Constructing the Conversational Roles of Studio Design Education Stakeholders in Times of Change

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Abstract
The architectural design studio learning environment is central to architecture design education. The architectural design studio 'signature pedagogy' has gradually shifted away from its conventional forms of engaging students since the turn of the millennium. The studio has transformed into a contemporary form of design learning and teaching based on several factors including reduced contact time between academics and students, change in studio spatial typologies and the hierarchy of academics supporting student engagement. These shifts have had a major impact on the ways in which students perceive the role of academics. Not only have the roles for academics altered, but also the autonomy of students has changed. The nature of interaction in design studios is still, however, primarily conversational. The aim of this paper is to establish and define the roles of the learners and teachers (tutors and unit coordinators), and to refine and extend existing theory of conversational interactions. A qualitative case study of a major Australian University school of design, brings the variations in roles of all the stakeholders to the forefront and enables academics to be aware of the contemporary challenges required in changed scenarios. This research also highlights what the future of design education requires from academics and the associated expectations from their students.

Keywords: signature pedagogy, architectural design studios, architecture design education, transformation, conversational roles, students' and teachers' perceptions

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Introduction

Architectural design studios are spaces where learners and teachers interact and enable learning the design process. Undergraduate degree programs typically have their curriculum centered around the core subject of architecture design taught in design studios. The traditional studio model researched is the signature pedagogical form of learning and teaching, which has recently changed. This change is influenced by several contemporary factors in the studio's learning and teaching structure. This paper argues that there is a need to explore and understand the theory around transformed roles of learners and teachers, to effectively inform the pedagogy of contemporary design studios.

Literature review

Centrality of design studio in architectural education

In order to qualify as a professional architect, there are three critical components: accredited education; followed by an internship; and finalised with a professional registration exam. The process of this lifelong learning profession begins with architecture education (Glasser, 2000; Teymur, 2002). The architectural curriculum is constituted of three classes of educational work (Dinham & Stritter, 1986; Kurt, 2009):

- fundamental courses on liberal arts;
- professional and environmental courses; and
- apprenticeship experiences that take place in the studio.

The architecture education curriculum is centered around the core subject 'architecture design.' The supremacy is verified by the design studio which is the mode to teach architecture design throughout the degree program (Glasser, 2000; Mewburn, 2011). According to Michael Oswald's study (Ostwald, Williams, Learning, & Council, 2008), the design studio in Australian schools of architecture occupies 38 percent of the educational curriculum. It is rated as an extremely important area of teaching by design academics (Ostwald et al., 2008). Despite this significant component, minimal research has been conducted to create the case for the challenges of contemporary studio teaching faced by tutors, students and unit coordinators [otherwise known as subject coordinators], and how they identify themselves within these roles (Belluigi, 2016). Anybody who is practicing or has studied architecture, is generally considered to be able to can teach design at any level (Musgrave & Price, 2010; Ochsner, 2000; Oh, Ishizaki, Gross, & Do, 2013; Powers, 2016; Salama, 2015).

Studio as a social learning construct

The students solve problem-based design activities with the help of their teachers in the studio settings (Ochsner, 2000; Salama, 2015). Studios are social learning constructs (Schon, 1987; Schön, 1984), where the students and tutors interact to discover design solutions, and observe and reflect on the solutions, in an iterative manner (Dutton, 1987; Sodersten, 1998; Webster, 2004). The problems of pedagogy at each level of the professional journey, from first to final year need to be

investigated, as the challenges of effectively teaching novice students, are different to teaching senior students (Dredge, 2012; Farivarsadri, 2001).

Current design higher education research focusses on general pedagogical issues that students and teachers face—but a deliberate attempt to expand understanding the roles that students and teachers play in the contemporary studio model, is not evident—especially the students' role. Therefore, the scope of this research focuses on the roles of the stakeholders within architectural design studio pedagogy.

Signature pedagogy

The studio widely represents the foundational means of teaching and education, in design schools. Such universal forms of learning and teaching, that are related with particular professions, have been researched by (Shulman, 2005), and are signified as "signature pedagogies" (p. 52). (Crowther, 2013) elaborates the notion of signature pedagogies in an architectural education context, as a type of learning design for the architecture profession.

Architectural design studio as the dominant environment of architectural education, is both a physical space and a mode of engagement (Lane et al., 2015). It integrates the physical space, experiential learning activities, problem-based tasks and assessment with the teacher/student relationship (Lane, Osborne, & Crowther, 2015). The studio pedagogy is therefore defined as a signature pedagogy; a form of pedagogical practice that is associated with the discipline and its profession (Crowther, 2013).

Transformation of the signature pedagogy to a contemporary model

Signature pedagogy (Shulman, 2005) for the design studio can be traced back to when the studio first started as a "Master Apprentice Model" (Mewburn, 2011). The students modeled the master's approach. After this, the model shifted to the École des Beaux Arts model in the early 19th-Century, where it was still master centered but transformed into a form of professional training (Powers, 2016).

The foundation for the institutionalisation of architectural design studio education emerged form the Bauhaus School, in the 1920's. This was a major shift, as architectural studio education became formally institutionalised (Powers, 2016). Since then, research on design studio pedagogy has focused on the signature styles (Ochsner, 2000; Powers, 2016; Salama, 2015; Schon, 1987; Schön, 1984, 1985). These models imply the theoretical underpinnings for studios in the past, where studios were physical spaces where students not only worked and received critique on their design projects, but also spent most of their time. The time spent with peers and teachers resulted in the learning of design by developing a strong sense of a social culture rooted with the physical interactions. The large amount of face-to-face time spent between the teacher and each student, served as the primal mode of teaching which resulted in design learning.

Table 1 Transformation of design studio's signature pedagogical model - from teacher centered to student centered (Dutton, 1987; Mewburn, 2011; Powers, 2016; Salama, 2015; Schon, 1987; Webster, 2004)

AUTHOR	MODEL/PROPOSED THEORY	TEACHING CONTEXT	TUTOR'S ROLE	STUDENT'S ROLE
Ecole de beaux arts (1800 – 1900's)	Master – Apprentice Model (master centered)	Master's practice	Master	Apprentice
Walter Gropius (1920's)	Bahaus Model	Formal school of architecture	Master	Student
Donald Schon (1983)	Theory of reflective practice (coach- student) (teacher centered)	University studio	Coach/ Demonstrator	Student
Thomas Dutton (1991)	Hidden Curriculum Critical pedagogy (student-centered)	University studio	Mediator/ Collaborator	Student
Helena Webster (2004)	Critically reflective pedagogy (student – centered)	University Studio	the entertainer the hegemonic overlord the liminal servant	Student
Ashraf Salama 2015	Studio model based on Transformative critical pedagogy (student – centered)	University studio	Professional Colleague	Student
Mathew N.Powers 2016	Self Regulated Design Learning (student – centered)	University studio	Designer of individual student experiences	Student takes responsibility of his/her own learning

Research to date focusses on theorising the role of the tutor, while they interact with their student as in the signature pedagogy. The student is assumed to be only a learner.
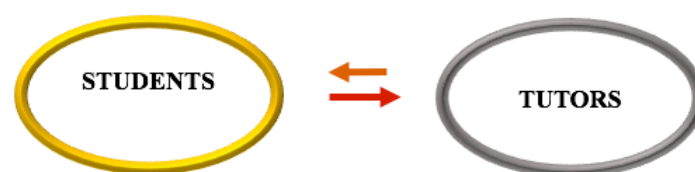

Figure 1 The simplified dual relationship between the teacher and student suggested in Signature pedagogical models

One of the contemporary studio model prevalent in Australasia (Ostwald et al., 2008) has transformed into a complex learning and teaching model than the traditional studio model. There is, however, a lack of research in response to the modern transformed model of studio, illustrated by contemporary challenges such as:

1.   reduced contact time between students and teachers (Tucker & Rollo, 2006);
2.   scarcity of dedicated studio spaces (Ostwald et al., 2008);
3.   introduction of online learning resources (Lane et al., 2015); and
4.   and the hierarchical form of the learning and teaching community in the studio i.e. the unit coordinators, tutors and students (Ostwald et al., 2008; Percy et al., 2008).

The contemporary studio model which sees unit coordinators, tutors and students interacting under these transformed conditions, lead us to explore the roles further.

Table 2 Transformation of the roles of teacher and student with transformation of signature pedagogical models – further adaptation from table 1

AUTHOR	MODEL/PROPOSED THEORY	TEACHING CONTEXT
Ecole De Beaux Arts (1800 – 1900's)	Master – Apprentice Model (master centered)	Master's practice
Walter Gropius (1920's)	Bauhaus Model (teacher centered)	Formal Institution of architecture
Donald Schon (1983)	Theory of reflective practice (coach- student) (teacher centered)	University studio
Thomas Dutton (1991)	Hidden Curriculum Critical pedagogy (student-centered)	University studio
Helena Webster (2004)	Critically reflective pedagogy (student – centered)	University Studio
Ashraf Salama 2015	Studio model based on Transformative critical pedagogy (student – centered)	University studio
Mathew N.Powers 2016	Self Regulated Design Learning Model (student – centered)	University studio

a) Role of students in existing models

The key contributors in the design studio, are the students. The design studio presents the students with a safe learning environment. It allows students to act as a design professional, without facing the consequences of their design, as they would in the real world (Chen & Heylighen, 2006). Contemporary higher education teaching

practices demand that the students are better understood by their teachers, who must devise ways to engage them effectively.

Teaching must be based on the understanding that 'one size doesn't fit all' (Bosman, Dredge, & Dedekorkut, 2010). This challenges design studio teachers to understand their students better, and to make design teaching more productive.

b) Role of tutors in existing models

In the Australian higher education context, a sessional academic tutor is hired on a casual basis. About 1,000 sessional academic staff are recruited to teach architecture design subjects each year, across Australasia (Ostwald et al., 2008) and little is known about how they teach and how they can improve their teaching practices. The sessional academic tutors are a diverse cohort of professionals (Kift, 2002; Marshall, 2012), ranging from postgraduate students to professional practicing architects.

They provide the students with formative and summative feedback through critiques, which range from private to public, i.e. from individual to group (Oh et al., 2013). These interactions occur in dyadic forms of communication. These include verbal and graphical modes of communication occurring simultaneously (Schön, 1984). The tutors facilitate design projects created by unit coordinators, critique on the design process, and impart crucial design vocabulary to students.

c) Role of coordinators in existing models

A unit coordinator designs the subject's curriculum, prepares and presents lectures, manages tutors, and moderates marking with tutors (Percy et al., 2008). They are often a practicing professional, as well as an academic (Pepper & Roberts, 2016). Unit coordinators often give lectures which are didactic in nature. Didactic forms of teaching support the transfer of knowledge from one person to a group of people.

Design knowledge is imparted through lectures that supplement the studio tutorials. In architectural design teaching, this knowledge imparted by the coordinator's lecture, is supplemented by architectural readings and design projects. There is a lack of research about the unit coordinator's role in this context.

The unit coordinators' role, captured using the perceptions from them, their students & tutors respectively will provide a more cohesive and strengthened view of how theoretical know-how about the roles can be made explicit for academics to deliver their roles efficiently.

The collaborative learning and teaching cycle of contemporary design studios

For contemporary architectural design pedagogy, the unit coordinator delivers didactic design lectures, and the tutor conducts the dyadic forms of design studio tutorials with the students as learners.

Therefore, the studio environment can be seen as a social learning community which involves two micro communities (Tait, 2002)—one based on the interaction between the tutors and the unit coordinators, and the other baced on the students and their respective teachers.
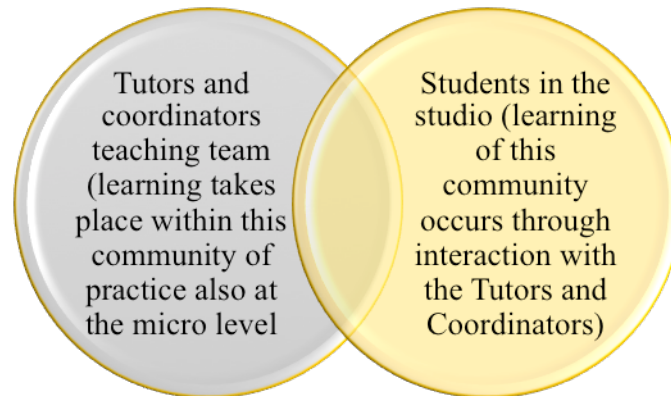

Figure 2 The Learning Community of Coordinators, tutors and students – diagram created by researcher to inform argument from Tait's Study (Tait, 2002)

Thus, the contemporary studio model, which is a dialogic/conversational form of learning and teaching, where unit cooordinators, tutors and students interact under transformed conditions of pedagogy. This leads us to explore these roles in-depth and to see the significance of the complexity that surrounds the delivery of these roles in architectural design education.

Theoretical perspective

This research project, as it develops in later phases, seeks to utilise Laurillard's (Laurillard, 2013) 'Conversational Framework,' as a model of learning and teaching. It is a theoretical framework proposed for effective academic learning and teaching in higher education. The conversational framework will be utilised in order to highlight the studio teaching environment and create a pedagogical model based on the interactions between the three stakeholders in the design studio.

According to Laurillard, (2013), the conversational framework describes the roles of the students and teachers briefly in a traditional framework of learning and teaching. It can be applicable to all academic learning situations and subject areas. In Laurillard's learning theory, the students must take responsibility for what they know and how it comes to be known. Thus, teaching can be seen as a form of a mediation of learning rather than an action on the students (Laurillard, 2013).

At the heart of Laurillard's (Laurillard, 2013) theory, lies the conversation where the learning partnership between the student teacher becomes more transparent and is similar to the dialogic nature of pedagogy in design studios.
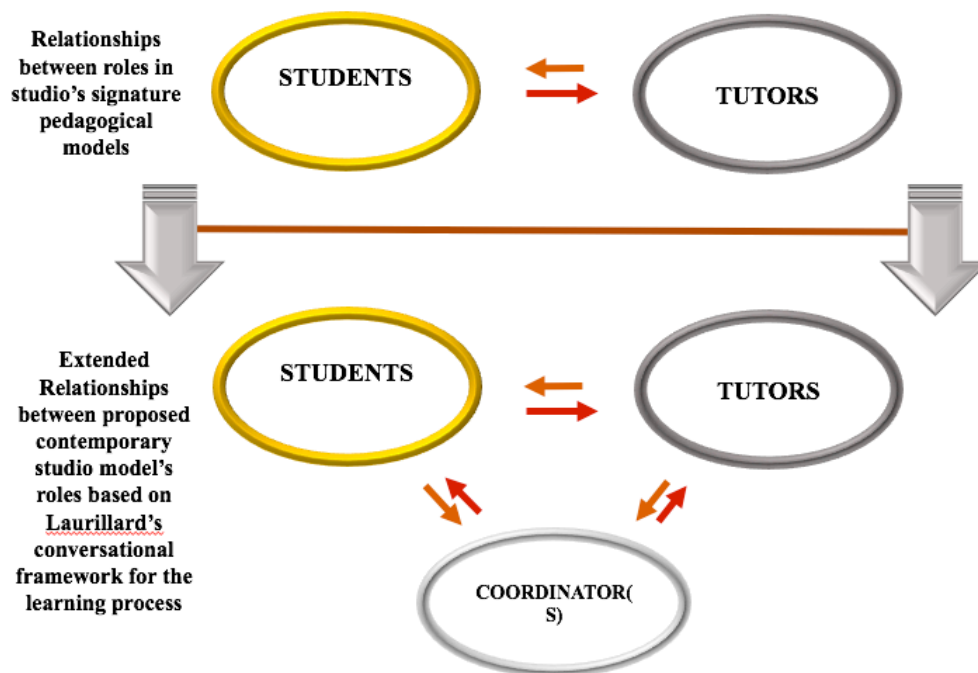
Figure 3 Transformation of the studio model from signature to the proposed contemporary model - incorporating the roles of the three members instead of 2

This research project aims to understand and illustrate a more complex structure; to adapt and extend Laurillard's (2013) theoretical perspective, that design learning at undergraduate level is mediated by the tutor in the design studio, and by the unit coordinator through their design lecture and online modes. Furthermore, the students play an active role in their design learning while interacting with the teachers.

Therefore, the framework will include these three members and their interactions. To create the extended framework, however, there is a need to understand the relative roles of each of these stakeholders in these learning settings, to each another.

This research problem frames the aims in the next section.

Research problem, objectives and questions

The aim of this research is to:
•   define the complexity of these roles in times of change;
•   understand the roles to inform effective learning and teaching practices in contemporary design studios; and
•   build the theory around the roles and their respective learning and teaching partnerships.

Therefore, the research questions that this paper answers are:
1.   What are the roles of the contemporary design studio stakeholders?
2.   How can these roles adapt to changes to aim at student success in this transformed scenario?

Methodology

To address the research questions this research implemented a case study methodology, employing qualitative case study research methods for data collection and analysis.

(R. Yin, 2009; R. K. Yin, 2013) offers an explanation for the use of case study research which suits the choice of this methodology in the design of this research. He describes that case study research shall be opted when: 1) the researcher asks 'how' and 'why' type questions, 2) the investigator has minimal or no control of the participants' actions and 3) the focus of the research is on a contemporary phenomenon in contrast to some historical event or phenomenon. In educational research, case study is utilised for mapping different qualitative ways, in which participants experience, understand and perceive social phenomena regarding learning and teaching around them (Merriam, 1998).

In this research, different ways in which the stakeholders perceive their respective roles in relevance to others in design studio learning and teaching, was investigated. The case study chosen for this research project is a well-established Architecture School's undergraduate program at a major university in Australia. The design school follows one of 4 contemporary studio models implemented in Australasian schools of Architecture (as shown in figure 4) and has a 4 years long architecture degree program followed by one year of masters. There are around 150 students in each undergraduate year and a team of six to ten tutors is employed with a single unit coordinator to conduct architecture design unit/subject for each respective year. The investigation of this case study and its implications may not be relevant to other forms of prevalent design studio models.
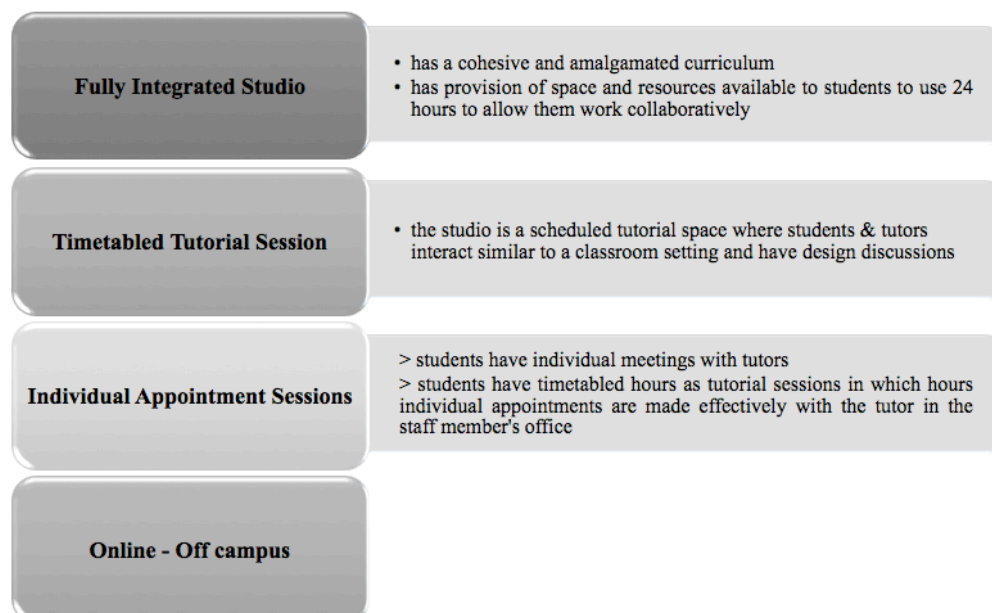
Fully Integrated Studio	• has a cohesive and amalgamated curriculum • has provision of space and resources available to students to use 24 hours to allow them work collaboratively
Timetabled Tutorial Session	• the studio is a scheduled tutorial space where students & tutors interact similar to a classroom setting and have design discussions
Individual Appointment Sessions	> students have individual meetings with tutors > students have timetabled hours as tutorial sessions in which hours individual appointments are made effectively with the tutor in the staff member's office
Online - Off campus	

Figure 4 Various Studio Models Being Adopted in Australasian Schools of Architecture and the second one 'Time-tabled tutorial session' is the one relevant to the case study
(Created by researcher and adapted from (Ostwald et al., 2008))

Data was collected through face to face, open ended interviews from a purposive sample, representative of each stakeholder of the architecture design subject, from first till fourth year. The particular number and characteristics of participants for each stakeholder group from first, second, third and fourth year, for the purpose of data collection was as follows

•   One unit coordinator who was teaching the second semester,
•   Two tutors: one experienced tutor teaching for more than two years and 1 novice tutor that has up to or more than one year but less than three years of experience to see the difference of perceptions.
•   Four students in their second semester of architecture design subject.

I was able to collect data from

•   One unit coordinators,
•   Two tutors from first and fourth year, and one tutor each from second and third year,
•   Five students from first year, three from second year, one from third year, and three from fourth year.
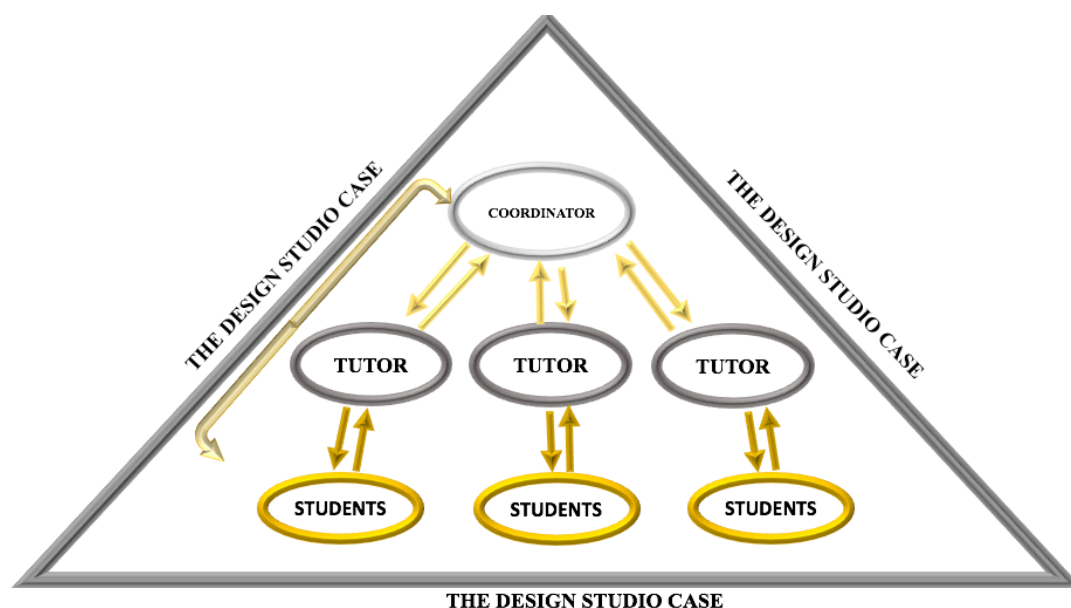

Figure 5 The undergrad design studio case - Hierarchy of the learning community within the QUT's case study

In the context of design lectures and studio tutorial learning and teaching settings. the interviews in this research, intended to capture the retrospective accounts of:students' perceptions of their experiences of their roles and the tutors' and unit-coordinators' roles.

Tutors' perceptions of their roles and their students' and unit-coordinators roles.
unit coordinators' perceptions of their roles and their students' and tutors' roles.

Analysis & findings

All the interviews were audio recorded and then transcribed. Each undergraduate year's members' data was collected and analysed using thematic analysis – to elaborate the nature of the roles each member plays within the design learning and teaching community relative to the other.

There were four data sets related to each undergraduate year from first till fourth year (including the unit coordinators, tutors and students for each respective year that were each treated as a separate data set). These data sets were then used for analysis to observe the repetitive patterns regarding the perceptions of roles in the design studio and lecture settings.

Thematic analysis can be used to analyse qualitative data. It is a process for analysing qualitative data that includes searching for recurring ideas (patterns) referred to as themes within a data set. It is a process that allows researchers to use diverse or varied information in a systematic way. This systematic information in turn develops and heightens their understanding and interpretation of observations about events, organisations, situations and people. Putting it in the words of (Jason & Glenwick, 2016, p. 32) '*people attribute meaning to a particular phenomena in interaction with those around them in context-specific settings.*'

The process of analysis as shown in the figure 6 was as follows:

Step 1: Coding Process

Each data set was subjected to initial coding. Then the initial coding was compared across data sets to be further processed through axial coding. The axial coding of the initial codes led to the creation of categories related to the roles. The roles revealed showed as responsibilities adapting to 3 phases of the design learning process. Each stakeholder described the roles relevant to 3 different stages within the design learning process and this led to the creation of two themes related to one another.

One on the phases of the design learning process related to the design project and the other related to the adaptation of the nature of these roles in relation to these learning phases.

Step 2: Axial coding and categorisation

The process of initial and axial coding revealed that the perceptions of roles emerged with a correlation to the learning and teaching phases. It also led to the finding that the three separate roles of the student, tutor and unit coordinator adapt along the learning and teaching journey – where the design learning process has three learning phases. The adaptations of the role along the design learning phases emerged as a pattern across the data sets.

Step 3: Emerging themes

Thus, two interrelated themes emerged from the data,

1. Design learning process:
This theme pertains to the learning process and its three phases within a design project:

➢ The first phase relates to the clarity of the unit/subject's structure, intent of project, curriculum, cohorts (number and nature of students and their prior assumed knowledge), responsibilities, learning and teaching objectives/goals, learning needs/challenges. This phase sets the foundation for the design process to unfold with clear expectations of the aims, structure and the learning and teaching partnership goals.

➢ The second phase relates to the development and iteration of design through collaborative efforts between students and teachers. This phase is successful if the learning and teaching partnership is built on clear learning goals. The students learn effectively by working on their design projects while being inspired by their teachers who enable the students find their individuality. The collaboration between learners and teachers has to be established on trust and honest feedback to build confidence among learners.

➢ The third phase relates to the transformation of thinking and self-efficacy of the students and academics. This is when the students consolidate the learning in the previous two phases and present their work to complete the design project's final goals.

2. Role construction:
The nature of the roles, as their identities and responsibilities constructed the theme on roles of the students, tutors and unit coordinators. These roles were seen as identities whose responsibilities and nature of role gets adapted to the three phases of the design learning process.
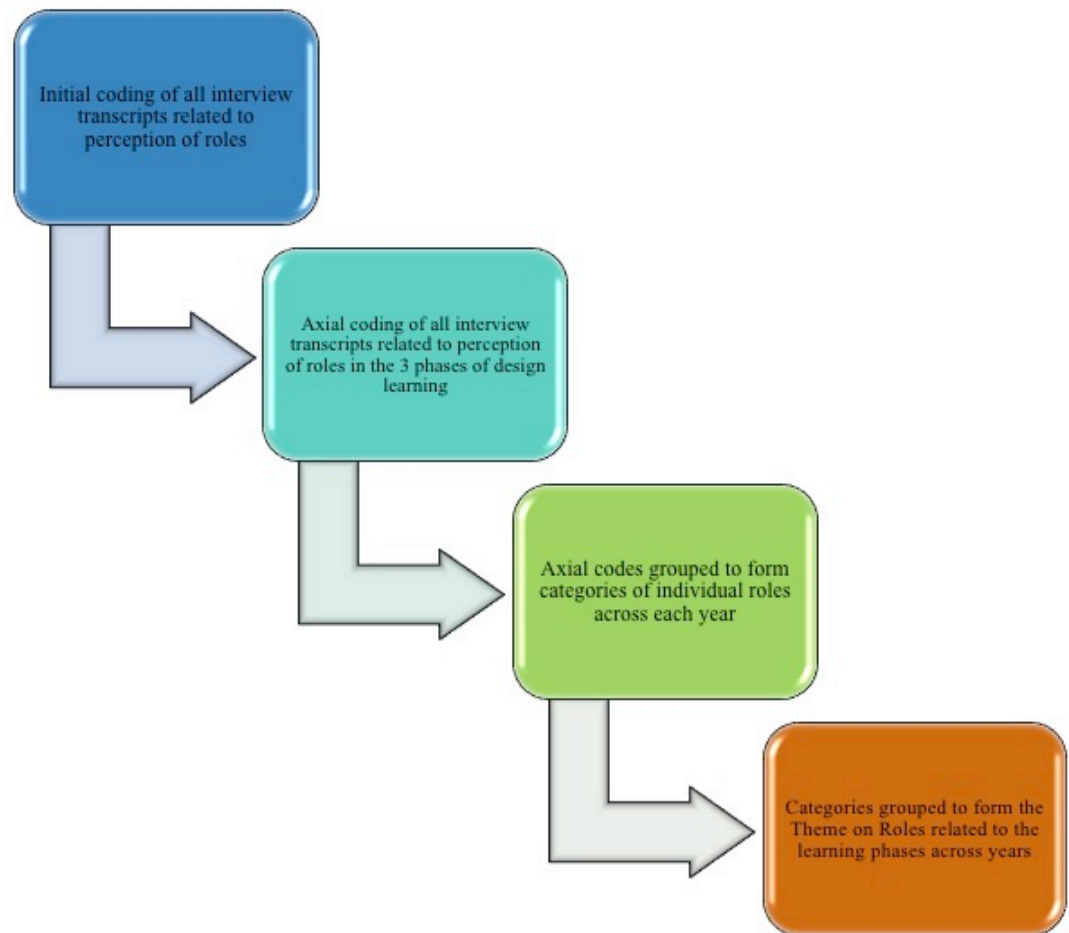
Figure 6 Process of thematic analysis

The roles as identities get adapted to these three learning phases. The correlation between the phases of the design learning process and the adaptation of the roles across the phases can be diagrammatically portrayed in figure 7.
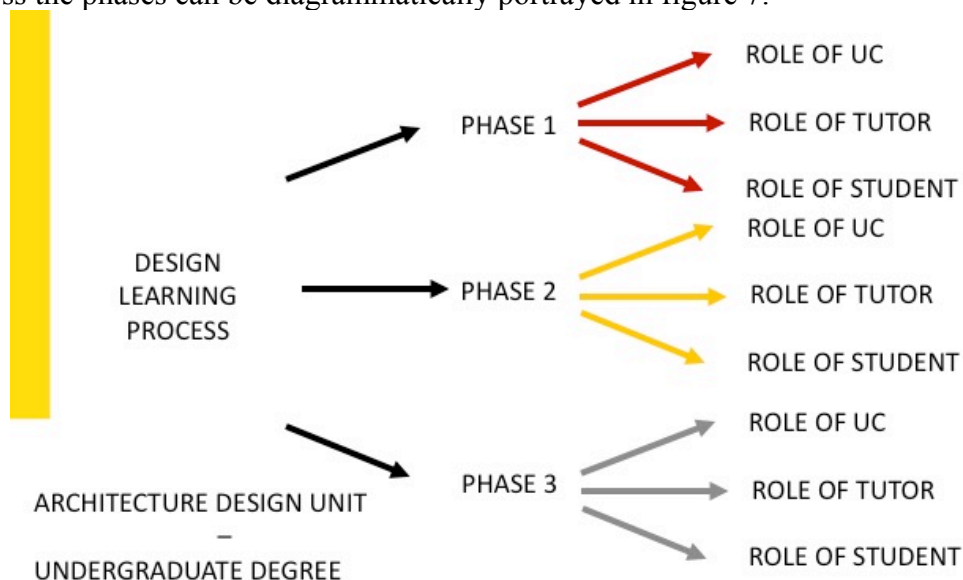

Figure 7 The correlation between the 3 phases of the design learning process and the adaptation of roles

Role construction theme

- **Transformed role of students**

In this research, the construction of the student's role has revealed that; in the first phase, the students must be aware of their responsibilities and the significance of their active involvement, for their own design exploration to be possible. Their role is to be willing to participate in these dialogic conversations which are modelled for them in the university and provide them a chance to model and build on the professional world's team working skills. With the university's structure to provide students the choice to attend or not attend classes, students have the option to use this autonomy to their benefit. They can do this by surrounding themselves with the appropriate opportunities, that will benefit their learning.

In the second design learning phase, the students' role is that of a dependent explorer who collaborates with their tutors, unit coordinators and peers in lectures and studio tutorials, to develop their designs by making informed decisions and refining their proposals by working on the intricate details of their design project. The student's role is to convey to the academics, their learning challenges to get maximum support. The students' role is not only constructed in relevance to their interaction with their unit coordinator and tutor, but also to their peers, where they share their ideas and collaborate to build on each other's knowledge through a sense of belonging.

In the final design learning phase, which involves: the completion of the project; its verbal and graphical presentation by students to an audience; and the assessment of it. The students' role is acknowledging the fears they have of sharing their ideas, by understanding that the critique of their project, is to help them refine those ideas—it is not a personal rejection of the student themselves. This phase reveals the student's role as one that grows, transforms and shifts as a result of the learning process. The student's role is to reflect on their learning and to use this shift in thinking and understanding of design, to their benefit in their later challenges in the profession.
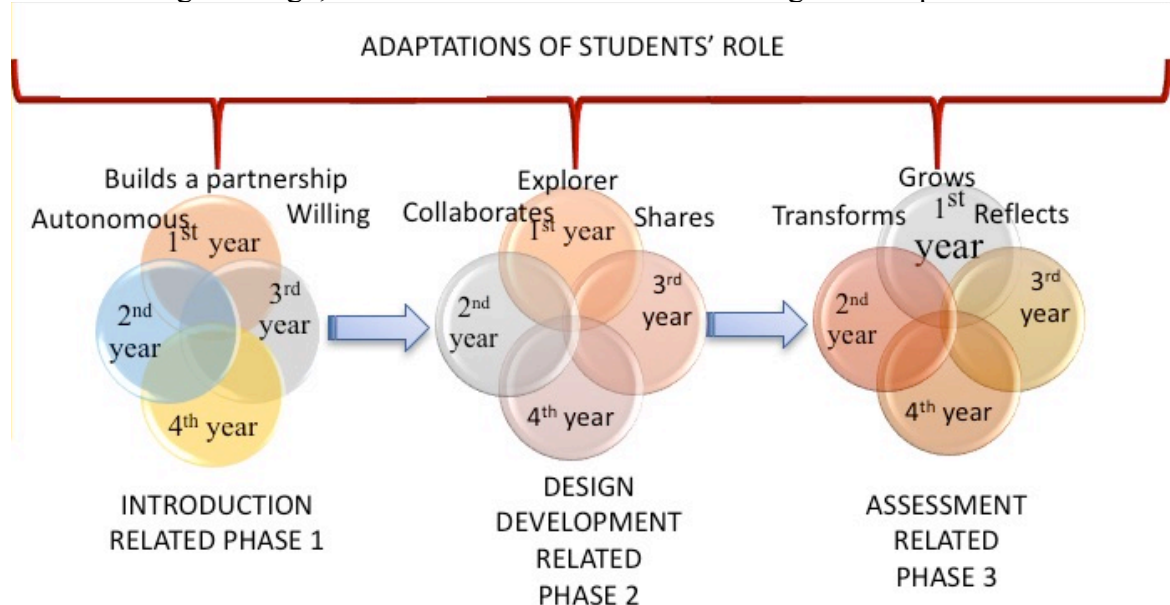

Figure 8 Correlation of the student's role to the design learning process Transformed role of tutors

The role of the tutors has revealed certain similarities with a few differences across year levels. The students consider the role of the tutor more important than the unit coordinator – as the tutor is engaged with the students for longer periods of time in studio tutorials. The tutor helps students complete their design project. A new perspective on this role is that of a life coach, who delivers a more holistic form of teaching for students to enable them cope learning scenarios independently due to reduced teaching time.

The role of the tutor in the first phase requires them to be clear of the learning objectives set by the unit coordinator, to give students a clear direction for their design projects. The tutor has to create a learning and teaching partnership with students – that makes the students aware of the importance of the studio dialogic sessions with their tutors and fellow peers.

In the second phase, the tutor's role is to build a collaborative relationship with their students based on trust and honest feedback. This provides the students the opportunity to see the architect's role being modelled in studio tutorials. The tutor can demonstrate both verbally and graphically to the students how to resolve design problems. The tutor's role is to encourage the students to expand their exploration of design solutions.

The tutor's role is efficiently delivered, if they are willing to be approachable, lesson plan ahead of time and are flexible to customise their feedback to students effectively and efficiently within the reduced time constraints – so that students feel heard, seen and above all were able to explore and resolve their design projects. The tutor's is also an active team member that supports their fellow tutors especially novice colleagues. The tutor must know what forms of knowledge the students receive in design lectures with the unit coordinator to build on the consistency of clarity of learning objectives.

The tutor's role in the third learning phase adapts to mentor the students to complete and present their design works confidently. Tutors enable the students to reflect on their own designs to do better next time. They enable the students to articulate the transformation of understanding about design thinking from the beginning to the end of the project. Tutors must reflect on the student's work as a measure of success of their teaching practice and be willing to improvise their practice based on the feedback from the unit coordinator, the students and their own observations to improve their design teaching skills for future.
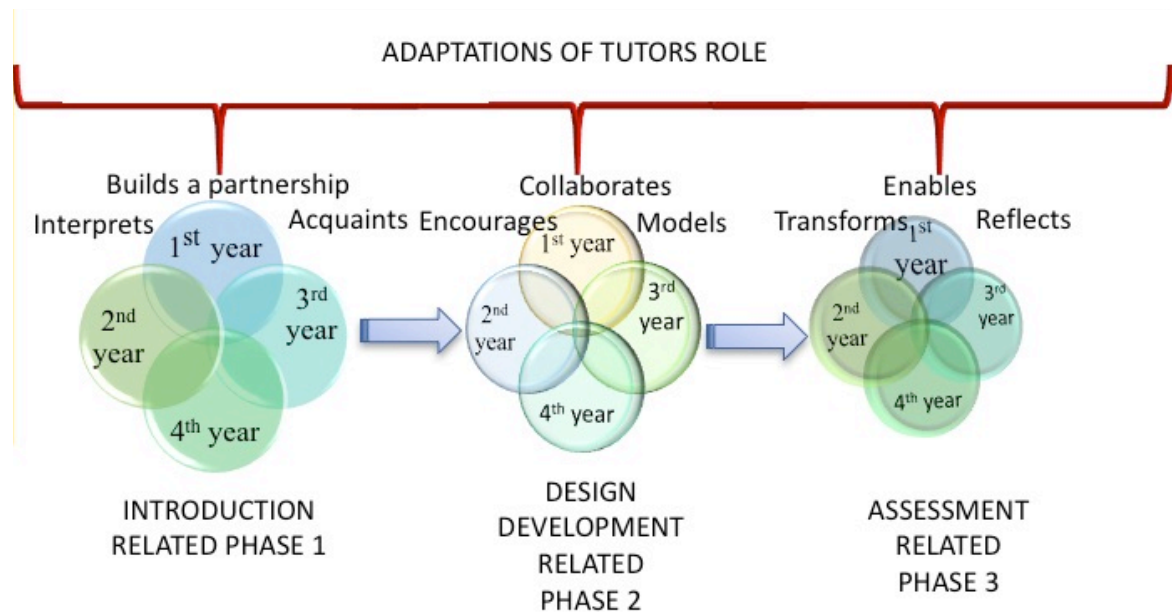
Figure 9 Correlation of the tutor's role to the design learning process

- **Transformed role of unit coordinators**

The role of the unit coordinator has revealed certain similarities with a few differences depending across the four years.

The unit coordinator, in the first phase of learning adapts the role of a leader and manager that creates the design project. The unit coordinator recruits the tutors team – empowers and trusts the students and tutors' team to build clarity and confidence among them, as they will all share and execute the learning objectives as a team. The unit coordinator has to set boundaries of responsibilities with the tutors and students to make them efficacious and clear about the intent of the unit. The unit coordinator has to create a structure for the subject which is easily apprehend-able by the students and tutors both. The unit coordinator must make an effort to know their learning audience and their progress in their design learning journey.

The unit coordinator's role adapts to a one who builds a teaching partnership with the tutors and a learning and teaching partnership with the students – by taking the students on a journey of relevance by sharing reflections of their own experiences as an architect or by choosing guest lecturers that inspire students on how they successfully resolved design problems. The unit coordinator's role is to provide ongoing support to students and to make sure the students see design lectures as a part of a two-way interaction process rather than passive receivers of knowledge. The unit coordinator supports their tutors team with the learning resources and flexibility to improvise learning tasks for their students' groups to maximize learning through collaboration instead of forced application of a rigid educational structure for the design subject.

In the third phase, the unit coordinator's role adapts to that of a moderator who draws an unbiased conclusion on the assessments of the tutors' grades of the students' work and is also responsible to maintain the quality of education. The unit coordinator reflects on their own teaching, managing and team's approach through the students
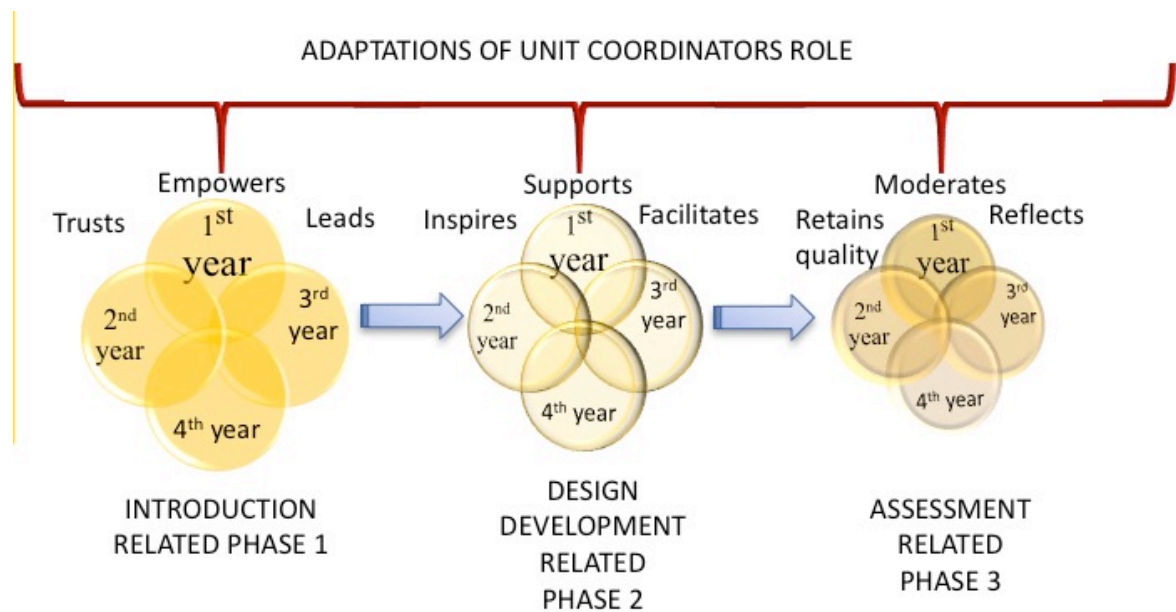
and tutors feedback.

Figure 10 Correlation of the Unit Coordinator's role to the design learning process

Conclusion

This case study has highlighted two significant aspects of the pedagogy of the contemporary architectural design studio that do not align with the traditional signature pedagogy; the additional role of the tutor, as an interpreter between the unit coordinator and the student; and the changing identities of the roles at different stages of the design learning process. The simple model of master and apprentice, or teacher and student, is no longer valid in the large class and limited time context. The additional role of the tutor creates a much more complex series of interactions that changes the traditional roles of teacher and student.

Further to this, we can see that all stakeholders perceive a changing identity in their roles at different times during the learning process; at different times of the design project. Student's role changes from participant, to explorer, to reflector. Tutor's role change from director, to collaborator, to assessor and informer. Unit coordinator's role changes from leader, to supporter, to moderator and manager.

Implications for future

The research findings will provide a foundational ground to build on the extensive interactional relationships between these three stakeholders for the contemporary design studio pedagogical model.

The understanding of these three roles sheds light on the complexity of knowledge that surrounds the nature of the identities of these roles and the demands from each in the contemporary design studio learning and teaching settings and how these roles get adapted to the phases of the learning process and reveal their relevant morphology.

It also brings out the importance of understanding these roles to foster clarity, collaboration and positive transformation among students and academics for design education to be effective.

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