has traditionally been recognised as an international leader. With the extensive changes that have occurred in the Higher Education sector over the last decade this situation may have changed. There have been a range of pressures bought to bear on the discipline through new directions in the sector as well as changes in student attitudes and expectations. Following in this paper is the description of a research initiative of the University of Newcastle, funded by the Carrick Institute, the Carrick Institute for Learning and Teaching in Higher Education was established as a national focus for the enhancement of learning and teaching in Australian higher education providers. The objectives of Institute are to:

- ☐ Promote and support strategic change in higher education institutions for the enhancement of learning and teaching, including curriculum development and assessment;
- ☐ Raise the profile and encourage recognition of the fundamental importance of teaching in higher education institutions and in the general community;
- ☐ Foster and acknowledge excellent teaching in higher education;
- ☐ Develop effective mechanisms for the identification, development, dissemination and embedding of good individual and institutional practice in learning and teaching in Australian higher education;
- ☐ Develop and support reciprocal national and international arrangements for the purpose of sharing and benchmarking learning and teaching processes; and
- ☐ Identify learning and teaching issues that impact on the Australian higher education system and facilitate national approaches to address these and other emerging issues.

The project will be completed in 2008 and is starting to implement the phase of surveying and interviewing the primary stakeholders in Architectural Education in Australia. Following in this paper is a description of the research project and what its objectives are. Also reported are the findings of the primary issues identified in the literature concerning architectural education.

THE PROJECT

The outcomes of this proposed project will lead to the identification of the issues which have diminished the discipline's status. The identification of issues will be achieved through a collaborative analysis of the tertiary landscape then mapping the issues nationally. It is determined that through the development of a shared understanding, nationally, of these issues and collaboration with both Architectural education providers and the professional bodies a way forward will be established. Following is a description of the project and the outcomes it will achieve.

PROJECT AIMS

This project aims to develop an understanding of the key teaching and instructional challenges facing the architecture discipline area across Australia. The project will not only set the groundwork for future, more targeted, projects in the discipline but it will allow for the development of benchmarking strategies to align Australian and international 'best practice'. This project will:

- ☐ Identify the challenges for Australian architectural education in maintaining and improving its quality, responsiveness and competitiveness in a global educational environment/marketplace.

- ☐ Set in place an agenda for future research and dissemination strategies to undertake detailed investigations into specific topics.

- ☐ Suggest how these challenges and research areas should be addressed by architectural education units and their staff, by university vice-chancellors, professional associations, government bodies and business organisations.

While the primary motivation underlying this study is to promote innovation and 'best practice' in architectural education, a substantial component of the study involves gaining a broader perspective of the environment in which architectural education is situated. This will involve considering aspects of a range of associated discipline areas.

INVESTIGATION STRATEGIES

In order to achieve the objectives of the study an empirical investigation of architectural and associated education is being conducted according to the conceptual model in Figure 1. The state of the art of architectural education will be explored first by situating it within a broader context of higher education in Australia, the scene of architectural, design and built environment education internationally, and within global economic, technological and social changes. The study will then specifically focus on academic units that educate architectural graduates in universities across Australia. The study will necessarily include some aspects of university governance relevant for education, and relationships with industry. Data will be obtained from DEST collections and other institutions, some directly from Architecture and Built Environment faculties, deans and staff.

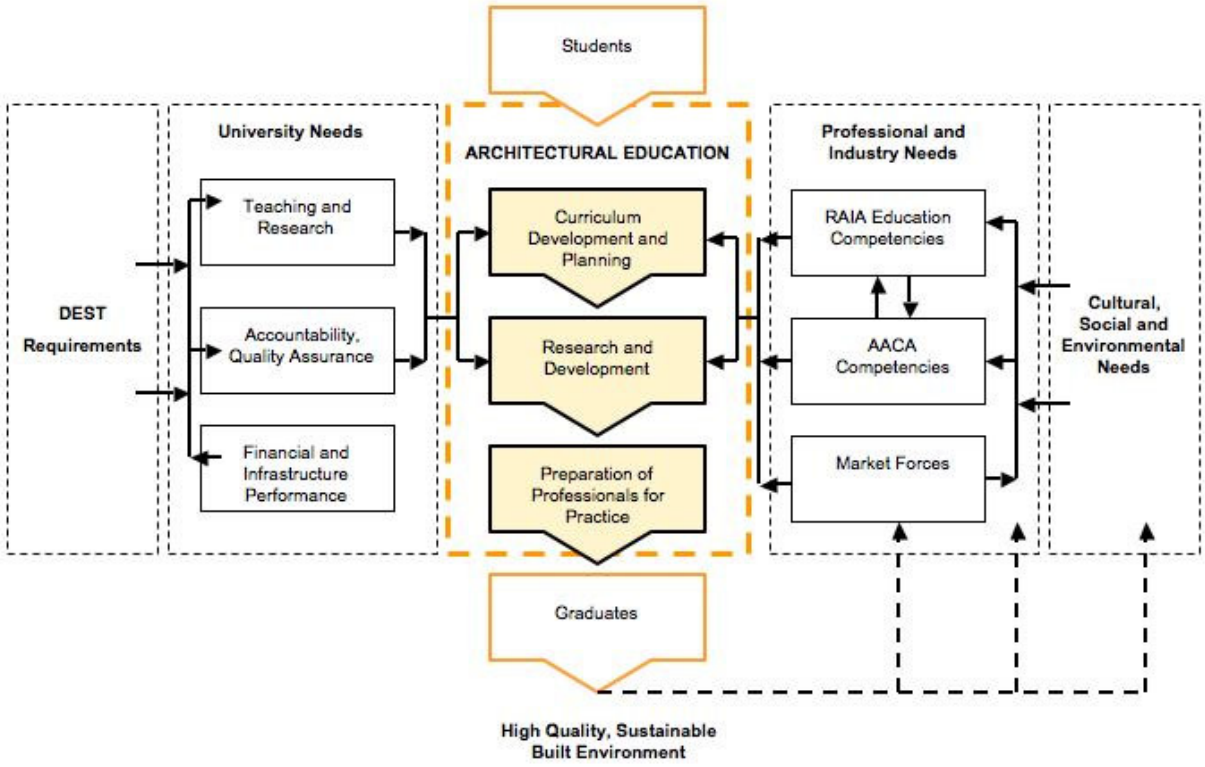

Figure 1. Needs Analysis and Impact Diagram for Architectural Education

The state of architectural and associated education will be ascertained through a series of interconnected studies, as follows:

- ☐ Study 1 Student Information: student flow pertaining to student enrolments, characteristics, completions, and employment; then about graduates' satisfaction and destination.

- ☐ Study 2 Academic Staff: recruitment, promotions, academic duties, type of employment, age and gender, student/staff ratios, etc.

- ☐ Study 3 Curriculum Details: A study of the curriculum development processes and course delivery, as well as innovation in teaching and learning in Architectural education, transfer of knowledge from research to teaching and the like.

- ☐ Study 4 Industry University Relationship: Of particular importance for assessing the state of Architectural education is to understand the relationship between architecture and associated (Design and Built Environment) faculties and industry (both private and public organisations).

- ☐ Study 5 The Identification of the Achievement of Excellence: The identification and documentation of innovation and excellence of practice across the Architecture and Built Environment education sector.

Studies 1 – 5 provide background data to position the discipline both nationally and internationally. They also provide a contextual framework for the following stages. Once the state of architectural and associated education is defined two further studies will identify the key challenges facing the discipline from the perspective of teaching and learning.

- ☐ Study 6 Challenges: A study of the concerns, hurdles or impediments currently facing architectural education across Australia. Such concerns might include issues like ‘studio teaching’, ‘assessing creativity’, and the ‘research and creativity nexus’.

- ☐ Study 7 Limited International Benchmarking: The issues identified in Study 6 are raised with key international institutions to determine some degree of international significance and to identify best practice responses internationally if such responses exist.

Finally, a report will be prepared detailing (1) the state of architectural and associated education in Australia, along with a (2) prioritised list of areas requiring future research and (3) strategies to ensure that best practice solutions are widely propagated. Figure 2 charts the conceptual location of the proposed studies in the context of the impacts and needs model of architectural education. The purpose of this figure is to show that the proposed studies consider the range of areas currently impacting on architectural education.

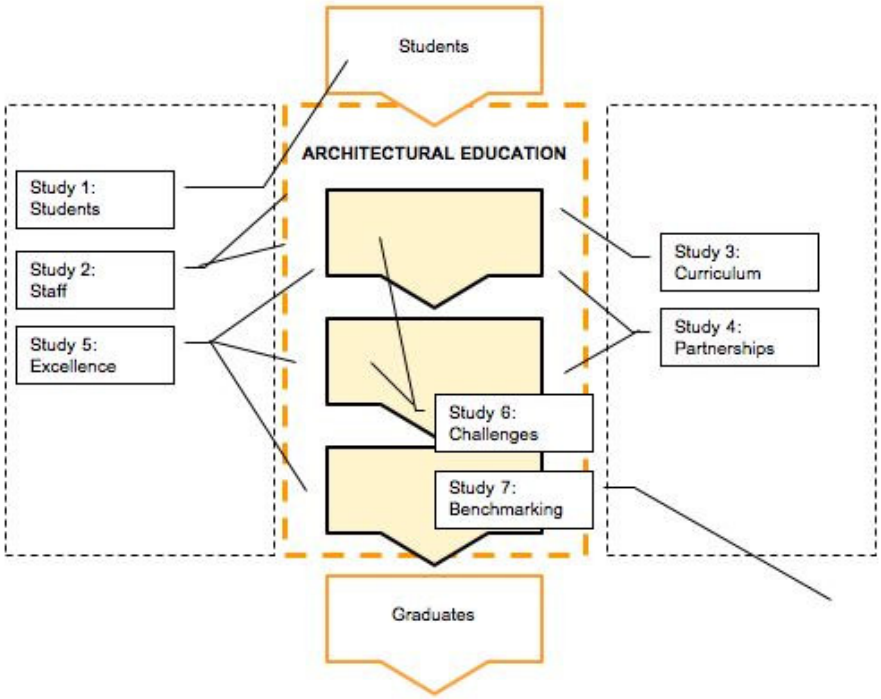

Figure 2: Conceptually locating the separate studies within the overall model

PROJECT GOALS

The specific goals of the research are, in the context of the architectural and associated disciplines, to:

1 Identify and describe the current state of education and major issues faced by Schools of Architecture in Australian universities.

2 Evaluate the quality of education in terms of responsiveness to emerging industry and societal needs, the changing student body, the changing nature of business (proliferation of IT, informatisation, globalisation, etc.); evaluate the impact of commercial imperatives on business education quality.

3 Develop and implement a framework to evaluate the curriculum design, teaching strategies and assessment practices/learning outcomes against appropriate Professional bodies' competencies.

4 Assess the impact of globalisation and the new communication and information technologies on teaching and learning.

5 Identify ways in which degree curricula have been developed and modified

6 Explore and feedback perceptions of key stakeholders in relation to the processes, outcomes and efficacy of these models and strategies.

7 Identify opportunities and strategies to advance strategic thinking in education and foster change, quality improvements and innovations in curriculum development, learning and teaching methods, and delivery technology; outline recommended implementation strategies.

8 Assess innovation capacity and the competitive advantage of Australian universities in the international forum.

9 Derive contextually appropriate 'best practice' principles for Australian undergraduate education with emphasis on studio education.

10 Highlight instructive examples of best teaching, learning and assessment practice

11 Disseminate this information to the wider professional audience in order to guide decision-making in the discipline.

12 Establish forums for collaboration and partnerships among universities and between universities and industry, to implement recommended strategies to foster innovation and greater international competitiveness.

ARCHITECTURAL EDUCATION

Architectural Design is at the core of the discipline of architecture. Communicating knowledge and skills in architectural design is the principal focus of teaching and learning in any professionally accredited program in architecture. Architectural design involves disciplinary specific activities and

knowledge bases that contrast with the very different knowledge forms of other fields such as history, theoretical discourses and environmental and construction technology that nevertheless contribute to learning in architecture. This contrast presents a specific set of problems for architectural design in the higher education sector.

There is much debate within the discipline about standards and competencies expected of the outcomes of architectural design education. However, there is little consensus on how to benchmark and explain the activities and outcomes of architectural design back to the higher education sector. The activities of architecture schools, their programs, structure, interface with the profession, are reviewed biannually by the Australasian Architecture Schools Association (AASA) at a meeting of heads of program. This project seeks to identify and explain key issues surrounding teaching and learning in architectural design and to stimulate teaching and learning in architectural design by focusing on:

THE CONTEXTS FOR ENHANCED LEARNING IN ARCHITECTURAL DESIGN.

The work of architectural design, both in practice and in academia, traditionally occurs in design studio settings. This studio experience contributes to the development of the life-long learner and establishes the milieu for creative actions in later practice. This proposal will shed light on how attributes of the creative problem solver are germinated in the design studio educational experience.

The value of the architectural design studio as a learning community is currently challenged by changes in higher education bureaucracy and by competing sub-disciplinary fields within architecture. The contexts that give rise to excellence in architectural design need to be re-defined and reinforced.

MEASURING THE OUTPUT OF ARCHITECTURAL DESIGN AND ARCHITECTURAL DESIGN STUDIOS

The work of architectural design, which is the focus of teaching and learning activities in architecture programs, is also the product of a disciplinary-specific methodology for creative problem solving. The contributions of creative action in practice to disciplinary knowledge bases in

architectural design are measured through outcomes of design project work. Whilst the potential for architectural design to generate knowledge is acknowledged, there is no agreement on the mechanisms for identifying, defining and measuring contributions to knowledge. Nor are there currently any mechanisms for recognising and measuring the capacity or potential for design studios and related curriculum materials to contribute systemic change in teaching and learning as it relates to disciplinary knowledge.

WHAT ARE THE ISSUES IDENTIFIED SO FAR?

The study at the time of writing is only starting and as such has not delved into the issues as they present in practice. The study has reached a point where the issues as documented in the Architectural education literature have been identified and this data will inform the framework for the next phases of the study. The literature has identified a range of issues but the concept that seems to dominate discussion is the complexity of the Architecture curriculum with its seemingly incompatible components. The complexity exists because of its fundamental need to integrate such curriculum components as:

- ☐ Design
- ☐ Studio
- ☐ Construction Technology
- ☐ Computing
- ☐ CAD
- ☐ Hand drawing
- ☐ Management and Professional Practice
- ☐ Research

The study has found that a programme of study which includes such a diversity of content areas there is the potential for there to be a lack of overall balance and quantity. It is always going to be difficult to achieve (Bachman and Bachman 2006) a balance between the diversity of competing curriculum components and not overcrowding the curriculum(Cunningham 2005). Out of this

issue flow many of the other issues which have been identified as impacting on Architectural education.

The diversity of the curriculum components (Challis 2002) and the inclusion of open-ended design problems (Murray 2002) has the potential to lead to a “crowded” curriculum an outcome of this situation is the impact upon the student workload.

The issue of the work requirements of the students is of major concern to students and academics alike. Student workload (Bachman and Bachman 2006) is the issue of balance between a stimulating workload which supports productive learning and high satisfaction and a workload that is inclusive of the diversity of content and the inclusion of open-ended design. Students often identify the issue of “busy work” as being a contributing factor to programme dissatisfaction with their learning experience. The issue or student workload is exacerbated when accompanying the issue of student part time employment. Students in Australian Universities are working more than at any time in the past, due not only to the requirement to pay fees but also “lifestyle” demands. Architecture students have currently a high demand in the Architecture industry with the ongoing building boom providing a high demand for “junior staff” who can work part time in drawing and planning areas. Students not only have the desire to work part time (some more than part time) and they also have the opportunity.

Challis (Challis 2002)has identified the issue of the design component of the curriculum may not necessarily fulfill the design needs of the students as her study found that the undergraduate design curriculum focuses on “schematic design” which is not representative of the real world in which only 15% of this design can be identified. Her concern centres on the issue of the total role of the architect and the diversity of activities which they undertake in their professional activity. The university graduate is well versed in the process of design but may not have the appropriate level of experience in issues such as responsiveness to client and relationship to builder - were also realised. Likewise there is a need to move from the individual to the collaborative. Learning is socially constructed and architectural practice involves social practice, therefore, Challis argues that working collaboratively on a project at university entails authentic learning.

Challis argues that these issues are often disregarded in the curriculum and proposes a range of concepts become curriculum components if the university experience is going to become an effective grounding for practice, these concepts include:

- ☐ Real purpose and audience.
- ☐ Integration of content and skills.
- ☐ Disciplined inquiry/academic rigour.
- ☐ Explicitly standards and scoring criteria.
- ☐ Elaborate communication. Challis states that the project aimed to address "sophisticated self-promotion" because it is an "important part of the repertoire of the successful architect yet is rarely explicitly taught".
- ☐ Levels of thinking.
- ☐ Reflection, self- and peer- assessment and feedback.
- ☐ Flexibility in content, strategies, products and time.

The need to implement a more diverse range of content needs to be supported by the curriculum model and instructional strategies. Cunningham(Cunningham 2005) espouses the need for a further shift to a project based or problem based curricula. The education around learning-by-doing, evolved to support the formation of aspirants for a profession centred upon creativity, is not yet fully appreciated by the academic community in the UK whose educational preferences continue to be shaped by the linear, predictive models upon which universities have, historically, based their expectations. The amalgamation of Beaux Arts educational methods (centralised, collective and doctrinaire), and those evolved during the Arts and Crafts Movement (individualised, liberal and regional), into a pedagogic system to serve modernism, necessitated a change of perception it has taken a century to assimilate into established, academic institutions. Project-based education appears to lack the intellectual rigor of the disciplined procedures associated with the sciences. Academic convention has, consequently, constrained the potential for education around architecture, and its concomitant research activities, to fulfill its promise and establish project-based education as an alternative pedagogy. These notes scan particular aspects of the educational history and analyse the unique characteristics evolved which set architectural pedagogy apart, a system from which education in its broadest sense might profit.

The curriculum component of assessment also is raised as a concern, especially by graduates of Architecture (Murray 2002). Assessment is widely considered as the mechanism by which

student ability is measured, however assessment methods have recently been the subject of considerable review in response to external pressures, and educational assessment has additionally become the vehicle for accreditation (of programmes), evaluation of “quality assurance” (of programmes), “accountability” (of teaching effectiveness) and “transparency” (of teacher impartiality/probity), and even “accounting-ability” (cost-benefit of programmes) (Williams and Cleary 1999). While all of these purposes are primarily focused on graduate abilities as indicators, the respective value systems are related to differing agenda and criteria, and the multiplicity of purposes inevitably confuses and corrupts the educational assessment.

Assessment of students is a fundamental and pervasive element of teaching and learning, and a potentially powerful means of driving their continuous improvement. Assessment is a complex, multi-faceted system (process), having the primary purpose of *Motivating, directing and enhancing student learning*. Depending on the circumstances, assessment also serves other purposes including:

- ☐ • Helping to ensure that educational standards, for internal and external requirements, are appropriate and maintained;
- ☐ • Determining whether course objectives have been achieved;
- ☐ • Allowing certification that program requirements have been completed;
- ☐ • Providing feedback for the improvement of teaching to teachers and teaching units;
- ☐ • Identifying high achievers against preset standards; and
- ☐ • Identifying students in need of additional support.

When it is conceived, designed and implemented well, it achieves all these purposes. It then provides students with a rich learning resource and information about their progress. It appear at the present time there are a number of issues with assessment as it is applied in Architecture education.

Also Murray(Murray 2002) has a range of issues with the validity of the assessment used in architecture programs. He states that architectural design assessment is "prone to actual and perceived subjectivity in assessment". Students believed that they were assessed on presentation and personality and that more emphasis should be placed on buildability and

adherence to brief. Murray believes that further investigations need to be conducted on the subject of Resources and Culture: equity and bias. Architecture programs, due to the requirement of a public presentation require fluency in English inhibit the international students or students form non-English speaking backgrounds. As there is also a need for purchasing appropriate equipment and materials it is an expensive program to undertake, students with limited resources are not able to present their design outcomes effectively as the students with the limited resources will not be able to utlise the quality of materials. As universities have increasingly limited budgets, students are seeking part-time employment. Almost half of the students surveyed reported that students of cultural backgrounds are not treated equally and three quarters of students claim "spending power" influences their potential success in the course

Senyapili and Basa found that students preferred computer drawing for its practicality. It is easier, quicker and easier to fix mistakes. However, compared to hand drawing they believed it was monotonous/homogenous and that it didn't reflect ability.

Although hand drawing was seen to be time consuming and the cause of mental and physical tiredness, students believe that it brought more enjoyments, making them feel "designerely". They beleived that hand drawing contained a warmth that wasn't felt in computer drawing. Furthermore, hand drawing gave students a sense of ownership/authorship.

For these reasons both hand drawing and computer-aided drawing will continue into the future. Students stated that hand drawing, "will be a distinctive quality since it requires specific skills". p 277 Whereas there is an obedience to computers not only for their practicality but also to keep up with the times and technology in the market.

Senyapili and Basa (Senyapili and Basa 2006) argue that the reason hand drawing is still preferable to many students is due to the nature of architecture. Architecture is a field that is defined by both art and science, an ambiguity which leads to the, "oscillation between pencil/computer". Two cultures intertwined. Senyapili and Basa state that although this particular study focused on students and demonstrated that neither hand drawing or computer-aided

drawing will become obsolete in the future, the views represented are very similar to the views of educators in the field. They present two questions for consideration:

1. "Does a tendency towards computers push architecture away from its artistic core?"

2. "Does insistence on hand techniques in presentation constrain architectural education behind the contemporary technical agenda?" (p 282)

Early design sketching is a skill that is extremely important in the design process (Rice 2005). It is a critical "tool of thinking: for architects allowing a designer to express, test and develop their ideas. Students, teachers and architects develop their own ways of sketching and therefore have various design processes. Both teaching sketching as a thinking tool in the design process and learning to think through sketching off a number of different teachers is difficult. Rice argues that in order for students to develop an effective design process they must learn how to use drawing as a toll of thinking. To do this Rice argues that sketching in all its various forms (by students, teachers and practitioners) should be observed and documented from a phenomenographic viewpoint. Rice believes that a phenomenographic perspective will be valuable for both students and teachers so that improvements can be made to the teaching and learning of early sketching in the design process.

There are many problems encountered in the teaching and learning of structural design within the studio-lecture education model. The main issue is to do with what is learnt in the lecture and taking this to the studio. Students are unable to see how the lectures relate to studio design and they are unable to use the knowledge from the lecture in their design. When they do use the knowledge they feel that their work is not noticed or appreciated. Academic staff feel that students are not motivated or interested in their class as they prefer the studio. Unay and Ozmen (Unay and Ozmen 2006) discuss many causes and effects of the problems encountered in the current system of education. They state that the structural design component of the course in second year only covers structural theory and as a result does not equip the students with the knowledge or skills necessary to make a structural design by incorporating structural system selection, element configuration and basic dimensioning. In third and fourth year, Unay and Ozmen argue, students do not receive adequate advice or support regarding structural behaviour. This is because they believe there are few academic staff who specialise in structural design and from these it is not possible that they are regularly present in the design studio. Furthermore, they believe that the role of structure in the architectural design process is majorly underplayed and

even ignored. For a better structural design education to occur Unay and Ozmen believe that universities must select appropriate educational technologies, such as computer-based structural analysis software and virtual modeling on the internet. Students must also be given the opportunity to discover solutions in practical exercises rather than in theoretical explanations. Furthermore, universities should work with small-scale structural models in their design studios To improve education in building structure design there needs to be an awareness of the critical and fundamental role the structural system plays, with both academic staff and students.

There are questions raised over the role of the accreditation processes and the impact this has on the curriculum and its components (Cowdroy and Williams 2005). Yet the accreditation process is essential to the viability and sustainability of an institutions Architectural programme. Criteria for accreditation are almost invariably expressed in terms of minimum (lowest) standards, of domain-specific core technical abilities acceptable to the accrediting authority that must be achieved by all graduates. In practical terms this means the accreditation criteria are the abilities of the weakest passing graduate.

An “accreditation imperative” dominates most such programmes, and the minimum standards set by the accreditation criteria often become “criteria for assessment”. In the worst situations the minimum standard core competencies become the whole curriculum, with teaching confined to the minimum necessary to “pass” the accreditation criteria, and passing all the accreditation criteria is often claimed as “excellence”.

Criteria for professional accreditation, however, do not include many of the essential elements of a quality university education that are expected of all university graduates (regardless of specialisation).

CONCLUSION

This project is now entering the phase of surveying, interviewing and running focus groups with the stakeholders of Architecture education. It is expected that the range of issues identified by this group will include the issues already identified in the literature thus far. What will be established by the next phase of the project is that there are a range of issues which are impacting on the curricula, teaching methods and assessment strategies within programmes. It is also expected that there will be other issues identified which fall outside the programmes

themselves, these will include the issue of student workloads, both related to their study and “part time work.

The project which has been funded by the Carrick Institute is a scoping study and the intention of the authors is that this is only the beginning of a range of funding opportunities which will provide support in the addressing of the range of issues through specific educational projects.

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