Studio Models in a Changing Higher Education Landscape

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Abstract
This paper explores the way in which different studio models have emerged in architectural education, as well as providing an overview of studio models in recent use (2007-2011), which is timely in a context that values 'efficiency dividends'. Four models are explored in order to represent the considerable diversity in how the studio is defined and understood in the Australian and New Zealand context. The paper highlights the significant influence and impact of Higher Education Institutions (HEIs) policies and management have had on schools and their studio models.

Keywords
Architectural education, higher education landscape, design studio, studio models, massification

Introduction

The term studio or *studiolo* ('little study') can be traced back to Renaissance Italy. It described a domestic room that was small enough to be intimate and which was often used by distinguished people as a retreat. Chilvers (2004, p. 680) notes that "such rooms became a badge of culture and were often specially designed or hung with pictures commissioned specifically for them". The guilds of the Middles Ages, from which an artisan learned their trade, were superseded by the workshop system

which operated during the Renaissance. The workshops were run by Masters who had oversight over a number of apprentices. Master artists sought to protect their originality by only identifying the work under their name (McCabe, 1984). These spaces which were dedicated to cultural pursuits eventually evolved to become a dedicated place in which people such as artists and architects were enculturated in how to act and think about the complexities of design (Cunningham, 1979; Kostof, 1977).

As the studio has developed through history its purpose and aims have necessarily changed in relation to a range of socio-cultural factors. For example, the role of the studio expanded to include instruction and the design curriculum through the popular adaption of the Beaux Arts model into architectural education from 1880 to 1920 in the USA and the UK (Bosworth & Jones, 1932; Crinson & Lubbock, 1994; Schön, 1983). Studio models have also continued to evolve in line with changes to social values, technology, the role of the architect and Higher Education Institutions (HEIs), but have continued to be viewed as central to design education (Ostwald & Williams, 2008; Salama, 2015). Despite their apparent value however, studio models are increasingly considered to be at risk in the changing higher education landscape of Australia and New Zealand (Australasia) (Ostwald & Williams, 2008, p. 147). The threat to studio teaching is further complicated by limited knowledge of the different characteristics and contexts of studio models.

Studio definitions

When architectural academics define a 'studio' in Australasia, it is often both a place and a culture that allows for project-based teaching in small groups (Ostwald & Williams, 2008; Zehner et al., 2009). Most references to the studio as a place are also deliberately left open to accommodate a diverse range of facilities available to schools. Little additional information can be gathered from the definitions provided in professional accreditation (ANZ APAP, 2013) and associated documents even though a studio is assumed to be an important space or culture. No greater clarity is found at the international level (UNESCO/UIA, 2011, NAAB, 2009) beyond a general argument for the importance of the studio space except for student learning and activities in the UK (Borden et al., 2010; Vowles, Low, & Doron, 2012).

Searching beyond the discipline of architecture, a similar problem exists in defining studio teaching and learning models in art, engineering, planning and physics (Boling, Schwier, Gray, Smith & Campbell, 2016; Bosman & Dedekorkut-Howes, 2014; Higgins, Aitken-Rose, & Dixon, 2009; McKenna Salazar, 2013; Reidsema & Goldsmith, 2011; Vella, Osborne, Mayere, & Baker, 2014; Young & Hallström, 2007; Zimmerman, 2009). Common threads across these disciplines include a project- or problem-based pedagogy where ill-defined or 'wicked problems' are used, coupled with regular review and reflection stages. This is interesting as the studio can also be described as a space which allows for individual and team project work, in or

outside of class. Despite these commonalities however, it is rare to find any exchange of concepts or definitions between disciplines. One exception is in the field of planning, where academics are attempting to combat universities' policies on resourcing and group-based assessment to allow for studio based teaching (Bosman & Dedekorkut-Howes, 2014; Vella, et al., 2014).

The higher education climate and the studio in the early 21st century

In the early years of the 21st century, many art and design based schools such as architecture found themselves in an institutional climate with diminishing resources. This has forced a number of schools to justify the greater costs associated with studio facilities or teaching models which rely on small-group teaching methods. The institutional climate was shaped by HEIs response to ongoing government policies along with global trends to adopt mass higher education to improve and safeguard the prosperity of nations (Altbach, Reisberg & Rumbley, 2009; Barber, Donnelly, & Rizvi, 2013; Gurri-Rosenblit, Sebkova & Teichler, 2007).

For Australia, this changing institutional climate meant a rapid increase of student enrolments, including more diverse student cohorts (low socio economic, mature aged, foreign and full-fee paying students). During this institutional transition public funding for higher education remained relatively static, particularly during the years from 1995 to 2007 (OECD, 2010, Annex 3, Table B2.1). For example, in 1990 the average Student: Staff Ratio (SSR) in Australian universities was 1:13 (Marginson, 2009) whereas in 2006 it was 1:21 (Australia Department of Education, Employment and Workplace Relations, 2009, p.15). To accommodate reductions in funding, economies have been achieved by reducing the number of teaching weeks per semester, rationalising units and changing the mode of teaching (lectures, blended learning, and flexible online delivery) (Ostwald & Williams, 2008; Zehner et al., 2009). In addition, greater demands for quality assurance has contributed to a more centralised approach to learning and teaching management and training (Altbach et al., 2009), which has diverted funds and time from teaching activities. In parallel with this, problems associated with poor student engagement (a sense of entitlement due to paying for courses, engaging in part-time work during study, and greater access/ mobility with technology contributing to the demand for flexible learning) were reported by academics, making it more difficult to implement any type of studio-based teaching that relies on students learning from the peer group (Dee Fink, 2013; Fuller, Ostwald & Williams, 2009; White, 2007).

Many similarities exist in New Zealand during the same period, although there is less reliance on international student revenue and more on up-skilling minority groups (Goedegebuure, Santiago, Fitnor, Stensaker, & van der Steen, 2008; OECD, 2010, Annex 3, Table B2.1; TEC, 2012). In summary, concerns exist that there are "deeper" implications for student learning and the use of studio models that are not being captured in the Australasian region. In light of a report (Deloitte Access Economics, 2016) that the cost of learning and teaching at Australian universities could

withstand a 2.5% efficiency dividend with minimal implications, this paper presents an important opportunity to reflect on the different types of studio models in use, and the unique teaching and learning opportunities they provide.

The research approach

A mixed methods approach (Creswell & Plano Clark, 2011) was employed to capture in-depth knowledge about studio models, by incorporating a qualitative based study embedded with quantitative data (See Figure 1: Diagram of the Research Design). The following ethical approval was obtained for this research: H-496-0607. Stage 1 involved the secondary analysis of data (Ostwald & Williams, 2007 a & b; AIA, 2008) collected from all 20 schools of architecture in Oceania[1]. Stage 2 drew from these findings, and the trends and factors impacting on studio forms, to identify the maximal variations (Creswell, 2005; Patton, 2002) according to teaching methods, type of physical spaces, school size and school locale. From this data, an informed selection of the purposeful sample group was made to examine maximum variations. Thereafter, Stage 2 which employed multiple research methods (observations, interviews and document analysis) was undertaken so that data collected could be cross-referenced for alignment and so that participants' interpretations and meanings could be better understood (Ezzy, 2002, p. 81) as multiple possible 'truths' can exist (Rubin & Rubin, 2005).

In addition to this general research structure, qualitative content analysis (Julien, 2008) of the data was employed to balance the construction of themes by allowing the academic voice to guide the process, as well as recognising the influence of pre-existing knowledge about the studio (Ezzy, 2002). Data from Stage 1 included excerpts of interviews with academic leaders (Head of School and/or Program Coordinator) and focus groups with full-time academic staff on the way the studio is included in their school. In addition, data on student enrolments and curriculum structures were collected. It was established from this analysis that 10 full-time academics from six schools would be a sufficient sample to reflect the maximal variations in Stage 2. However, the results could not be generalised beyond the sample (Sandelowski, 2001).

The data from Stage 2 involved a visit to each of the six schools to observe the facilities used for design learning and teaching, a face-to-face interview with an experienced academic (identified from Stage 1) about a recent design unit that they had taught and finally, the collection of supporting documents (unit outlines and other documents related to the design units). Each academic was interviewed twice for a one-hour period, which allowed the second round of interviews to unpack issues identified in the first. The second interview took place by telephone a few weeks later, after the analysis of the transcripts of the first interview. A framework method (Spencer, Ritchie & O'Connor, 2003) was introduced to the process of analysing the data using the context of higher education, as the themes emerging were

comparable with learning and teaching frameworks. One prominent and recognised framework in higher education was adopted for this stage, Biggs's (2003) constructive alignment system for quality learning and teaching. The framework includes the following themes: philosophical attitude towards learning and teaching (shortened to philosophy for this paper), institutional climate, curriculum, environment[2], teaching methods and assessment.

A sense of the rigour and trustworthiness of the data was demonstrated in this study by the quality of the processes employed to fairly represent their original meaning(s) (Woods, 1999; Ezzy, 2002). The aim was to develop greater detail on processes and results which show "thick" descriptions of the academic voice, corroborating literature findings, triangulating multiple sources and self-awareness of the potential researcher's bias (Lewis & Ritchie, 2003; Rubin & Rubin, 2005; Wallis, 2017).

The primary limitations of this study are centred on the composition of the purposeful sample group. The six schools were comprised of four Australian schools and each was represented by two academics. The remaining two schools were from New Zealand and each was represented by one academic. It could be reasoned that both New Zealand academics were experienced teaching leaders and the findings were comparable to the base data in Stage 1. However, the gender balance was over-represented with six females to four males, in contrast with the general dominance of males in architectural academia and the architectural profession.

The results and discussion

In response to the questions about the form the studio takes in their institutions, a number of patterns emerged from the analysis of Stage 1, Australasian data (Ostwald & Williams, 2007 a & b). These were identified amongst the three main themes of *teaching methods, physical place* and *curriculum*. Culture was excluded, as it was difficult to identify or distinguish from the other three themes. Descriptions of the studio form were generally composed of two of the three themes. The majority of participants (81%) identified that the studio form in their school involved the *teaching methods* theme, which varied from one-on-one tutelage, internal critiques (weekly formative assessment), and events/exercises. Fewer participants identified with the accessibility to *physical place* (44%) theme or the structure of the *curriculum* (47%) design theme. The physical place theme was evident in responses where the more traditional studio spaces could be found for the majority of students to access both during and outside of class time. The key patterns that informed the selection of the purposeful sample group were related to resourcing levels and their influence on teaching methods and the utilisation of space:

It was typical in the teaching methods theme that academic staff first described the schools' spatial facilities to explain the approach and then the resources for staff.

> *A holistic learning environment. Not a space in the usual sense. A teaching context. A type of seminar around the issues of design engagement. A method rather than a space. A group activity/enquiry. A laboratory (philosophically). Dialogue. Shared enquiry. Reciprocity. They are project centred. The meaning of the project. The communication of technique*. (Victoria – Staff)

The staff resources could vary significantly across schools from four to 12 contact hours per week and SSRs from 1:15 to 1:25. The reason for these differences could not be established through this data. What could be established was that three schools needed to over-teach the allocated hours to maintain their teaching method (internal critiques) due to less contact time. These insights were gained from the focus group interviews of academic staff.

> *Unofficially we do give more time. Definitely need more than six hours. … Six hours 15–20 students per week would be heaven. Rarely have students of less than 40 but have a high level of pastoral care. 2 x 2-hour sessions are more effective than 1 x 4-hour session.* (Regional – Staff)

Another two schools described how their methods had to change from an internal critique process in a studio unit to event-based tutorials (in-class tasks) in order to engage students. This occurred due to fewer contact hours and an increase in the tutorial group size. References were also made to the potential loss of peer learning culture, as studio facilities were absent, therefore their rationale was to implement small group-based tasks in class.

> *[C]ulture again – 1 to 17 not bad … listen to crit or peers they can learn from this – now here they disappear after their turn – we have lost learning from peers – now to keep them here we organise activities or tasks for the hour – I miss the learning from peers.* (South Australia – Staff)

Unusually, an academic leader from a different school was frustrated by the continuation of traditional teaching methods, such as the desk critiques as they thought it was no longer appropriate. However, it was permitted due to sufficient resources.

> *What I see happening is that rather than encourage alternate forms of education, that is the studio might be a space where all sorts of flexible or informal arrangements might occur, small-group learning, student-based delivery, peer-to-peer teaching … What I see is that tutors follow*

> *students around repeating the same didactic lecture over and over and over. Then they sit down six hours later and say I'm really exhausted as though they've done a good day's work*. (New Zealand – Academic leader)

This suggests that change may be occurring when fewer contact hours have resulted in poor student attendance and engagement, otherwise it appears that academics will attempt to maintain existing methods. The two schools employing event based tutorials with an absence of studio facilities were selected for the purposeful sample. In addition, two schools where there was evidence of over-teaching were selected, only one of which had access to studio facilities. Finally, the last two schools selected had access to studio facilities and employed one-on-one tutorials and internal critiques. With these six schools the maximal variation had been established for teaching, space, school size and school locale. This was considered important, as the physical place theme was more likely to be found in all New Zealand (n=3) schools and nearly a third of Australian schools (n=5).

Those respondents with access to studio facilities conveyed the pressure being experienced to maintain these spaces with increased student enrolments. Those with an absence of studio facilities were concerned this would mean a loss of peer learning culture. Irrespective of the type of space available, little explanation was given as to how the studio facilities may benefit or disadvantage students. It was unclear if a consistent relationship existed between teaching method and space type. For example, those schools with studio facilities appeared to be better resourced in staffing and contact time. Access to mobile technology and affordability was in its infancy at the time of data collection (Ostwald & Williams, 2007 a&b). It was also uncommon for desktop computers to be situated in studio facilities or classrooms, instead these were housed in computer laboratories. At the time, Zehner et al., (2009) found that computer laboratories were the most active and attractive space for students to work in outside of class time.

The final pattern that informed the selection of the purposeful sample group was concern about changes being made to curriculum structures in response to HEIs drive for renewal and change. These concerns included Modularisation of units in weighting, rationalisation of discipline specific units and the pressure to incorporate generic graduate attributes into a crowded degree.

The results from Stage 2 are summarised in Table 1, using Biggs's (2003) framework for *constructive alignment* and later unpacked through the description of studio models in Table 2. Before reviewing these tables, it is useful to understand the order and nomenclature used. Column headings in Table 1 identify participants and their school's key characteristics. Schools with physical studio facilities start with an "S", a number to indicate which one of the three schools and the size of the school signified by a "s" for small (up to 350 students), "m" for medium (350 to 500 students) and "l" for large (over 500 students). Labels starting with a capital "T"

signify schools where design teaching occurs in a classroom setting. Below the column headings are references to how the studio models relate to the findings. The rows in Table 1 correspond to Biggs's six themes.

From this process of analysis, the following four studio models (*University*; *University Hybrid*; *Discipline*; *Discipline Hybrid*) were developed to capture the maximum diversity occurring in the studio forms over the 2007-2011 period in Australasia (Table 2). The names given to the four studio models reflect how significantly the *institutional climate* can restrict (*University*) or accommodate (*Discipline*) schools' underlying learning and teaching philosophy and their ability to negotiate HEIs policies and settings. The models are described hereafter.

The *University model* employs a lecture/tutorial approach with a fully defined and compulsory curriculum structure due to institutional policies determining resources and facilities. The lecture/tutorial approach is required as design units are compulsory for all students in an entire year level (meaning a large class of 180 to 280 students), and the restriction of staff and classroom resources that are inevitably encountered. Nominally the resources permit tutorials of three to four contact hours per week and an SSR of 1:20 in a timetabled design classroom. The classroom is a little larger than a conventional university tutorial room, fitted out with pin-up boards on the walls and mobile furniture.

Design classrooms are often adjacent to each other and include mobile walls or large sliding doors to connect between spaces, thereby allowing greater cross-over between tutorial groups or to make an exhibition space. Greater economies may be achieved with a fully defined compulsory curriculum structure, as all students in the same year level are required to take the same design unit. The unit coordinator devises the learning and teaching program for a large class, including the management of multiple tutorials and tutors. Tutorials are designed to be an event and often involve the formation of smaller groups where in- class tasks are organised to scaffold student learning and skill development. Central learning and teaching policies have ensured that detailed unit outlines and assessments are made available online and that multiple assessment tasks are used to indicate student progress and feedback. The *University* model (T1m and T2m) was identified in the Australian context in schools belonging to universities affiliated with the 'Australian Technology Network' (ATN) and the 'Group of Eight' (GO8)[3], which suggests it is also likely to be found in other university groupings.

The *University Hybrid* model shares many similarities with the *University* model, but with the difference being the way resources are managed. Typically in this model the school cross-subsidises its design units by making its non-design units more cost effective with the principle use of lectures and minimal, if at all, tutorials. The outcome was that undergraduate design units operated with six contact hours per week and an SSR of 1:11. The same conditions existed in postgraduate design units, however this was a result of academics and tutors teaching over allocated times.

The school had reduced their resources because it is assumed that students at this level require less tuition and were more self-directed. Tutorials were primarily taught through internal critiques using the "critic method" (Wallis, 2017) where the role of the tutor is significant in providing feedback on the student work presented. Another distinction which differentiated the University model was the availability of studio facilities that had been argued for successfully by the school and which were based on reputation and growth in student enrolments. Studio Models that end with "hybrid" signified a different and less expected combination of teaching delivery and utilisation of space. The University hybrid model (S3s) was identified in an Australian context.

The *Discipline* model involved greater freedom and accommodation from the *institutional climate* to employ established practices in architectural education instead of generic approaches to learning and teaching in higher education. This was suggested by the employment of an elective curriculum structure for design units, allowing students to select a design unit where the entire class was typically 14 students or fewer. Like the second model, design teaching was resourced at a higher level than non-design units. The design leader in this *Discipline* model can either be an academic or external practitioner and they devise the project vehicle, and teach by employing internal critique using the "facilitator method" (see Wallis, 2017) and personalised tutoring over six or 12 contact hours per week. Depending on the philosophy of the school, freedom may be offered in relation to single or multiple assessment tasks, but a school panel is required at interim and final critiques to moderate the work between different project vehicles and year levels. The elective curriculum structure allows for multiple year levels to be taught in the same design unit. The *Discipline* model (S1m and S2m) was identified in a New Zealand context, which suggests the likeliness of its being found in Australia was low, as New Zealand schools were in general, better resourced.

The *Discipline Hybrid* model shares many similarities with the *Discipline* model, the greatest difference being the absence of studio facilities and central employment of internal critiques to deliver design instruction. In this model the design leader would "conduct" (see Wallis, 2017) the students' discussion and judgment of pinned-up work over six contact hours per week, as personalised tutoring was no longer affordable or efficient. The students had to be more fully engaged in the internal critiques as not all work was displayed and discussed but key strategies and approaches were, requiring the student to interpret their work accordingly. The *Discipline Hybrid* model (T3l) was located in the Australian context.

When considering these four studio models, three main implications were identified as follows:

- substantial difference in human resources and its relationship to teaching methods employed.

- sustainability of *University Hybrid, Discipline Hybrid* and *Discipline* models due to reliance on over-teaching, goodwill of tutors and cross-subsidising design units from non-design units over a longer period of time.
- role of the academic differs according to the level of preparation and coordination required in the *University* model (lectures, tutorial design, tutor management) compared to small-group teaching in the *Discipline* models.

Ironically, the utilisation of space (studio facilities or classroom) and assessment methods had relatively minimal impact on the four studio models and teaching approaches. Those schools with studio facilities initially had better levels of staff resources but this had evened out, except for the *Discipline* model (2007-2011). There were timetable implications for the *University* model due to the lack of design classrooms for the large number of tutorial groups. There were both opportunities and challenges for the assessment approaches which were dependent on the environment created by the instruction methods.

Conclusion

From this study of dominant studio models in architectural education in Australasia from the last decade, it is clear resourcing levels were the major determinant of teaching and learning strategies. This also raises questions about the sustainability of the *Discipline* models, which cost more, employ traditional discipline-based practices yet appear to hold a higher status in the profession. In contrast, the *University* models are more affordable, accessible and cater for a mass number of students. The study has also highlighted the significant influence and impact of HEIs policies and central management on studio models in schools. This reinforces the need for researchers to better define and debate studio models in use, as concerns exist with models such as the *University* model. It is also thought that future graduates may be less prepared to adapt to changes in society, technology and the production of architecture due to constrained knowledge of design and the poorer ability to integrate different knowledge domains (Cowdroy et al., 2007; Salama, 2015; Webster, 2004). However, further research is needed to determine if these concerns are valid or is there an attempt to maintain traditional methods of design pedagogy, which are arguably no longer effective or viable. A typology of studio models therefore provides a tool to debate the future of architectural education and to consider the implications of HEIs policies on this discipline area.

Since completing this study, changes in the higher education landscape have continued, pushing for even greater efficiencies and the incorporation of more flexible and blended learning through online technologies. The studio typology proposed in this paper and its characteristics were intended to be sufficiently broad so that it may be employed and refined for use by disciplines other than architecture or in other international regions. The issues of diversification in studio models and

their implications are not easy to qualify or capture but it is necessary to develop a response for future studio models within a mass higher education system.

Notes

1. Data collected from all 20 accredited programs in Australia, New Zealand and Papua New Guinea in 2007, which involved 35% of full-time academics (Ostwald & Williams, 2008, pp. 28, 178). Papua New Guinean school was excluded from study presented in this article, as there was insufficient data to make a fair analysis/ representation.
2. The *environment* theme is an adaption of Biggs's *climate* theme to signify the role of the physical setting as well as the teaching and to articulate the difference between *climate* and *institutional climate.*
3. Both groups represent significant metropolitan based universities in Australian states. ATN is five universities with an emphasis on practical application and GO8 markets itself as the group of leading Australian universities.

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Figure 1: Diagram of the research design

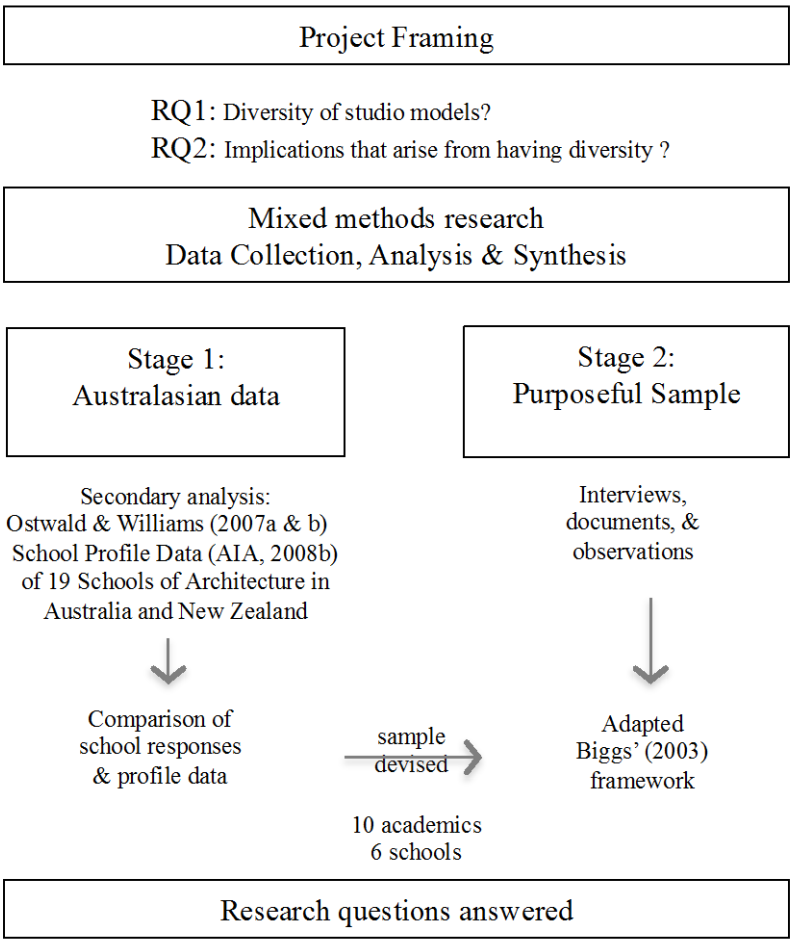

Table 1: Purposeful sample group results and the development of studio models

School participants		T1m*	T2s	S3s	T3l	S2m	S1m
Studio model		University		University Hybrid	Discipline Hybrid	Discipline	
Institutional climate		Restricts			Accommodates		
	School climate	Equal resourcing per unit		School cross-subsidised design units			
		Teaching to hours allocated		Over-teaching			
Curriculum	Structure	Compulsory based			Elective based	Both	Elective based
Teaching Methods		Lecture/ tutorial			Small-group teaching		
	The role of academic	Management of large class and repeat tutorials			Solely responsible for small group		
	Overall class size	250 to 280	45 to 180	40 to 85	Av 15.	14	24
	Main instruction method	Event-based tutorials		Internal crits	Internal crits	Internal crits	Internal crits & personalised tutoring
	Contact hours	3	4	6	6	6	6-12
	SSR	20	20	10-12	12-14		
	Average tutorial time per student per week (mins)	Av. 9	12	Av. 32	Av. 25	34	60
	Tutor/Practitioner attraction	Difficulty: improved by timetabling measures			Less difficult		
Assessment		Staged milestone			Portfolio based	Blend	Portfolio based
	Number of assessment tasks	2-3	3-5	4-9	1	4	1
Environment		Centrally timetabled design classrooms		Specialist studio facilities	Timetabled design classrooms	Specialist studio facilities	Specialist studio facilities
Philosophy		L&T		Discipline			Combination

* Single weighted design unit

Table 2: A typology of architectural studio models in use in Australasia (2007–2011)

University	*University Hybrid*	*Discipline Hybrid*	*Discipline*
Compulsory design curriculum	Compulsory design curriculum	Elective design curriculum	Elective design curriculum
Limited staff resourcing *(20 students per tutorial)*	School cross-subsidised design units *(10-12 students per tutorial)*	School cross-subsidised design units *(12-14 students per tutorial)*	School cross-subsidised design units *(12-14 students per tutorial)*
Lecture/tutorial approach	Lecture/tutorial approach	Small group teaching	Small group teaching
Event based tutorials (3-4 contact hours)	Internal crits *(critic)* (6 contact hours)	Internal crits *(conductor)* (6 contact hours)	Internal crits *(facilitator)* & personalised tutoring (6-12 contact hours)
Multiple/ Staged milestone assessment	Multiple/ Staged milestone assessment	Final portfolio assessment	Final portfolio assessment
Centrally timetabled design classrooms	Specialist studio places	Timetabled design classrooms	Specialist studio places
L & T philosophy	Discipline philosophy	Discipline philosophy	Combination