

*Exploring The Effective Dimensions Of Engaging Students in Contemporary
Architecture Design Studios in Times Of Change*

Naima Iftikhar, Queensland University of Technology, Australia
Philip Crowther, Queensland University of Technology, Australia
Lindy Osborne Burton, Queensland University of Technology, Australia

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Abstract

The architecture design studio is the pedagogical platform for the majority of learning and teaching experiences that take place within architecture design education. The traditional architecture design studio pedagogical model, signified as '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 space based on several factors such as reduced contact time between academics and students, changes in studio spatial typology and a change in the hierarchy of academics that are involved in student engagement. These shifts have had a major impact on the ways in which students and teachers conduct dialogic interactions with one another and perceive their learning and teaching experiences. A qualitative case study at an Australian University undergraduate school of design seeks to explore and link the components of the interaction between the different stakeholders of contemporary architecture design studio pedagogy. The research seeks to verify and extend Laurillard's conversational learning and teaching framework, to elaborate the theory and practice around contemporary design studio pedagogy. The components of the dialogic interaction between the different stakeholders form the basis for academics and students to reflect on their learning and teaching interaction informed by theoretical know-how and awareness rather than solely relying on intuition. The unpacking and understanding of these interactive components can inform design academics to adapt effective ways of engaging their students in architecture design studios.

Keywords: Signature pedagogy, contemporary studio pedagogy, conversational interaction, effective design pedagogy

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Introduction

Architecture education is centered around both didactic and dyadic forms of education. Didactic forms of delivering knowledge are the lecture systems where the students are the passive receivers of knowledge while dyadic forms of teaching engage students actively in learning activities. The architecture design studio is an educational environment primarily used to learn and teach the process of architecture design. Design education in architecture design studios is based on these dyadic forms of teaching and learning (Rogers, 1996). This places emphasis on the educators to understand their students better and the ways in which the students can be engaged effectively (Khorshidifard, 2014).

Research to date has focused more on the design studio models focusing on the interaction between the tutor and students in the architecture design studio as being a two-way interaction process – with some focusing on the coordinator and curriculum aspects. The traditional design studio model characterized primarily as a signature pedagogical model (Crowther, 2013) has transformed in a contemporary model but minimal research has been done on this critical aspect and detail of the interactive process between the unit coordinator, tutors and students in the contemporary architecture design studio pedagogy. The transitional years of undergraduate at university are critical in students' retention and effective learning (Tinto, 2002). Understanding the interactive nature of the learning and teaching process, equips the design educators with an informed approach to enable the students succeed in their learning.

1. Literature Review:

1.1. Architecture Design Studio And Its Primacy In Design Education:

The purpose of architectural education like any professional education is to create professionals suited to the demands of professional practice (Salama, 2015).

The creation of an architect is guided by three main components: professional education, then internship followed by an accreditation exam. The process of this lifelong learning profession begins with Architecture education. There are two major determinations of architectural education: 1) the education of architects to be and 2) to help create 'good, educated, citizens' (Glasser, 2000, Teymur, 2002). The architectural curriculum is constituted of three classes of educational work (Kurt, 2009, Dinham and Stritter, 1986):

1. fundamental courses on liberal arts,
2. second is about professional & environmental courses,
3. third is about 'apprenticeship' experiences that take place in the studio.

The architectural education curriculum is centered around the core subject 'architecture design' and its supremacy is verified by the design studio that is the mode to teach architecture design throughout the degree program. Over the past five centuries, architectural knowledge has been established institutionally. It is no more the scenario of an apprentice learning from a master, rather students work on their desks within the universities in classes called 'design studios' which involves the basic and traditional approach to design education as previously with experienced designers' staff working with less experienced ones (Mewburn, 2011, Glasser, 2000). Students create a design project with the guidance of a studio

tutor. The design studio pedagogy model emphasizes learning by experimenting (Kurt, 2009).

Architecture design studio teaching occupies about 38% of the entire curriculum & since 2006 in Australasia the Atelier models of studio shifted into contemporary studio models supplemented by lecture programs (Ostwald et al., 2008). The importance of the design studio in the Architecture education curriculum was supported by a survey of Academics across Australian Universities in 2007 on the relative importance of the ranges of studies where design studio was the ‘only’ area rated “extremely important” (Ostwald et al., 2008).

1.2. **Signature Pedagogy:**

The studio is extensively used in schools of design as the foundational mode of instruction and education. Such universal forms of learning and teaching, which are associated with particular professions, have been researched by (Shulman, 2005) and come to be referred to as signature pedagogies (Crowther, 2013).

If one wants to comprehend why professions develop as they do, studying their professional forms of preparation will reveal that insight. In doing so, Shulman, (2005) argues that certain characteristic forms of learning and teaching will be detected, which he called ‘signature pedagogies’. These teaching types organize fundamental ways in which future practitioners are educated for their new professions. (Shulman, 2005) elaborates the stance further that *‘these signature pedagogies, the novices are instructed in critical aspects of the three fundamental dimensions of professional work –to think, to perform, and to act with integrity’* (p.52).

Crowther, (2013) elaborates the notion of signature pedagogies, as a type of learning design for a particular profession, and supports it by referencing the term by (Laurillard, 2013b) *“the best teaching ideas are most likely to be developed in very specific subject matter contexts. They have been referred to as the ‘signature pedagogies’ of a discipline”* (p. 220). Architecture design studio is the dominant environment of architectural education. It is both a physical space and a mode of engagement that integrates the physical space, experiential learning activities, problem based tasks and assessment with the teacher/student relationship (Lane et al., 2015). The studio pedagogy is defined as a ‘signature pedagogy’; a form of pedagogical practice that is only associated with the discipline and its profession (Lane et al., 2015).

1.3. **Existing Models Of Design Studio Education – Signature Pedagogical Models:**

The idea of signature pedagogy of the design studio can be traced back to the historical times when the studio started as a Master Apprentice Model (Mewburn, 2011). The students modeled the Masters behavior and approach. After this, the model shifted to the Ecole De beaux Arts model in the 19th century, where it was still master centered but entered a form of professional training (Powers, 2016). The first University model of studio pedagogy appeared with Donald Schon’s idea

of the ‘reflective practitioner’ that gets molded in the studio (Schön, 1984, Schön, 1985, Schon, 1987).

Table 1 Transformation of design studio's signature pedagogical model - from teacher centered to student centered

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

The focus of design higher education across these models over time as shown in table 1, have shifted from teacher centered pedagogy to student centered pedagogy which is the need for maintaining current quality higher education practices (Webster, 2004, Belluigi, 2016).

1.4. Roles Of Students And Teachers And Interaction Process Between Them In Existing Models:

The transformation of the roles of teacher and students based on the nature of interactions between them within these models as shown in table 2 are explained as follows:

- In the Ecole De Beaux Arts model, the student followed the master's practice and worked in the atelier as an apprentice working on drawings and was modeling the master's practices (Powers, 2016).
- As design pedagogy was institutionalized within a teaching school through a taught design studio, the idea of design teachers and students emerged through

the Bauhaus (Powers, 2016). This transition resulted in the roles of this educational institutional relationship to be modified to those of a teacher and a student.

- The idea of having an explicit theoretical basis for design studio pedagogy came through Schon's (Schön, 1984, Schön, 1985, Schon, 1987) theory of reflective practice where design studio was considered an ideal model for teaching professionals to utilize reflection on action as a way to problem solve. The roles of the teacher and student developed as a coach and student respectively. One that shows, demonstrates and tells the student and develops the solution to the problem with the student through ample time and effort. But it fails to address of how the teacher can make his design process explicit to the student rather than just telling him/her what to do.
- The hidden curriculum proposed by Dutton, (1987) argued for a balance in the teacher centered approach to give a voice to the students in the design studio. To enable student's role to have the capacity to reflect and critique the work of their peers and also become a collaborator in the design teaching and learning process with their peers and teachers (Dutton, 1987).
- Helena Webster, (2004) used the student's voices to depict the three roles they saw of their tutors in the studio based on the tutor to student relationship. One being the entertainer that told historical stories and gave examples of their own work to the students – these were not interested in the students learning and interacted minimally with the students. The next called hegemonic overlord was seen as one that corrected students work, even drew for them to allow for the students to have a similar approach to the design work as theirs. The third was the liminal servant which students idealize as one being enthusiastic, understanding the student's learning pattern and perspective, having acceptability of student's individuality as a designer and gave feedback that the student could understand (Webster, 2004). This insight remarkably explains the role for an ideal tutor but the next step helpful for design academics will be to have an understanding of how this ideal role can be opted, what process to opt and how to examine their pedagogy based on the student to teacher relationship within the contemporary scenario for design teaching.
- Ashraf Salama, (2015) argued that the awareness of professional practice for students shall transform the learning experience of students as being professional colleagues in the practice and shall have ample awareness of the practice (Salama, 2015). Still the clue, missing is the actual lived experiences and voices of the students and the nature of relationship and interaction that results from such approach to design studio activities.
- The next model chosen for comparison is by Powers, (2016). The model (Powers, 2016) reveals the roles of students as ones that can contribute to their design learning through their active contribution through self-regulated learning. The role of the teacher reveals itself as one that has to design the studio objectives corresponding to each student separately. This model demands high level of subjective approach from the teacher which in the contemporary scenario of reduced time and limited contact with students isn't practical.

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	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 that takes responsibility of his/her own learning

1.5. Shifts In Contemporary Architecture Design Studio Education And Challenges In Times Of Change:

The shift in the ways, universities in Australia in the early 2000's, designed Architecture programs informed by reduced university funding and recruitment of part - time academics created a shift in the ways the design studios were conducted (Ostwald et al., 2008). With this shift, there was an introduction of part-time sessional academics working with full – time academics (Marshall, 2012) to cater to the changed signature pedagogy in design education. While the students increased in number, the face to face time between the studio instructor and student reduced (Tucker and Rollo, 2006), and as a consequence, design lectures were embedded to supplement the design studio teaching. Part time sessional academics were employed from the industry to bring knowledge of practice in the studio teaching and learning (Ostwald et al., 2008, Marshall, 2012). In addition to part time teachers, the student cohort sizes have increased (Australian Institute of Architects, 2015) and there is a hierarchy of teaching team that is unit coordinators that conduct design lectures, recruit and manage a team of tutors while the tutors undertake design studio tutorials with the students (Pepper

and Roberts, 2016). Other factors include the introduction of the online learning media (Lane et al., 2015).

Together all these factors led to the studio signature pedagogy being shifted into a different contemporary blended model of design teaching (Crowther, 2013, Lane et al., 2015). Ostwald's et.al, (2008) study of this shift of Architecture design studio in the Australian context revealed three studio models based on the type of studio space, media of communication and nature of interaction between the tutors and the students as represented in Figure 1 created by the researcher along with a forth one which is an online mode of studio teaching.

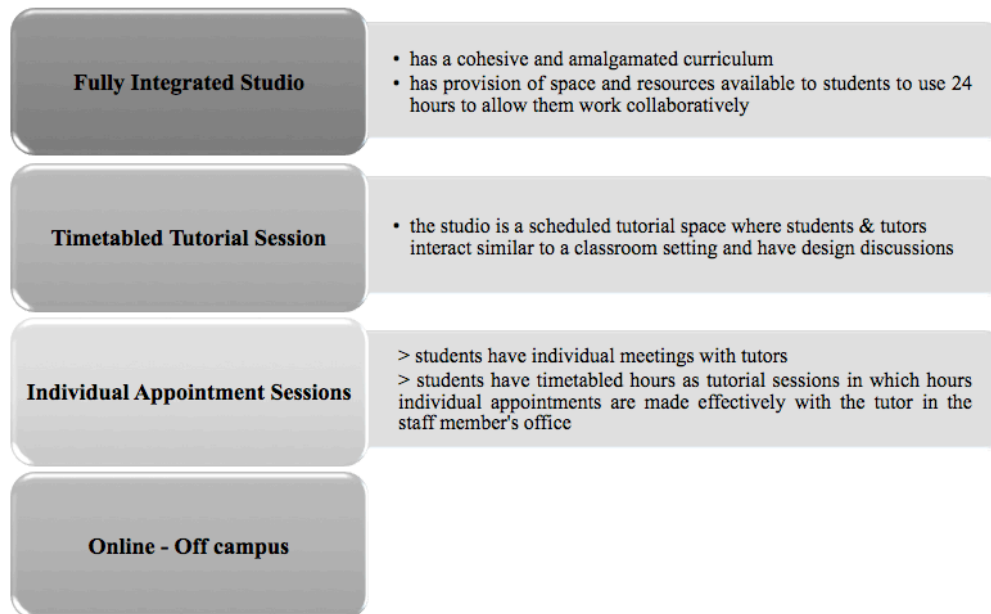


Figure 1 Various Studio Models Being Adopted in Australasian Schools of Architecture and the second one 'Time-tabled tutorial session' is the one relevant to the case study
(Created by researcher and adapted from (Ostwald et al., 2008))

2. Research Problem And Questions:

Based on these contemporary challenges, this research project argues that contemporary design studio education requires this dual relationship as shown in figure 2, to be transformed into a triadic relationship to inform current design teaching practices (Sodersten, 1998).

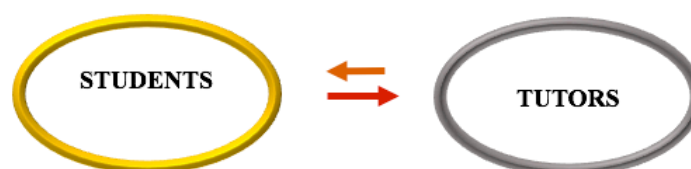


Figure 2 The simplified dual relationship between the teacher and student suggested in Signature pedagogical models

The aim of this research is to:

- portray the interaction between the design studio stakeholders' roles in contemporary studio model;

- understand the interaction process in different learning and teaching modes between teachers and students during different stages of design project execution to inform effective learning and teaching practices in contemporary design studios; and
- to build the theory around the interaction process and the relevant learning and teaching partnerships.

Therefore, the research questions that this paper answers are:

1. How does the interaction unfold between contemporary design studio stakeholders in times of change?
2. What are the key components of interaction between these stakeholders in this evolved scenario?

3. Theoretical Persepctive Of This Research:

This research seeks to utilize the Conversational Framework as a model of teaching and learning developed by Dianna Laurillard based on the ideas of social situated learning developed by Lev Vygotsky (Laurillard, 2013a). It is a theoretical framework proposed for effective academic teaching and learning in higher education. The conversational framework will be utilized in the research in order to highlight the communication and interactions between the three stakeholders in the design studio that are, the students, tutors and coordinators.

One of the major gaps in the research according to Laurillard, (1999) on academic teaching has been in teachers being unreflective of their teaching practices. There is an absence/lack of explicit theoretical frameworks that would explain how the university academic can approach the objectives and ideals of higher education and connect these to the activities of the student and teacher to the broader structure of systems they are working in (Laurillard, 1999). There are theories about children learning and how learning occurs in non-educational contexts (Laurillard, 2013a) but clear theories about the way university design students learn and how tutors engage them in effective design learning is missing (Musgrave and Price, 2010, Oh et al., 2013, Powers, 2016).

According to Laurillard's learning theory for the conversational framework, the students must take responsibility of what they know and how it comes to be known (Laurillard, 2013a). Thus teaching can be seen as a form of a mediation of learning rather than an 'action' on the students.

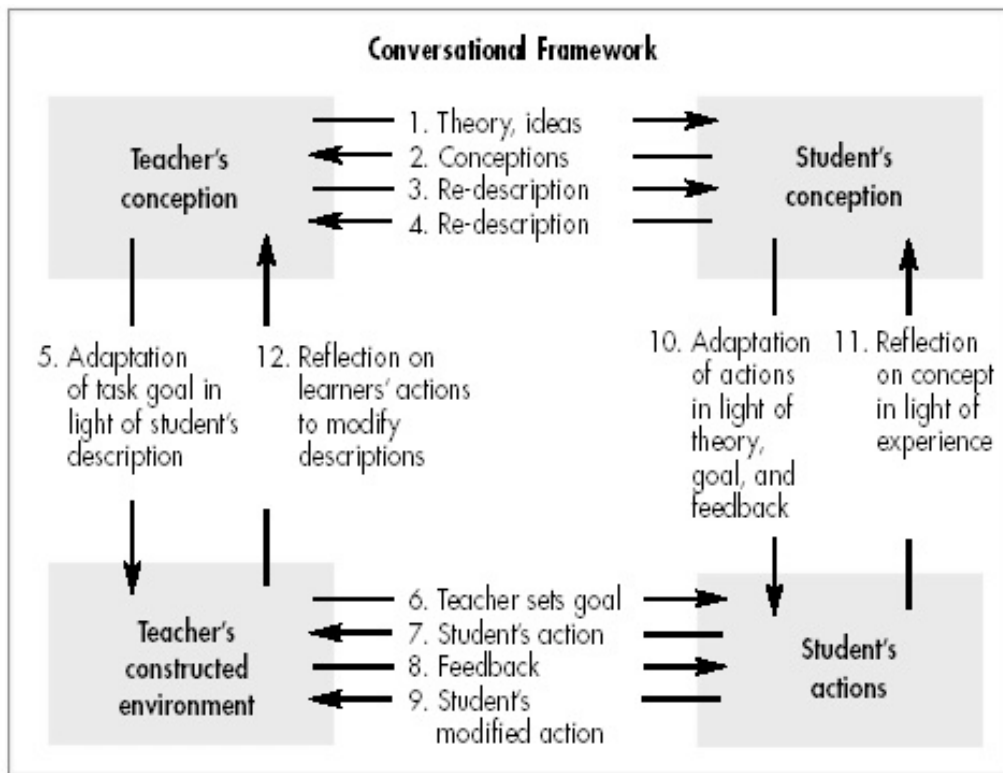


Figure 3 Conversational Framework developed by Laurillard – components of the iterative dialogue between teacher and student for learning to be possible

Laurillard's conversational framework is based on certain components necessary for the academic learning to be possible in an iterative conversational manner. The epistemology underlying the conversational framework situates learning as a relationship between the learner and the world, which is mediated by the teacher. Therefore, the teacher's constructed environment resultant of social interactions between the learner and the teacher results in successful academic learning. The components of the conversational framework are as follows:

3.1. Discursive Process:

The activities 1 to 4 in figure 3 occur in a series that relate to the discursive process which takes place between the teacher and the student at the level of the accounts of the topic goal – both negotiate in a dialogue to agree on a topic goal.

3.2. Adaptive Process:

This is represented by the activities 5 and 10 in the figure 3 of the framework which are both internal to the teacher and student, where each one adapts their actions at the task level in the light of the discursive process at the description level.

3.3. Interactive Process:

The interactive process is represented by activities 6-9 in figure 3 which occur in a series between the teacher and the student at the level of the task environment, the teacher sets the task goal, the student aims to achieve the goal by producing action on task, the teacher gives

feedback related to the task goal on the student's action, the student modifies the action in light of the feedback by teacher.

3.4. **Reflective Process:**

The reflective process is again internal to both student and teacher represented by activities 11 and 12 in figure 3, each reflects on the interaction occurring between them at the task level in order to re-describe their understandings at the level of the descriptions of the topic goal.

Interpreting the ideas of the conversational framework in the context of design learning and teaching can be seen as an interaction occurring between the three stakeholders that take place in the studio and lectures respectively in the following ways and environment:

1. verbal, (studio and lectures both)
2. graphical (studios)
3. online medium
4. and the non-verbal form of communication unfolding as non-verbal cues of the play between the teacher and students as a form of the hidden curriculum (Dutton, 1987) of appointing roles.

Considering the contemporary architecture design studio learning and teaching challenges and shifts in signature pedagogy in times of change, the dual relationship between the teacher and student as a result of two-way dialogic process can be expanded to incorporate the hierarchy of the teaching team i.e. the unit coordinator and tutors interacting with the students to extend Laurillard's framework to create a learning and teaching model for contemporary architecture design studio education as shown in figure 4.

According to (Laurillard, 2013a), this conversational framework that describes the learning process is intended to be applicable to all academic learning situations, subject areas and topics.

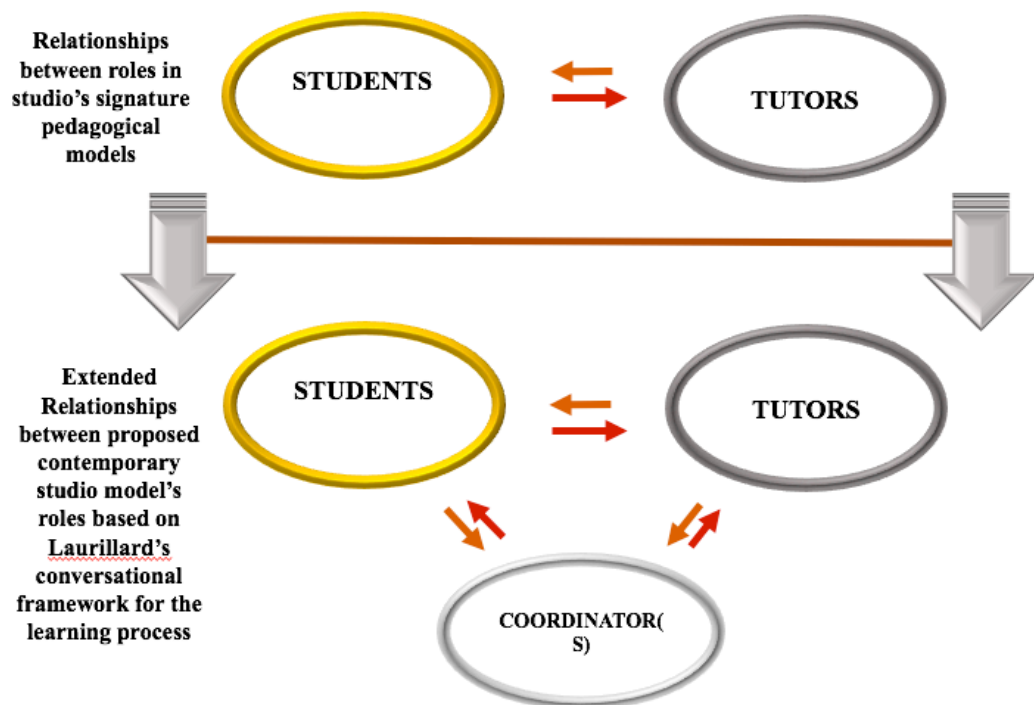


Figure 4 Transformation of the studio model from signature to the proposed contemporary model - incorporating the third member and extended relationships based on Laurillard's conversational framework

4. Methodology:

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

Yin, (2013, 2009) 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 (Yin, 2013, Yin, 2009). In educational research, the 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 interactions in relation to other stakeholders in design studio learning and teaching were explored. 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 four contemporary studio models implemented in Australasian schools of Architecture (as shown in figure 1) and has a four years long architecture degree program followed by one year of masters. There are around 130 - 180 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 students undertake an academic design project with the tutors in the studio tutorials which mirrors a real-life architecture design project and the unit coordinator provides design knowledge through lectures. The investigation of this case study and its implications may not be relevant to other forms of prevalent design studio models. 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 to 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.

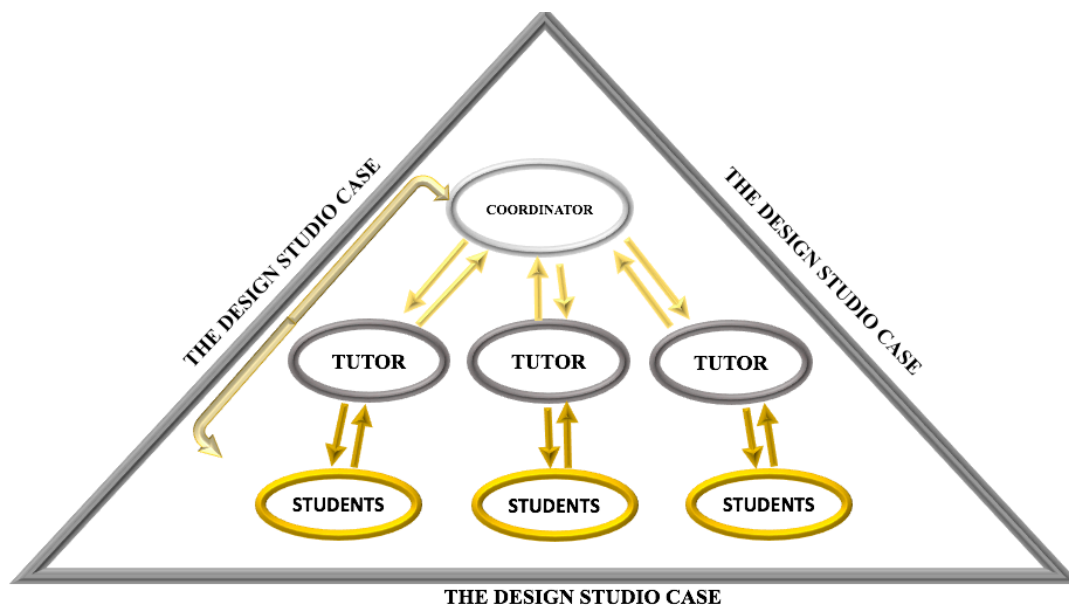


Figure 5 The undergrad design studio case - Hierarchy of the learning community within the QUT's case study

In the context of design lectures and studio tutorial learning and teaching settings the interviews in this research were intended to capture the retrospective accounts of:

- students' perceptions of their experiences of learning and teaching interactions in design lectures and studio tutorials in relation to the tutors and the unit coordinators.
- tutors' perceptions of their experiences of learning and teaching interactions in design studio tutorials in relation to the students and the unit coordinators.
- unit coordinators' perceptions of their experiences of learning and teaching in design lectures and studio tutorials in relation to the tutors and the students.

5. Analysis And Findings:

All the interviews were audio recorded and then transcribed. Each undergraduate year's members' data was collected and analysed using thematic analysis. Four data sets were created related to each undergraduate year from first to fourth year. Each data set included the unit coordinator, tutors and students for each respective year. These data sets were then used for analysis to observe repetitive patterns regarding the perceptions of collegial communication forms in the design studio and lecture settings.

Thematic analysis (Boyatzis, 1998, Braun and Clarke, 2013) can be used to analyse qualitative data. It is an analytic process that includes searching for recurring ideas (patterns) referred to as themes within a data set. Thematic analysis 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 accounts about events, organisations, social situations and people (Braun and Clarke, 2006). Putting it in the words of Jason and Glenwick, (2016) '*people attribute meaning to a particular phenomena in interaction with those around them in context-specific settings*' (Jason and Glenwick, 2016)'.

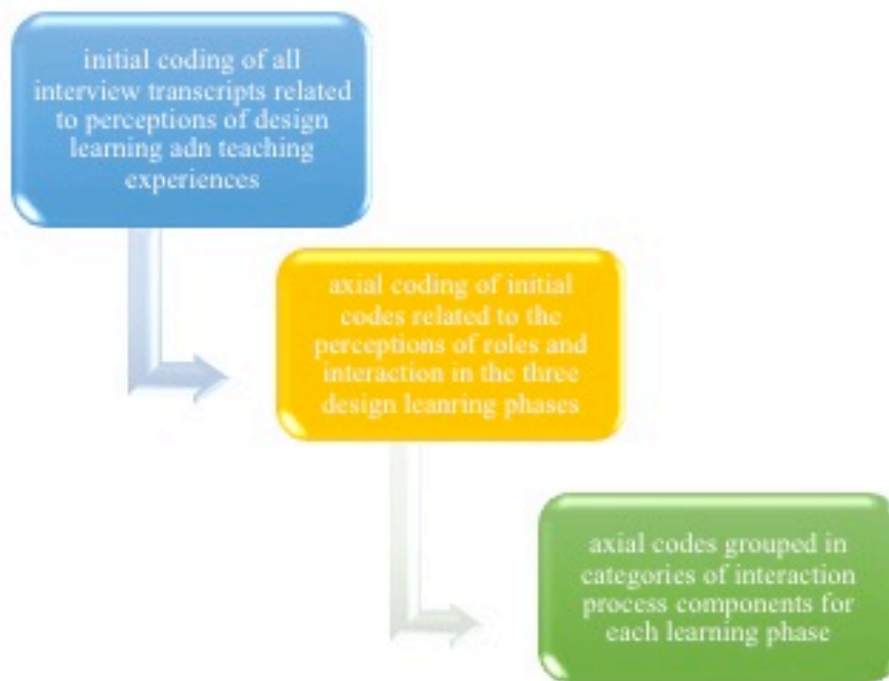


Figure 6 Process of thematic analysis

The process of analysis as shown in the figure 7 was as follows:

Step 1: Coding Process – initial and axial coding:

Each data set was subjected to initial coding. Then the initial coding was compared across data sets and further processed through axial coding.

Step 2: Axial coding and categorisation:

The axial coding of the initial codes led to the creation of categories in the form of concepts related to the design learning and teaching phases, roles of stakeholders and their respective interactions. Each stakeholder described the roles relevant to three different stages within the design learning process and the changed nature of interaction along the three phases. This led to the creation of three themes related to one another.

One theme related to the phases of the design learning process of the design project, the second theme was based on the adaptation of the nature of these roles to the learning phases and the third described the changed nature of interaction between the stakeholders in different learning and teaching settings as shown in figure 7.

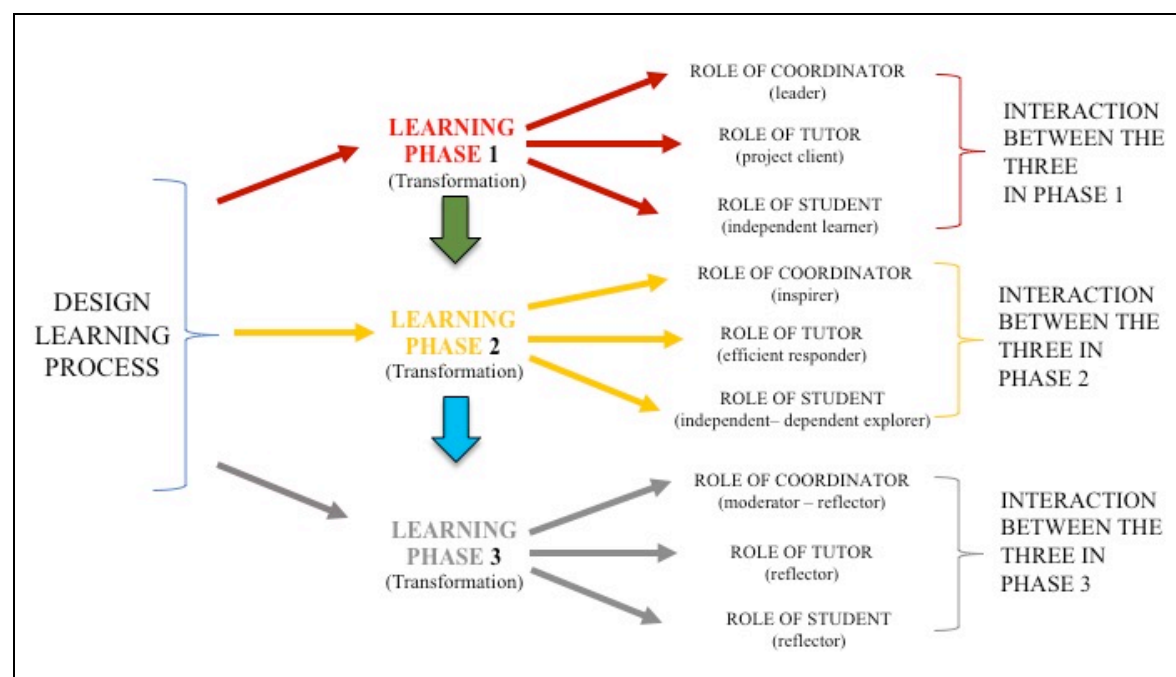


Figure 7 The correlation between the 3 phases of the design learning process, the adaptation of roles and the interaction process

Step 3: Emerging themes:

Thus, three interrelated themes that emerged from the data are as follows:

Theme 1: Design learning process:

This theme describes interactions of the design learning process which unfolds as three overlapping phases within the execution of an academic 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 regarding the aims, structure. This phase requires setting clear and

distinct learning and teaching partnership goals between academics and students.

- 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.

Theme 2: Role construction:

The nature of the roles of each of the unit coordinator, tutor, and student, described as their identities and responsibilities constructed the theme on roles. The nature of these roles gets adapted to the three phases of the design learning process. In each learning phase, the roles of the three stakeholders along with the interaction process is shown in figure 7.

Theme 3: Interaction Process:

The interaction process between the three key members is the ways, when (time), where (modes of learning and teaching) and how (unfolding of the process) the three members interact with one another in a sequential manner. The ways mean the modes of interaction, the when means what learning phase along the sequential path, the timing of how what happens and the how determines the factors or steps or activities which constitute the interaction process. The interaction process for design is iterative in nature, builds incrementally on the last interaction and has several layers of process components. Some are evident through tangible actions and some are the ones that take place within the individuals minds or intellectual capacity themselves and are intangible.

It is impossible to imply that a given set of sequential step by step processes can objectively define the interaction that exists between key members, but is representative of the perceived, experienced and lived examples of the context or the case study under research. The interaction between the stakeholders is cyclical, repetitive and incorporates the changing needs of each learning phase. The interaction gets adapted in different ways in each learning phase by having some differences across the learning phases in the interaction process components - with some new steps along the interaction and some similar to Laurillard's framework but not an exact replica of the conversational model for each phase or set of members interaction.

➤ Interaction cycle in design learning phase 1:

The first design learning phase is about setting the foundation for the design

project so consensus of the learning objectives among the three key members is vital. The cycle of learning and teaching design begins with the interaction between the coordinator. The concepts eminent in interaction here are conveying conceptions, revealing conceptions, interpretation, reflection, explanation description, and querying to make conceptions clear.

The coordinator introduces the unit content through the lecture mode to the students and finally the tutors set major goals with the students in tutorials.

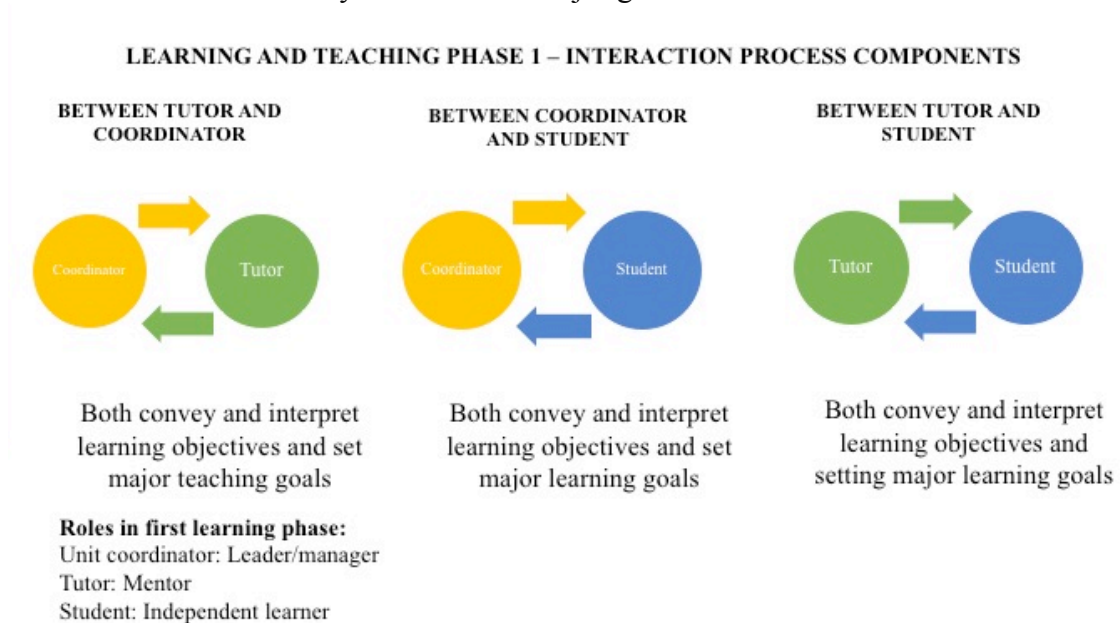


Figure 8 Design learning and teaching phase 1 - interaction process components

➤ **Interaction cycle in design learning phase 2:**

The interaction cycle in learning phase two begins with the unit coordinator and the student, followed by interaction between tutor and student and then among students themselves. The components of interaction build around setting sub goals that feed off the major goals set in phase 1 and then execution of those sub-goals by the unit coordinator telling explanatory stories of architectural precedents to students to inspire them, the tutor mentoring the students to not only complete their own work through the action feedback reflection cycle of teaching but also through acting as a life coach by providing students the support they need and to build a sense of community by encouraging students to interact and share ideas with each other.

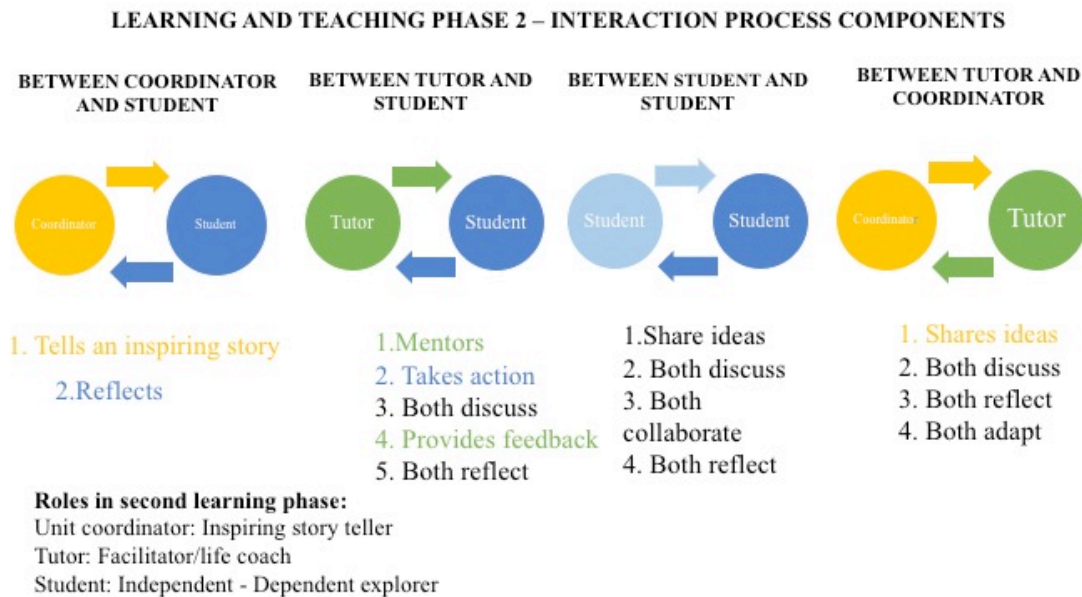


Figure 9 Design learning and teaching phase 2 - interaction process components

➤ **Interaction cycle in design learning phase 3:**

The cycle of interaction in phase three begins with the tutor empowering the student through interaction to present their final project with efficacy. The leading to student presentations which enabling them to reflect on their learning in the entire project, followed by interaction between tutor and unit coordinator to assess, moderate and reflect on the students' progress as a measure of their own teaching success.

LEARNING AND TEACHING PHASE 3 – INTERACTION PROCESS COMPONENTS

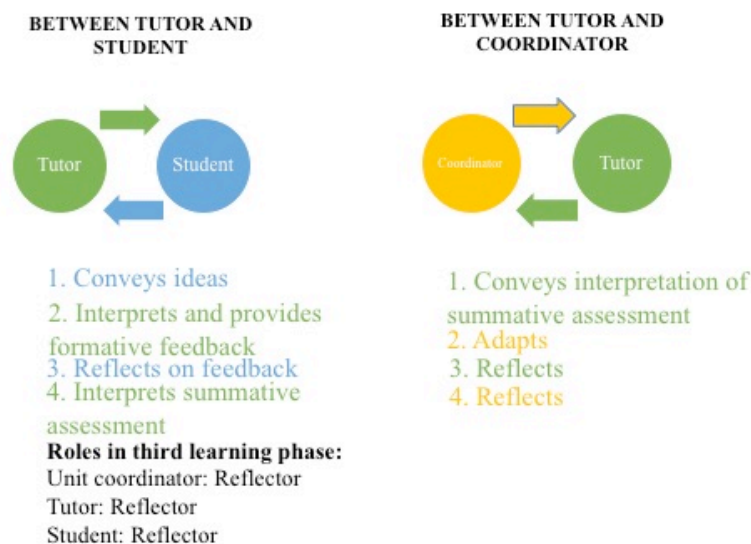


Figure 10 Design learning and teaching phase 3 - interaction process components

6. Conclusion And Way-Forward:

The research findings have provided a foundational ground for understanding the extensive interactional relationships between these three stakeholders for the contemporary design studio pedagogical model. The understanding of the shift in the design learning process for a design project, the variation in roles and the

relevant interaction process between the roles sheds light on the complexity of knowledge that surrounds the nature and modes of the communication platforms between the coordinators, tutors and students. This highlights the demands of effective communication considering the contemporary design studio learning and teaching settings and their inherent challenges.

The unpacking of the interaction process enables academics to dissect, reflect and understand their own communication patterns objectively and to improvise the dialogic process to benefit students through effective engagement - under changed circumstances of architecture design learning and teaching in times of change. In times where effective interaction equates to efficient response and is one of the major answers to effective design pedagogy.

The findings show that Laurillard's framework can be extended to incorporate the conversational forms of interaction between the stakeholders and that the framework gets adapted along the design learning and teaching phases in different ways with some differences. It also brings out the importance of understanding the aspects of the learning and teaching interactions to foster clarity, collaboration and positive transformation among students, tutors and coordinators in a similar learning and teaching setting for design education to be effective.

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Contact email: Naima.Iftikhar@Hdr.Qut.Edu.Au