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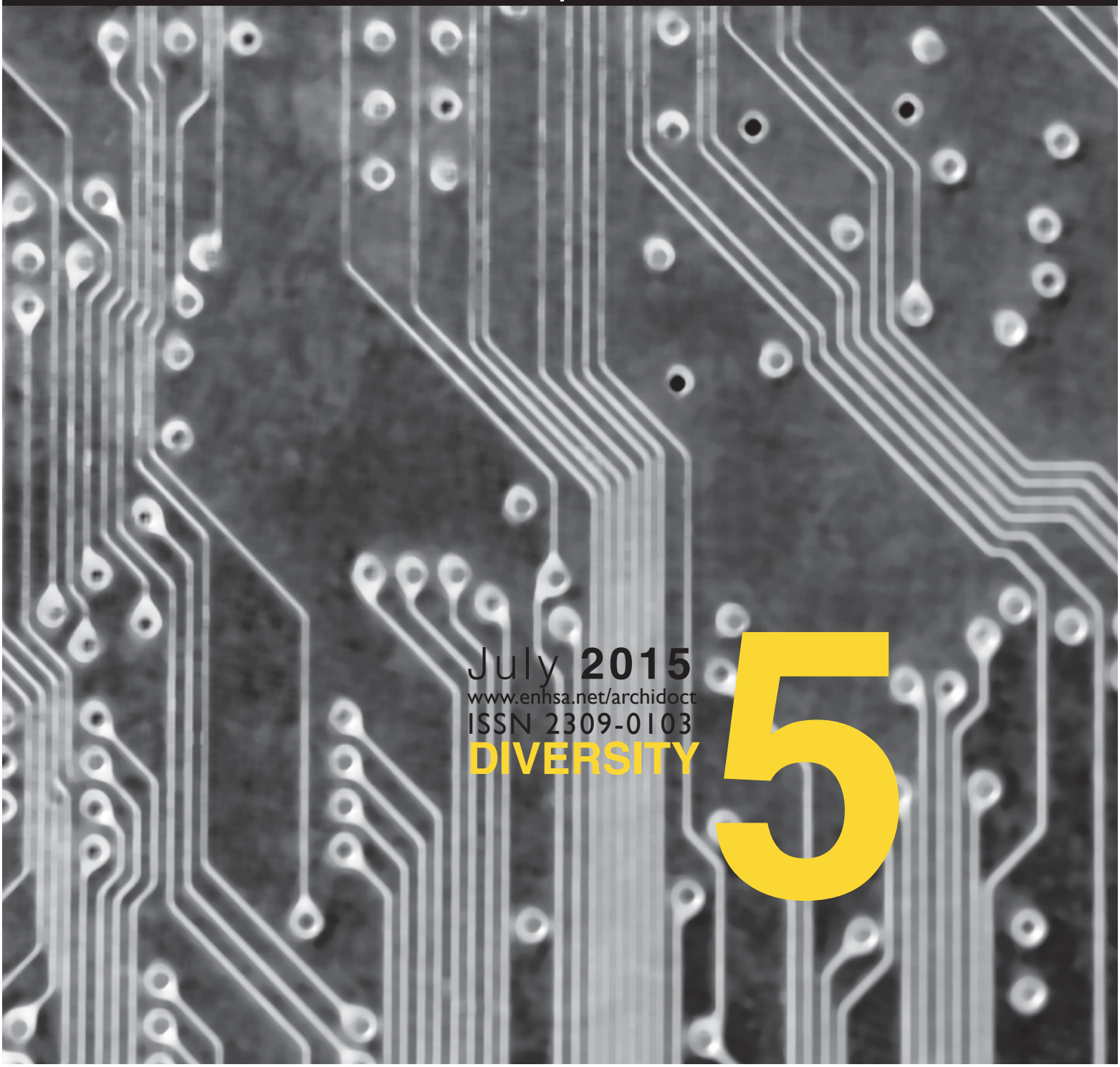

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Review of Approaches to Learning adopted by Architecture Students in the Coursework of Architectural Design

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Abstract

Students' approaches to learning in higher education has been presented in terms of surface and deep approaches (Marton and Säljö 1976). This paper reviews selected literature in architectural education where the definition of approaches to learning adopted by architecture students in the coursework of architectural design is compared with surface and deep approaches. The categorized approaches identified in an earlier study adopted by first and fourth year architecture students (Iyer and Roberts 2014) is correlated to this review to present how the concepts of deep and surface approaches to learning manifest themselves in architectural education. In conclusion, the study (Iyer and Roberts 2014) and the review points towards a more complex set of approaches to learning than just a deep and surface division. It also raises a further question on do the categorized approaches from the earlier study form different points on a continuum between deep and surface, or are some in a different dimension. The review on architecture students' approaches to learning is a reflection towards the surface dimension and going in the direction of deeper dimension through years of training and reflective practice in architectural education.

Keywords

Approaches to learning, architectural design, architectural education.

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Introduction

Students' approaches to learning are directly correlative to their prior experiences of studying and understanding the key concepts of the subject matter, which is vital to the subsequent approaches to studying and learning outcomes (Prosser and Trigwell 1999). Biggs poses a case of the implicit and explicit theories of students' learning; with the latter pointing to the importance of the phenomenographic model (Biggs 1994) describing surface and deep approaches to learning (Marton and Säljö 1976). This paper reviews the literature in architectural education looking into the question of defining the approaches to learning adopted by architecture students in the coursework of architectural design and presents it in perspective of surface and deep approaches. The review is correlated to the categorized approaches to learning identified in an earlier study of comparing the approaches of first and fourth year architecture students (Iyer & Roberts, 2014) to delve into the related question of whether these approaches adopted by architecture students' in architectural education are different from the deep and surface dimension. It also raises a further question on do the categorized approaches from this earlier study form different points on a continuum between the deep and surface dimension, or are some of these identified approaches in a different dimension.

Learning Approaches of Students in Early-Stages of Architectural Education

A perspective on how are the approaches to learning in the early stages of architectural education manifested in the students during the enrollment process is reflected by the introduction of architecture as specialization after A-Level education and through aptitude tests like the National Aptitude Test for Architecture – NATA (Council of Architecture 2014). This creates a distinct student cohort within the early stages in various schools of architecture 'who have learning approaches that are streamlined due to their exposure to architectural education' (Atkinson 2010). The prior learning experiences of the students' cohort and the appeal to architectural education are, thus correlated. The architecture student's experience is explored through the terms 'creativity' and 'engagement' with research to 'tease out the relationships between engagement and creativity for student learning in design' and the complexity of 'the nature and quality of students' engagement with their learning' in the architecture profession (Reid and Solomonides 2007). The student's experience is used as the basis to understand the impact on their learning approaches within the design studio. These experiences can be tapped in the early stages of architectural education and channelized towards a deeper impact on their approaches to learning. The seminal research into 'how students learn' and 'what motivates the student' are fundamental questions posed by Biggs (Biggs 2011). Roberts emphasizes on Biggs' focus on 'the student' which he says 'we all encounter' (Roberts 2009). 'Learning is about what the students do rather than what the teachers do' and, 'if students value something, then they see it as important, and will be motivated to learn' (Roberts 2009) brings to fore; the importance of architecture students' approaches to learning after they formally enroll into the architecture program. They can be motivated through structured approaches to learning adopted in the early stages of the architectural design studio which act as the formative years of their architectural experience.

Salama explores the importance of design studio in the architectural 'curriculum to design training and teaching' elaborating that it 'is the kiln where the future architects are molded and the main forum for creative exploration and interaction and assimilation'. He argues 'that most design studio teaching continues to provide students with little understanding of the value of design as a technique, a process, or set of purposive procedures'(Salama 2005). The integration of learning history with students' learning approaches in the design studio is investigated from a historical and cultural context to learning (Stewart and Wilson 2007). Simon Unwin's stoic phrase 'nothing will come of

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nothing' (Unwin 1996) and Andrew Higgott's pointed question 'Teaching First Year: what do they need to know?' (Higgott 1996) sums up approaches and experiences seen from the students and acadamics perspective when dealing with architectural history within the design studio (1996). Cakin has evolved a major educational strategy developing communication skills and collaborative initiative between institutions stating 'a strong belief in the use of precedents in teaching and learning design, derived from students' need to start from a knowledge base; encouraging students to explore ideas based on metaphors and analogies resulting from the acknowledgement of the role of metaphor in conveying meaning in architecture' (Cakin 2001).The design studio is effectively presented as the fertile ground where the students' approaches to learning goes through years in its formative stage from a process, technique, language and contextual perspective.
Webster looks at project-based learning as the central pedagogic tool in architectural education 'represented by the design project at its core' with the process of students' learning where 'critical reflection; understood as a key element of project-based learning in the design studio requiring students to continually reflect on their work both alone and with others, most significantly with design tutors in the one-to-one tutorial.' The author suggests that students' experience 'three principal types of tutor behavior; the entertainer, hegemonic overlord and the liminal servant and they believed that only the liminal servant increased their motivation and supported their learning' (Webster 2004). Robinson looks at 'the tutorial system within architectural education, which aims to support the process of design in a studio environment where things can be tested without the practicalities of the real world' and concludes that mentoring using peer-assisted learning, 'seems an ideal tool in architectural education which is presently neglected' (Robinson, 2007). Thus approaches to learning of architecture students in the early stages of architectural education within the design studio have quality of students' engagement, motivation, design curriculum, historical & cultural context and the role played by the design tutor as key parameters.

The Review Process as a Learning Tool

The review process is approached by architecture students with research pointing at a revisit and a proposed guide for the design studio tutors by looking at 'the established model highlighting inherent opportunities for learning and conditions associated with a lack of learning' (Sara and Parnell 2004) reflecting the balance between challenge and support required. Chadwick and Crouch focus on 'the review, as a learning and teaching tool, is a fundamental component of architectural education' and terms it as 'educationally flawed' with the process seen as 'intimidating and unnecessarily grueling and can lead to students feeling demoralized and humiliated'.They propose a model-in-development to humanize the review process and integrating it as an important part of the students' learning process within the design studio(Chadwick and Crotch 2006). The review process as a constructive learning assessment tool in the design studio can be used by the design tutor as-well-as the architecture students' cohort to encourage approaches to learning towards understanding the complexities of architectural education from the early stages to the later years. In comparison, a typical surface approach; where the response of the student in early stages would generally be that the reviewers did not like the presented work; which perhaps oversimplifies the discussion and the purpose of the review and needs to be explored in further detail.

Impact of Design Studio on Approaches to Learning

This brings to the fore the impact of the design studio on the students' approaches to learning.The central role played by the design studio has been 'routinely referred to as being a core of architectural education' (Webster 2001). 'The Reflective Practitioner' by Donald Schon champions the

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cause of the design studio as central; both to architectural education, the profession and the pedagogic connect of teaching design; 'the distinctive structure of reflection-in-action' and 'the future interaction of research and practice' (Schon 1983). Webster provides an outline of the ideas of Schon and related literature from disciplines outside architectural education, pointing towards the importance of 'design project, as a vehicle for project-based learning, was adopted on the assumption that the expertise needed by architects could only partially be learnt through the traditional methods of knowledge transmission, lectures, etc. used by most academic disciplines' (Webster 2001). Schon's work is described as the launch of 'an attack on the dominant technical rationality in professional education, criticizing it for being unable to respond to the complexities of the real world and of failing to account for how professionals work in practice' (Schon 1983) (Webster 2001). The design studio is reflected as the core of architectural design curriculum and the integrated design project seen as the principal teaching vehicle (Schon 1985) (Schon 1987). This clearly reflects the centrality of the design studio and its impact on the architecture students' approaches to learning.

The Design Studio in the Early Stages of Architectural Education

Platt questions 'if architectural ideas are only fully understood with the illumination of construction, what are the implications of teaching architectural design in the academic studio?' and takes us to 'design and build' design project in the design studio with the emphasis on 'do it' & 'teach it' and the required balance of full time academicians and practicing designers towards the right impact on the students' learning approaches in the design studio(Platt 2000). Roberts suggests that Schon's (1983) work on architectural education's project-based 'learning by doing' approach has been considered as a pioneering model for professional education and 'the design studio provides a venue for students to engage in conversation, dialogues and collaboration related to open-ended problems and encourages speculative exploration. Studio-based learning has been seen to be an enjoyable and effective way of learning critical design skills' (Roberts 2004). This can be seen as a pointer to the first year design studio and the approaches to learning that is required to be adopted by students of architecture.

Farivarsadri states that 'introductory design studio as a foundation of architectural design education which has a great importance' and elaborates 'on the importance to organize the body of knowledge and skills to be learned in this year properly, to find suitable methods to transferring them to students, and to achieve maximum efficiency in teaching requires an awareness of different pedagogical approaches and the implications of any chosen method of instruction on the students' (Farivarsadri 2001). The author elaborates on Bloom's Taxonomy in introductory design education and looks at the work of Lede Witz(1985) and his summarization of learning architecture as 'learning and practicing new skills such as visualization and representation; learning a new language and learning to think architecturally'. Farivarsadri states that 'still many of the design studio syllabi are derived from the 'basic design model' developed in the Bauhaus school' and the limitations of this model with a reflection on a holistic perspective concluding that the quality of introductory instructors, their knowledge about learning process and their patience and willingness to look at an array of subjects and enrich the introductory design process(Farivarsadri 2001). This need for a more holistic approach towards introductory architectural education is voiced by major architects iin their seminal works including 'Lessons for Students in Architecture' (Hertzberger 2005) and 'Thinking Architecture' (Zumthor 1998); with these different ways of thinking about architecture pointing at distinctive approaches to learning.

Unwin explores the question of 'how new students in Welsh school of architecture are inducted to architecture through first semester program of design project run in parallel with supplementary exercises focusing on analysis, place and technique' (Unwin, 2001). Unwin is looking at how

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the students of architecture in early stages of their education develop an appropriate approach to learning and has structured exercises that 'run alongside the design projects' with a 'focus on three main themes, seen to build a bridge into architectural education, the core skill of which is taken to be architectural design' and based on these pointed themes including analysis, space and techniques; extrapolating on each theme with architectural examples (Unwin 1997). 'Students are encouraged to refine the framework and their own analytical themes. They are expected to translate the lessons run from the exercises creatively rather than mechanically or slavishly, into their own design work thus developing their own capacity for designing or building to build their own repertoire of architectural ideas which they will hopefully add to in similar ways through their careers as architects'. He concludes that 'students learn for themselves rather than doing what they are told but at the same time they are not left to struggle with design without sources of ideas and information' (Unwin 1997). This statement by Unwin represents two different approaches; one where they approach learning by mechanically following a demonstration or as a craft-based approach and the other; where they learn by going through the process of making architecture, which can be seen in parallel to surface and deep approaches to learning (Marton and Säljö 1976). They see the benefit of 'learning by doing' but also of 'learning by looking at the work of others' (Unwin 2001) and with this analysis, Unwin further widens the range of the approaches to learning with reference to the students of architecture. The review further explores schools of thought from the Beaux Arts-to-Bauhaus and the prevailing philosophical viewpoints; world over (Gulgonen and Laisney 1982; 1988; Bax 1991; Littmann 2000).

Approaches to Learning and Early Stages of Architectural Education

'Learning as an interactive process is an important issue in architectural design education' and the authors look at 'the role of the design studio', further considering three steps including 'learn and practice some new skills, say, visualization and representation; learn and practice a new language as Schon(1984) described design as a graphic and verbal language; and learn to think architecturally, as pointed by Lede Witz(1985)' (Demirba□ and Demirkan 2003). The design studio is portrayed as a knowledge studio defining it 'as a mental place of dialogue, where all sorts of knowledge (scientific, technological, and humanistic), skills and attitudes are integrated'. Depuydt argues that with learning knowledge and skills, the emphasis should be on the attitudinal aspects of learning (Depuydt 2001). Odgers explores 'the question of authority in teaching and learning with reference to Barthes and Gadamer' by offering 'two interpretations of authority. One is based on power, the other on the recognition of superior understanding in another' with these versions of authority in a teaching relationship within the context of the design studio at Welsh School of Architecture, Cardiff (Odgers 2001). Parnell looks at 'project-based learning, a form of which lies at the heart of the design studio' and to the surprise of architecture students in their early years of architectural education; the nature of 'students learning experiences prior to university' seems to lie within the didactic model. The students face problems in the early stages of architectural education with project-based learning, which 'requires the students to reassess their familiar mode of learning and adopt a new learner identify in relation to the tutor' (Parnell 2001). This becomes difficult to achieve for the students as, 'this transition from receiver of knowledge to critic and instructor of knowledge is complex and hence difficult for many students to achieve' and Parnell concludes that the peer discussion method has a positive effect on students' learning processes and evidence points that 'students develop higher quality cognitive strategies cited as necessary for the management of disjunction' (Parnell 2001).

Roberts has investigated 'how students with particular cognitive styles, as measured by Riding's

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Roberts has investigated 'how students with particular cognitive styles, as measured by Riding's cognitive style analysis, perform in design project of work at particular stages of architectural education' concluding that 'contrary to assumptions found in the literature, those with a preference for thinking in a holistic, global manner, perform less well than their peers in the early stages of their education, but tend to improve as they progress through their education' (Roberts 2006). The design studio has been explored with reference to 'the learning styles of freshman design students in three consecutive academic years using Kolb's experiential learning model' with the conclusion that 'the bipolar perceive dimension indicated that the freshman design students are more related to the analytical skills of theory building, quantitative analysis and technology. Also, the bipolar process dimension showed that they have better behavioral skills compared to perceptual learning skills'. The research suggests that 'design education can be considered as being in line with the experiential learning model of Kolb(1984)' (Demirkan and Osman Demirba□ 2008). In summary, this review presents the connection of the early stages of architectural education with reference to skill-based, knowledge-based, experiential and cognitive based perspective of reflecting on the students' approaches to learning.

Conclusion: Categorized Approaches to Learning in Architectural Education adopted by Architecture Students

The study on students' approaches to learning adopted in the first and fourth year of architecture based on their experiences while undertaking an architectural design project has been categorized as six learning approaches (Iyer and Roberts 2014). These categorized approaches to learning reflect on the research question & the literature review into architectural education, the latter giving a broad canvas to draw upon for a definition on approaches to learning adopted by students' of architecture; while the former points to these identified approaches falling within the spectrum of the deep and surface dimension presented in higher education research (Marton and Säljö 1976).

Table 1. Categorized approaches to learning adopted by First & Fourth Year Architecture Students (Iyer and Roberts 2014)

Approach A	Series of steps taken from the introduction of the design problem to the completion of the final solution with emphasis on presenting a good output and preparing a good portfolio.
Approach B	Trying to understand or experience architecture using the experiences of the faculty as a scaffold or reflecting on their instructions to present the learning outcome.
Approach C	Evolving perceptions of architecture by adopting a series of steps within the process of design that is based on a product-focused outcome.
Approach D	Evolving the perceptions of architecture through the process of design that is based on a process focused outcome.
Approach E	Conceptualising the thought process and using the same in the evolution of architecture based on in-depth experiences directly correlative to the perceptual psychology within the experiences of each student.
Approach F	Looking into the conceptual and abstract foci towards design based on an innately creative and experiential level of understanding architecture; reflected by the student.

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The introduction of the architectural design coursework in the first year of the architecture program is considered as the stage where the students tread their formative learning approaches; A & B as a step-by-step approach from the design problem to its final solution (Iyer and Roberts 2014). This could be seen as learning approaches bordering to the surface dimension (Marton and Säljö 1976). Approaches F & F pursued predominantly by fourth year architecture students were learning approaches at a very conceptual and abstract level (Iyer and Roberts 2014) and dwell within the parameters of the deep dimension (Marton and Säljö 1976). The categorized approaches to learning duly form a framework parallel to the one suggested by Unwin with reference to his work with students in the early stages of architectural education at Welsh School of Architecture (Unwin 2001). This study; is a work in progress in charting the approaches to learning adopted by the architecture students' as they progress on the ladder of their rigorous years in architectural education and step into the portals of the architecture profession; thus moving from the surface to the deeper dimensions of approaches to learning.

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