Exploring Transition toward Independent Learning

Student Experiences in The First Year of Architecture School

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A thesis submitted in partial fulfilment of the requirements
for the degree of Doctor of Philosophy

Welsh School of Architecture
Cardiff University
June 2019

EXPLORING TRANSITION TOWARD INDEPENDENT LEARNING

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ABSTRACT

This thesis explores the learning experiences of students in the architectural design studio, specifically looking at learning issues associated with the transition from dependence to independence and analysing students' accounts of their learning processes during their first year.

The study methodology combined both qualitative and quantitative tools. The Autonomous Learning Scale (ALS) of Macaskill and Taylor (2010) was employed for the quantitative component, measuring students' perceived level of independence at two different points in their first academic year. This provided a detailed evaluation of the key factors in learning independence – such as gender, age, and nationality – and tracked changes in the students' skills throughout the year, in addition to investigating the correlation between level of learning independence and academic performance. The sample for the quantitative study consisted of two groups: the first comprised 87 students who completed the ALS questionnaire at the beginning of the year; and the second, 83 students who completed the questionnaire at the end of the year. During the time between ALS1 and ALS2, we collected narratives from 10 students through 50 interviews to gain a fuller understanding of their independence experiences, particularly with respect to their engagement with and transition onto the course.

The findings suggest that the design studio is a suitable environment for facilitating learning independence in higher education. Most of the students appreciated the learning environment within the school and expressed a feeling of belonging to the community, stating that it had helped them to become more independent. More importantly, an analysis of the narratives revealed that the respondents perceived themselves as becoming more independent as they progressed through the year. However, many of the participants felt uncertain about aspects of independent learning and wanted more guidance and support, remaining attached to the practice of tutor-centred learning.

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CHAPTER ONE
Transitions into Independent Learning

I.I. Introduction

Higher education has seen a shift in meaning – from a provider of teaching to a producer of learning (Barnett, 2012) – and this places emphasis on developing independent learning cultures (Skolnik, 1999). Independent learning is key to a university education (Hockings et al., 2018). In higher education, students engage with autonomous modes of learning and thinking (Knowles, 1988; Hughes, 2003), taking responsibility for their own learning, being self-directed, making decisions about what to focus on and how much time to invest in learning (HEA report, 2014). In the UK context, independent learning is an integral 'learning outcome' of most university courses and expected of graduates by UK employers (CBI, 2009).

Independent learning is not limited to educational effectiveness and success; rather, independent learners are identified as citizens who are more likely to contribute positively to their surroundings and become socially responsible members of society (Holec, 1981; Dickinson, 1995). Independent learning then, is a form of a lifelong learning for an unknown future. It enables learners to understand and strengthen themselves, to develop and go forward, not because of acquiring sufficient knowledge or learning new skills, but because of their ability to reflect on these skills and knowledge in the future (Barnett, 2012). In other words, independent learning is a means of developing the skills needed to become personally autonomous, which is a desirable goal in modern society (Boud, 1991).

Hence, being an independent learner is widely accepted as a graduate attribute, appearing in mission statements, learning and teaching strategies, and course and module outcomes. It teaches students to learn for themselves and, in turn, to empower themselves in their learning, whatever the context (Broad, 2006). Independent learning also increases students' motivation, confidence, and awareness of their limitations, as

well as their ability to manage these limits. It is also considered an important aspect of preparation for life after study, preparing students for the world of work, in which collaborative working is the norm. It enables key employability attributes to become fully embedded in the curriculum, rather than seen as something adjunct to students' academic endeavours (Roberts, 2017). Moreover, all disciplines place a high value on the development of skills in critical thinking, analysis, and argument, and all aim to produce individuals who can think clearly and independently and manage their own lives effectively (McNair, 1996).

However, as independent is increasingly embedded in universities, there is growing concern that many students struggle to make the transition to the level of autonomy required for university study (HEA report, 2014). Students may also be influenced by the annual changes in the league table position of a given institution and not equally influenced by competition for places and the quality of the learning environment offered by the university. Clearly, the league table is important, but it does not necessarily reflect pedagogies that foster independent learning.

And Although extensive research has explored perceptions of students' transition towards independent learning (Trigwell & Prosser 1991; Meyer et al., 1990; Prosser & Trigwell, 1994; Biggs & Tang, 2011; Thomas et al., 2015), there is relatively little published work on independent learning in studio-based subjects, such as architecture. Previous studies have focused on students from different disciplines to explore different experiences and perspectives, though they did not identify differences between different disciplines in terms of approaches to independent learning or how the challenges can vary between disciplines. An understanding of independent learning in general is not sufficient. Rather, one must understand the teaching and learning requirements of one's own discipline to promote independent learning most effectively. In other words, a study with a focus on independent learning in the design studio is required.

Accordingly, this thesis intends to explore students' learning experiences in the design studio, consider the barriers to the transition to learning independence, and identify students' perspectives on this issue.

In its annual survey of schools of architecture, the RIBA Education Statistics (2018) reported that there were more than 15,500 students in the UK's schools of architecture in the academic year 2016/2017, and numbers increased this year to more than 16,600. Courses in schools of architecture attracted more than 32,000 applications in the past academic year. Furthermore, more than 225,000 students are currently studying studio-based subjects, including design, and creative arts in UK universities (The Higher Education Student Statistics, 2018). With this increase in the number and percentage of students undertaking studio-based subjects, the current research is clearly vital – not only to architecture students, but also to the wider spectrum of learners in various studio-based programs. Accordingly, a study concerning students' reflections on their first-year experiences was necessary, providing a great opportunity for both learners and educators to develop their teaching and learning practices to ensure successful adaptation to studio-based learning and better facilitation of independent learning.

Moreover, the interest in higher education more generally with issues around independent learning and student's learning experiences reinforces the topicality and currency of this study, as well as its relevance to a larger audience outside the field of architecture. Hence, this study is likely to be of interest and benefit to independent learning researchers, educators from different fields, and directors of teaching. It is, of course, hoped that the ultimate benefactor will be the students themselves.

I.II. Rationale of the study

The rationale for this study is based on various academic and personal theories. Firstly, higher education – both in the UK and around the world – is undergoing changes in terms of teaching paradigms, expectations, widening participation, and engagement

(Sarker et al., 2010). Ethnic diversity is greatly expanding, with increasing numbers of international students studying abroad (Biggs & Tang, 2011), and there has been progress in making higher education more accessible to students who have traditionally been excluded (Moore et al., 2013). Moreover, the changing face of higher education from didacticism, which is based on consideration of the learner as a passive recipient of knowledge, to learning facilitation offers a distinct perspective, ontologically, and pedagogically (Barnett, 2012) ; one that is both active and student centric.

Therefore, widening participation extends beyond simply providing access to certain social groups (such as those historically excluded on the grounds of their gender, age, ethnic background, or social and economic circumstances), it also includes understanding what happens at institutions and what outcomes are achieved, including large parts of the student learning experience, from transition and induction through to completion and exit (Moore et al., 2013). And the focus on the 'first-year experience' and students' perceptions of their learning is an essential aspect of this understanding (McClean, 2009).

The first-year experience is of particular significance due to the challenges involved in adapting to a new learning environment, alongside making major changes in one's life as a whole (Kahu et al., 2017), and this plays a significant role in shaping students' attitudes and performances in subsequent years (Tinto, 1993). This is typically the stage when student expectations are reinforced or dispelled, ways of thinking are established, and the foundations are laid for the development of the independent learner (Krause et al., 2005). As such, the point of entry into university life represents a major event in the education of the individual and marks a transition that presents a variety of challenges.

Secondly, there is growing concern around the situation of learning independence in higher education in general in the UK (Thomas et al., 2015; Knowles,1988; McNair, 1997), and in architecture in particular (Andrew, 2017; Vowles et al., 2012; McClean,

2009). Despite a great deal of research addressing learning independence in disciplines such as languages and nursing, there is little research in many studio-based subjects, including architecture, and only recently have works appeared on subjects within the scope of learning independence.

Finally, the rationale for this study cannot be detached from my personal interest in the subject of learning independence, nurtured over many years in higher education – as an undergraduate and then postgraduate student and later as a faculty member in various institutes. I have always believed that education generally and university education more specifically should encourage students to be academically responsible. Students, at this stage, are maturing and reaching a stage at which they will be expected to take responsibility not only for their learning but also for other aspects of their lives (Knowles, 1988; Merriam, 2001).

However, I also believe that students entering architecture school do not spontaneously become independent without a supportive environment that provides the opportunity to operate as independent learners, thinkers, and designers. In architecture, students deal with ill-defined (Reitman, 1965), ill-structured (Simon, 1973), and wicked (Rittel & Webber, 1973) problems, which generally grow more complex through the process of design. These design characteristics are often completely unknown to students when they arrive at architecture school, and even more challengingly, the problems are contrary to their experiences in their earlier education, which were mostly rule-based, procedurally driven, and based on well-defined problems with pre-defined strategies. This transition from the highly controlled, teacher-driven learning environment of schools to university, where the student is responsible for their own learning, is perhaps the biggest challenge of all for students (Murtagh, 2010). This is compounded by the students having little experience of design or other subjects that contribute to architectural study (Architecture Benchmark Statement, 2010). Students are thus confronted by a fundamental change to their principal mode of learning. Rather

than acting as a recipient of knowledge, the student is required at an early stage to analyse problems and scenarios and construct knowledge pertinent to the specific context (Heylighen et al., 1999). Therefore, development of a personal knowledge is essential to create student's architectural identity, and consequently to learn to 'think as a designer'.

In a traditional pedagogy, tutors deposit knowledge in students and never ask them to question that knowledge. Students receive, memorize and do not relate this knowledge to real life problems. Accordingly, they get a passive role in this view. However, architecture education can be seen through a different lens that rather than determining or prescribing a particular pedagogy, instead counts on how knowledge is acquired through learning by doing and collaboration. Within this lens, the importance of the prior experience of learners is critical to their knowledge development in addition to their social interactions with others within the learning environment. Tutors are seen as a source of knowledge, yet students are not only recipients but also producers of knowledge, which in turns empower and encourage them to think beyond what is traditional, and to examine and question this knowledge.

This focus on individuality takes its epistemology of knowledge from the constructivist paradigm which regards each learner as an individual entity, uniquely conditioned by his or her background, perspective and previous learning experience. This interest towards a more student-centered environment is pedagogically endorsed in the design studio. Within this untraditional learning setting, that includes both the physical context and the social interactions within, students could be seen as active constructors of knowledge and not just passive absorbers of knowledge. Accordingly, constructivism within the design studio capitalises on the richness embodied by the differences in learners, and strongly opposes the notion of students as 'empty vessels'. Although this perspective suggests that learners are individual and unique, yet it emphasises on their need of outside influences to learn as well. This in turn, requires us as tutors to assume the role

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of facilitators, to allow students to assemble knowledge from their background and context, and to direct them in ways that ensure that they will learn from and reflect on their own experiences. Schools of architecture, therefore, have a great potential to better foster independent learning in higher education, and even to lead by example

I.III. Aim and research questions

Many teachers of architecture argue that the purpose of the design studio, which is the core of architectural education, is to educate students on the nature of design, to think independently, to act in 'designerly' ways (Cross, 1982), and to become reflective practitioners (Schön, 1983). Several previous studies have explored particular aspects of design studios in some detail (e.g., Schon, 1985; Fleming, 1998; Carig & Zimring, 2000). Other studies have examined the social and epistemological implications of studio practices (e.g., Dutton, 1987; Heylighen et al., 1999; Roberts et al., 2006).

This research provides an important opportunity to advance our understanding of the evolving conception of learning in the design studio, specifically the transition toward independent learning for undergraduate students. The aim is to develop an understanding of learning issues associated with students' transition from dependence to independence by analysing their accounts of their learning processes during their first years in architecture school.

To achieve this goal, the main research question is as follows: *What are architecture students' perspectives of their transition to independent learning?* Supplementary questions relate to the analysis and interpretation of the data and the methods used to collect these:

1. Does maturity, gender, nationality and prior learning experiences affect learning independence?
2. To what extent does independent learning change over time?

3. What are the key elements in design that support the development of independent learning, and what elements can be seen as barriers to independence?

4. And lastly, does learning independence have an effect on students' academic performance?

I.IV. Methodological framework

The questions and aim described above suggest an approach that combines qualitative and quantitative research methods. Such an approach would make it possible for students to convey their points of view within a natural and familiar context and to track learning changes during their first year. Rather than attempting to impose definitions, barriers, or challenges from the literature, this study will investigate how these students came to understand and describe their experiences of learning transition over their first year in architecture.

The rationale for mixing methods is that neither approach alone is sufficient to capture the range of trends and details of the problem in question. When used in combination, quantitative and qualitative methods complement one another and allow for a more complete analysis (Green et al., 1989; Tashakkori & Teddlie, 1998). Therefore, instead of considering students' 'learning', we aim to provide useful insights into students' evolving conceptions and expectations of independent learning over their first-year experience.

With respect to this focus and the need for in-depth knowledge, the methodology for this research will address the following issues:

1. It should provide a view of the learning transition process through the eyes of students. Since the concept of learning independence places students at the centre of the teaching-learning process, their views and attitudes on the nature of their learning experience are significant.

2. It should provide knowledge about the ways in which the design studio affects this transition into independent learning.

3. Nevertheless, it should be a flexible research design that allows for the emergence of new ideas and avoids reliance on theories and concepts.

Evidently the best source of such concealed information would be the students themselves, elicited by inviting them to explain the narratives of what happens in their learning processes. In particular, the focus will be first-year students, who are the individuals experiencing the learning transition and thus the most authentic source for the research.

The research data collection is structured in three phases, spanning a total period of one academic year. In phase one, at the beginning of the year, students' level of learning independence was measured using the Autonomous Learning Scale of Macaskill and Taylor (2010). This investigation was necessary to identify students' differing levels of predisposition to independent learning and to note any differences along the lines of gender, nationality, or age.

For phase two, and to gain a fuller understanding of the students' learning experiences (particularly with respect to their engagement with and transition into independence), 50 interviews were conducted. These were sorted broadly into five waves and analysed using two different approaches. The first was a 'Narrative Analysis' approach, which presented 10 stories from 10 students and demonstrated that each story had its own direction and each student had a unique learning experience. This approach was chosen to discover the nature of each student's learning experience.

The second approach followed a 'Thematic Analysis of Narratives'. The focus here was on finding themes and patterns to explore the subsurface of students' narratives to identify common threads to the interviews, such as challenges and tools of independent learning. This approach was suitable for answering questions such as, what are the key

elements in design that support independent learning? What are the challenges that students face during their transition to learning independence?

Finally, in phase three, the same students were invited at the end of academic year to complete the Autonomous Learning Scale questionnaire to explore the changes in their level of independent learning over the year and to identify any correlation between their level of independence and their academic performance.

I.V. Structure of the thesis

This thesis is structured around seven chapters as follows:

1. The present chapter provides a brief background to the topic of independent learning, presents the problem statement and purpose of this study, and explains the rationale and significance of this work.

2. Chapter 2 reviews the literature relevant to independent learning in the higher education context. The chapter consists of two major parts: the first provides a theoretical background, definitions, and several previous studies related to my research and carried out in the context of higher education in the UK; and the second discusses learning in the design studio and its features and challenges.

3. Chapter 3 introduces the methodology adopted for this research. A detailed account of the research design and methods of data collection is then presented. This chapter also describes the research participants and the process and phases of data collection and analysis. The chapter concludes with a discussion of the challenges in data collection and the ethical considerations.

4. Chapter 4 analyses and reports the statistical findings of the quantitative research. The chapter concludes with a discussion of the results, supported by graphs and tables, and the identification of this work's limitations.

5. Chapter 5 proposes the first approach to analysing the qualitative research findings, providing 10 stories from the first-year studio. A detailed discussion of

the key findings in this part of the research is presented, with reference to the existing literature.

6. Chapter 6 presents the second approach to analysing the qualitative data. The results of the thematic analysis and detailed discussion of the themes are presented.

7. Chapter 7 presents a detailed discussion of the key findings of the study, with reference to the existing literature, and offers a student theory of learning independence in the first-year studio. This theory stems from the conclusions of the previous three chapters and represents students' perspectives on both the positive aspects of the design studio and the barriers to independence during their first year, as well as suggestions for improvements which could support the transition to independence.

8. Chapter 8 concludes the thesis, outlining the major conclusions, implications, and contributions of the study to the literature and to the current practical situation of learning independence in the context of architecture. The chapter also highlights some limitations of this study and makes some recommendations for future work.

CHAPTER TWO
What Is Independent Learning and How it is Fostered in
The Design Studio?

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This research addresses the issue of turning dependent learners into independent ones, and in particular into independent architectural students. It aims to provide useful insights into students' evolving conceptions of independent learning through their first-year experience, and to identify factors that influence students' independent learning in the design studio.

Therefore, to present a discussion about students' independent learning in architectural design, it is necessary first to identify the key concepts related to independent learning in general, and then to identify the context of teaching and learning in the architectural design studio.

This chapter highlights key themes from the literature which will be developed further in later discussion in this research. Two themed sections will be explored: Independent Learning in Higher Education, and Learning in the Design Studio.

II.I. Independent Learning in Higher Education

First theories about independent learning appeared in the USA with the growth of the "human potential" movement of the 1960s and early 1970s (Taylor, 1997). The work of Carl Rogers 'Freedom to Learn' (1969) is a major work in this field. As Rogers (1969) states, when a student "chooses [their] own direction, helps to discover [their] own learning resources, formulates [their] own problems, decides [their] own course of action, lives with the consequences of each of these choices, then significant learning is maximised".

Rogers argued that learners innately know what they need to know and given an appropriate environment and support they will learn better. Moreover, teachers should facilitate a person's learning and not teach directly, shifting the spotlight from them to

individual learners so that both teacher and learner become jointly responsible for a positive outcome. However, Rogers's distinctive ideas are often recognised today for their influence on counselling and therapy rather than education (Taylor, 1997).

II.I.I. Learning definition

The word 'learn' comes from the old English term lore, which literally means 'instruction' and refers to a body of traditions and knowledge on the subject. The Oxford English dictionary defines the verb learn as "To acquire knowledge of (a subject) or skill in (an art, etc.) as a result of study, experience, or teaching".

Atkinson et al. (1996) described learning as "a relatively permanent change in behavior as a result of practice or experience". A broader perspective has been adopted by Biggs (1999) who argues that learning is not just about acquiring knowledge; it is a way of interaction with the world. As we learn, our understanding of things keeps changing. The acquisition of information in itself does not bring such change, but the way we structure that information and think with it does. Learning was also defined by Marton and Tsui (2004) as "the process of becoming capable of doing something as a result of having had certain experiences (of doing something or of something happening)".

But learning is not a single process, "it may involve mastering abstract principles, understanding proofs, remembering information, acquiring methods, techniques and approaches, recognition, reasoning, debating ideas, or developing behavior appropriate to specific situations" (Fry et al., 2008). Accordingly, Andreou et al. (2006) highlight the fact that learning is an internal process that is different for every individual. As a result of being engaged in an educational experience changes take place in a person's behaviour (Lakin, 2013).

But what do we mean by 'independent learning' in higher education? Questions also surround the issues of the challenges and skills of independent learning and how it can be made inclusive.

II.I.II. Independent learning definition

Independent learning is not a new concept, nor is it a concept where there is universal agreement on its meaning. The Oxford English dictionary definition of the term independent is "Not depending upon the authority of another, not in a position of subordination or subjection; not subject to external control or rule; self-governing, autonomous, free". Learning as defined in the same dictionary is "to acquire knowledge". Together the literal meaning of these words imply that independent learning is an acquisition of knowledge free of external control. The decisions of what knowledge, how, when, and where to acquire it would be strictly under the control of the learner. From the previous definitions we can identify the importance of the learner's attitude during learning. If the students interact as active participants with positive attitudes towards learning, and take the responsibility for their learning, they will acquire the knowledge and modify the structure of pre-existing knowledge.

Students' independent learning in higher education has been the subject of intense research for decades. It is presented as something of value that is expected to take place at university, as it is considered more student-centred than teacher-centred. However, as reported in 'The Nuffield Review' (2006), undergraduate students do not meet the expectation of their higher education tutors, and struggle to cope with the independent and self-directed style of learning.

The UK Quality Code for Higher Education (2012) requires that institutions provide a framework for independent learning:

> Higher education providers, working with their staff, students and other stakeholders, articulate and systematically review and enhance the provision of learning opportunities and teaching practices, so that every student is enabled to develop as an independent learner, study their chosen subject(s) in depth and enhance their capacity for analytical, critical and creative thinking.

While not explicitly defining independent learning, this requirement implies the importance of independent learning in higher education.

Philip Candy, in 'Self-direction for lifelong learning' (1991), quotes Forster (1972) to define independent learning/study:

1. Independent study is a process, a method and a philosophy of education: in which a student acquires knowledge by his or her own efforts and develops the ability for inquiry and critical evaluation.

2. It includes freedom of choice in determining those objectives, within the limits of a given project or program and with the aid of a faculty adviser.

3. It requires freedom of process to carry out the objectives; it places increased educational responsibility on the student for the achieving of objectives and for the value of the goals.

Kesten (1987) explains independent learning as that learning in which the learner, in conjunction with relevant others, can make the decisions necessary to meet the learners' own learning needs. Independent learners understand themselves, and feel in control of their lives: they are driven by motivation. They learn because they want to know, not because they are told to, and they act because they want results, not to satisfy other people (McNair, 1996).

For Grow (1991) independent learners set their own goals, with or without help from experts. They use experts and all the available resources to pursue their learning goals and are willing to take responsibility for these goals.

Similarly, for Garrison (1997), independent learning is an approach where learners are motivated to assume personal responsibility and collaborative control of the cognitive (self-monitoring) and contextual (self-management) processes in constructing and confirming meaningful and worthwhile learning outcomes.

Hughes in his teaching fellowship project (2001) identifies independent learning as an approach that seeks to empower students to take responsibility for their own learning and through this to further develop their academic and personal potential; it is an essential part of development in students' self-awareness and self-confidence as autonomous lifelong learners.

Moreover, various terms are used to discuss the concept of independent learning (Meyer, 2010). The different terms of learning autonomy, personalised learning, self-regulated learning, self-directed learning, and independent study describe very similar themes and processes, including students understanding their learning, their responsibility for their learning, and working with teachers to structure their learning environment (Candy, 1991; Palfreyman, 2003; Meyer, 2010; Mota and Scott, 2014; Hockings et al., 2018). Cross in 'Adults as Learners' (1981) was able to compile more than 15 different attempts at defining and differentiating these terms. Henrie and colleagues (2018) associated independent learning with a number of key themes: responsibility or ownership of outcomes; confidence in skills or ability to achieve (self-efficacy); engagement with learning (Chan, 2001; Fazey and Fazey, 2001; Macaskill and Taylor, 2010; Macaskill and Denovan, 2013); and, the expansion of students' knowledge base instead of focusing on prescribed material (Thomas et al., 2015).

In addition to the previous definitions, several institutions have defined independent learning and independent learners. The Open University for example, defines independent learning as: "working with increasingly less structured teaching materials and with less reliance on traditional kinds of tutor support" (Moore, 1984). More definitions can be found in the following table:

Table 1: Independent learning definition

Table of Definitions	
The Open University (1984)	Working with increasingly less structured teaching materials and with less reliance on traditional kinds of tutor support.
Kesten (1987)	Learning in which the learner, in conjunction with relevant others, can make the decisions necessary to meet the learners' own learning needs.
Candy (1991)	A process, a method, and a philosophy of education, in which a student acquires knowledge by his or her own efforts and develops the ability for inquiry and critical evaluation.
Garrison (1997)	An approach where learners are motivated to assume personal responsibility and collaborative control of the cognitive (self-monitoring) and contextual (self-management) processes in constructing and confirming meaningful and worthwhile learning outcomes.
Hughes (2001)	The ability to take charge of one's own learning. It means taking responsibility for all the decisions concerning all aspects of this learning.
Palfreyman (2003)	An approach that seeks to empower students to take responsibility for their own learning and through this to further develop their academic and personal potential.
Chan (2003)	The ability of learners to work together for mutual benefit, and to take shared responsibility for their learning.
Southampton University Study Skills (2004)	The independent learner is a person who will (a) be motivated to learn; (b) manage his own learning; and (c) reflect on his learning.
Meyer (2010)	Students having an understanding of their learning; being motivated to take responsibility for their learning; and working with teachers to structure their learning environment.
The University of New South Wales Learning Centre (2013)	To be responsible for managing your studies, your time and yourself.
Higher Education Academy (2015)	Any course-related study that you undertake when not being taught by lecturers or other academic staff.
University of Bristol (2017)	Taking responsibility for workload, commitments and deadlines.
University of Hull (2017)	Being able to make informed choices and taking responsibility for one's own learning. Motivation, feeling confident enough to take decisions and act on them, and reflecting on one's own learning are essential aspects of being an independent learner.
University of Nottingham (2017)	The ability of taking control of work. It is about deciding what students need to know and deciding how they are going to study.
Cardiff University (2017)	The learning guide suggests that independent learners are motivated to learn, can manage their own time and take time to reflect on their learning.
University of Kent (2017)	Being an independent learner means to work on your own a lot more, to set your own goals, tracking down resources and taking responsibility for producing the goods on time.

	It is the student's ability to self-monitor – to form a realistic view of his/her own progress, to learn from mistakes, to listen to feedback, then to adjust his/her own approach.
Lancaster University (2017)	Independent learning means developing a range of skills, including: managing time and resources, making the most of face-to-face learning opportunities such as lectures, finding, evaluating and selecting information, thinking creatively and critically, and knowing when and how to seek support with study.

As seen from the table, there is inconsistency in terminology, even at an institutional level. However, almost every work that has been written on independent learning highlights the same themes. Students' control, self-efficacy, motivation, working together, and active participation are the general concepts to describe independent learning. The following points can be noted from the literature:

1. Independent learning is the shift of responsibility for the learning process from the teacher to the learner (Garrison, 1997; Chan, 2003; Palfreyman, 2003; Hughes 2001; and Meyer, 2010). Previous definitions refer explicitly to the students' freedom to act; this involves freedom of choice in determining objectives, and freedom of process to carry them out, and accordingly requires the learning process to be student-centred. As students are the centre of the learning process, they are perceived as decision makers who have, or will develop, the capacity to choose from among available tools and resources to learn. This will therefore require them to be motivated to learn, and confident in their ability to learn. Academic confidence, or self-efficacy is an individual's belief in their capacity to perform a given task, stemming from a cognitive appraisal of personal and environmental factors (Schunk and Pajares, 2004). This means that independence can positively contribute to build students' self-confidence as they became able to develop an understanding of their learning and able to structure their learning environment. Moreover, the Open University (1984) offers another dimension that empowers learners in their learning;

learning independently means working with less direct supervision or support. This view is supported by Meyer (2010), who assigned a different role for the academic staff who act more as a facilitator rather than as the traditional imparter of knowledge and skills.

2. However, as Atwood (1974) says "the independence we are talking about is independence from constant supervision and direction, not isolation from the teacher and others who function as resources, guides and motivators". It is about identifying our own needs and capabilities and knowing when, and often where and how, help is needed. Furthermore, Kesten (1987) proposes collaborating with other learners as an important feature in independent learning. Similarly, Palfreyman (2003) suggests learners should work together for mutual benefits. Being an independent learner does not mean 'learning on your own' or in an isolated way. Independent learning may include situations of group learning where activity may be collaborative and individual learning outcomes similar (or different) but each reached independently (Meyer et al., 2008). It does not need to be seen only in terms of learning in 'isolation' but also within a community of learners.

These points clearly place the responsibility for learning in higher education on students in the first place, aided by teaching staff and defined by the limits and objectives of the programme. We can deduce some similarities from the above definitions. The first is that most of these researchers agree that independent learning is controlled by students. The second is that this control will require active engagement in learning which brings about a change. The third point, which is commonly shared by all researchers, is that such change leads to more responsibility.

Although we found several similarities in the definitions, there is also lack of understanding of how the transition into independence occurs in different disciplines.

Research on learning in higher education shows that "what the student does is actually more important in determining learning than what the teacher does" (Shuell, 1986).

Considered in this light, it is hard to pin down a definition with which everyone agrees. But it perhaps safe to say, as the above definitions indicate, that what we mean by independent learning is "a process that students carry out in collaboration with others for the purpose of developing and shaping their own learning outside the official learning time, but contributes to their programme of learning outcomes without direct and constant supervision".

II.I.III. Concerns about independent learning

Learning can only happen if learners want to learn, despite all the learning material and input provided by tutors (Thornbury, 2000). Moreover, learners, especially those who have been exposed to teacher-directed learning for years, may resist accepting being the centre of the learning process (Doyle, 2008), and accordingly cannot be expected to make the leap to learning independence without guidance (Meyer, 2010).

In accordance with Thornbury (2000), the success of independent learning is not based on imposition and forcing students to learn, instead, the techniques of motivation and encouragement need to be used. This means that, in order to facilitate transition to independence for students, we have the responsibility of promoting engagement within the discipline being taught. Krause and Coates (2008) support these claims and suggest that even though students are expected to be responsible about their learning, it is the educators' responsibility to prepare the best environment that makes learning possible and affords opportunities to learn.

Engagement in learning, as a vital aspect of independence, is not limited to the time and energy students invest in educationally purposeful activities, but also represents the effort institutions devote to using effective educational practices (Kuh et al., 2008).

Coates (2007) highlights the role of institutions within higher education in promoting engagement. Higher education institutions should be prepared to adapt to changing student expectations and show respect for all students from diverse backgrounds and to offer learning support services. Tutors should be available for consultation outside class time (Coates, 2005), and they should be able to link learning materials to students' personal experience and interest (Hu & Kuh, 2002).

But how could students be independent while seeking help from others?

In learning theory, Vygotsky (1978) identified two distinct levels of learning: the actual development level of the learner, and a potential development level which could be reached with the assistance of adults or capable peers. He described the difference between these two levels as the "zone of proximal development" (ZPD). The ZPD refers to that metaphorical space between what learners are able to do on their own and what they are able to do through the help of a more knowledgeable or experienced other.

The Vygotsky (1978) model of ZPD offers an explanation for the link between learning independence and collaboration: getting help in the present means that the learner will be able to work alone later, becoming more independent. This constructivist lens requires a constant interaction with one's learning environment. Consequently, students in the design studio are socially active constructors of knowledge, sharing this knowledge by externalising it (i.e., producing, presenting, and discussing their design work), internalising it (i.e., taking feedback, rethinking, and reflecting on it), and then externalising it again.

The design studio is more than just a room in which to work or study; rather, it offers students an experience and learning culture of its own. Unlike traditional learning environments – which at any given moment are either empty or being used by students and faculty for learning and teaching – many studio environments continue as learning

and teaching environments beyond the designated 'class time', when the instructor is not present. In fact, many architecture programmes encourage students to continue to work in these spaces outside of the designated course hours, without their design tutors (Lueth, 2003). The design studio thus functions as both a learning centre and a complex social setting. In this study, we refer to both the designated learning/teaching physical space and the design module itself as 'the design studio'.

While Vygotsky's work mainly discusses children, the same processes can be seen operating in the learning adult (Tharpe & Gallimore, 1988). Vygotsky's argument is simply understood as a way of collaboration in the learning setting between the tutor and student. Learning requires teacher modelling, explaining, and asking the student for explanations because these verbalisations by the teacher are the basis for the student's self-questioning, and explaining of concepts when studying and reflecting (Vygotsky, 1978).

He goes further and explains that in working with others in a social educational setting, whether tutors or peers, learners would be able to achieve goals and tasks that they would not be able to accomplish on their own, and once the learner had reached this new level of development, they would be able to achieve this on their own in the future. ZPD is different from one student to another, and every learning experience changes this zone, and accordingly, the current zone of proximal development will transform into actual development later. Accordingly, what a student can do independently will expand gradually.

However, Marshall (2008) draws our attention to an important point, which is that guidance and support from tutors should be progressively reduced until the learners can make their learning decisions independently. This shows a transition from external guidance by the tutor, through shared guidance between the teacher and the learner, to internal guidance by the learner only.

According to Kesten (1987), the tutor is expected to be a guide, a mentor and a facilitator in the learning process and to be involved in assisting student learning; the tutor allows students to achieve their aims, to be aware of their responsibility and to maintain passion in learning. Moreover, a critical educator has to help students to speak with their "authentic voices" and by doing so to "define themselves as authors of their own world" (Ellsworth, 1989). To make this happen, Krause and Coates (2008) suggest educators should engage students in various activities that contribute directly and non-directly to their learning achievements and to their sense of belonging to the academic community, such as in leadership roles in student mentoring or study group facilitation. In their study on school engagement, Fredricks et al. (2004) suggest that students' engagement can take many forms; students are behaviourally engaged when they are involved in the learning process, and invest their time and effort to participate in learning activities. They are also engaged on a cognitive level when they face challenges and would seek to go beyond the requirements of the task being given. And lastly, emotional engagement happens when they exhibit interest and enjoyment in their own learning, and when exhibiting a sense of belonging to the school and the subject being taught (Fredricks et al., 2004; Kahu & Nelson, 2018; Krause et al., 2008; Kahu et al., 2015).

It is widely suggested in the literature that when students are fully engaged in their learning they will not only acquire skills and knowledge but will also experience personal development, which, in turn, facilitates more independence and progression opportunities after leaving higher education (Kahu, 2013; Carini et al., 2006; Thomas, 2012). In this way, engagement leads to a better learning experience and accordingly, the more engaged and independent the student is, the more success is expected.

II.I.IV. Challenges and tools of independent learning

Although all the previous definitions agree upon a shift to more responsibility of learning, it is reported that many students initially lack the strategies and planning skills to achieve

this in practice (The Nuffield Review, 2004). Murtagh (2010) in a research study with first year students and their lecturers highlights a lack of understanding on the part of students on what is expected from them while transitioning into higher education. Higher education staff tend to consider the responsibility for learning to be primarily the students (Crabtree et al., 2007), while, on the contrary, some students consider that lecturers have the greater responsibility for their learning (Murtagh, 2010; Killen, 1994).

In a study on independent learning from the academics' point of view, Thomas et al. (2014), highlighted the need to examine independent learning from students' perspectives and to explore the qualitatively different ways that students use to become independent learners. A broader perspective has been adopted in a later longitudinal study by Thomas et al. (2015), who found that students had a limited understanding of independent learning and under-estimated the difference between independent learning in higher education and school or college. It was found that students from different disciplines were surprised by their responsibility for the contents of their learning, and that their independent learning was not monitored. However, the study has not identified significant differences between students in different disciplines and highlighted the need for mixed methods research to identify disciplinary differences. The literature identifies a number of challenges in implementing independent learning and also suggests some solutions. There is, however, very little in the literature about how independent learning, should be promoted and communicated about (Thomas et al., 2015).

Meyer (2010) classified independent learning challenges into two categories: challenges that are tutor-related and challenges that are student-related. In brief, tutors' perceptions of how students learn may not correspond to the conceptualisation of independent learning. Students also may resist the introduction of independent learning or may misunderstand or abuse the freedoms associated with its introduction, which makes the implementation of independent learning challenging (Meyer, 2010).

These challenges were discussed in detail in mixed methods research conducted by the National Union of Students (Student Experience Research, 2012). The research consisted of a multi-method approach combining the breadth of a national online survey, along with an in-depth qualitative approach through in-person focus groups at eight locations nationally, followed by an online discussion group to validate the findings. In the study, students were asked what they understood by the term 'independent learning'. For around a quarter of students independent learning was not explained to them, but it is a term which is familiar to them. A few students mentioned that it was formally talked about in an induction or lecture/seminar and a similar proportion said that it is often referred to by lecturers and tutors when discussing the importance of reading around a subject. In terms of learning support, when asked how supported students feel in their independent learning, opinions were mixed. Almost a third felt somewhat supported, 45.7% totally supported and few felt that they were not at all supported.

McNair (1996) recognises four types of skills required for fostering independent learning; some of these skills are tutor-related while others are learner-related.

1. Metacognitive skills

   Any skill that enables students to recognise the link between themselves and the perception of personal control over activities need to be developed. Examples of such skills are the self-assessment, monitoring and planning processes which are evident in the behaviour of the learner. Tools to develop these skills are found within notions of recording achievement, action planning, and discussions of module or programme choice with personal or academic tutors.

2. Self-awareness

   As it is not possible for the tutor to know each learner intimately, then it is essential that the learner is the one with the detailed knowledge of his or her

needs and aspirations which will be constantly reconstructed in relation to new experiences and environments.

3. Personal management skills

   These skills require student's recognition of personal resources and lack of them, and the ability to assess the demands of the task to be undertaken. In addition students must recognise the need to seek help from others when required.

4. Academic skills

   Academic skills are those generic and transferable skills that underpin higher education learning, enabling students to become confident, independent, critical thinkers and active learners. Accordingly, ongoing support and feedback about progress must be available to students from their tutors. These academic skills are related to the guidance provider (tutor), while the previous ones are learner-related.

The College Higher Education Toolkit (2015) recommended a number of suggestions about how students could understand what it means to be an independent learner:

1. Students should be encouraged to discuss with tutors their expectations of the course, how they are expecting to be taught and assessed.

2. To develop learning communities outside scheduled contact time, through reading groups and study groups for peer tutoring at programme level, to give clear guidance about what is expected of students.

In a previous study, The Higher Education Academy (2014) illustrated differences between disciplines in terms of learning independence. Students of humanities and social sciences show higher levels of autonomy than students in the sciences. In the science subjects there is often less scope to choose assignments or research topics, and students may be required to work on tasks and topics set for them right up to doctoral

level; in the humanities and social sciences, however, there can be much more autonomy in choosing learning and assignment tasks and topics, even from the first year of study.

In a later diary study commissioned by the Higher Education Academy (2015) and undertaken by the National Union of Students (NUS) and Liz Thomas Associates (LTA) it was found that students individually developed their understanding of independent learning, via trial and error, rather than it being transmitted to them by a disciplinary community.

Taken together, these skills, whether related to students or tutors, suggest that students need to understand and accept their position as the centre of the learning-teaching process, and that tutors should facilitate and support learning by providing ongoing formative and summative feedback and conveying to the learners that learning independently is as important as the content learnt (Marshall, 2008). Additionally, tutors should provide activities that promote students' engagement academically and non-academically. In this way, institutions will be more effective and efficient in fostering independent learning in higher education.

II.II. Learning Independence in the Design Studio

Studying architecture at university is acknowledged to cause a fundamental shift in learning mode, thinking and attitude on the part of students in their transition from school (Rodrigo, 2010). Dutton (1987) stated that design studios, unlike typical classrooms, are active learning environments where students are engaged socially and intellectually in different sets of activities, such as model making and drawing, while shifting between analytic, synthetic, and evaluative models of thinking. As Pressman (1993) points out "I believe that in architecture perhaps more than any other field, students must become progressively independent and responsible for their own education at an extremely early phase".

II.II.I. What is the design studio?

Traditionally, the practice of architectural design is learnt through a project-based 'studio' approach. The current state of the architectural design studio can be traced back to both the atelier of the Ecole des Beaux-Arts (The School of Fine Arts) in Paris in the 19th century as well as the Bauhaus after the First World War (Chafee,1977).

The design studio describes the architectural design course which the architecture student takes to earn a degree. In architectural education, the design studio is the nucleus of the architectural programme; it is the most dominant subject with the highest credit hours per week. According to the European Association for Architectural Education (EAAE), the curricula of schools of architecture include between 25% (in the more engineering-oriented schools) to 60% of design studio activities. It aims to produce students who 'think' like someone in the design field, to be reflective practitioners (Schön, 1983) and think and act in designerly ways (Cross, 1982).

The meaning of the design studio in architecture is not limited to the course; the design studio also describes the space where the student or the professional architect produces his or her design work as well. The UK Quality Assurance Agency for Higher Education (QAA) Benchmark statement describes the word studio as meaning:

> *Much more in architecture education than a convenient workroom. It evokes an image of creative cooperative working in which the outcome: the architectural design and the educational benefit in terms of skill development, is greatly superior to that which could be achieved by the individual student working alone.*

In other words, the design studio is more than just a room to work or study in, but a place that offers students an experience and learning culture all of its own. And unlike other traditional learning environments, which at any given moment are either empty or combine students and faculty who are learning and teaching together at a specific time, many studio environments continue as a learning and teaching environment beyond the

designated "class time" when the instructor is not present. In fact, many architecture programs encourage students to continue to work in these spaces outside of the designated course hours without the presence of their design tutors (Lueth, 2003), accordingly the design studio functions both as a learning centre and a complex social setting. In this study, we refer to both the designated learning/teaching physical space as the design studio as well as the design module itself.

II.II.II. Features of design studio learning

Teaching in the design studio is not lecture-based, throughout the studio students undertake a design project under the supervision of a studio tutor, and learn by constructing solutions to open-ended, complex, and ill-structured problems, rather than by listening passively to lectures. The design project is more like a virtual reality version of an architectural project (Chen and Heylighen, 2006) and is considered to be the most useful vehicle for attaining the real-life design skills and developing the designerly working habits as a hypothetical problem-solving process (Teymur, 1993).

They are supposed to investigate the design problem and to explore precedents in order to create a knowledge base for their design proposal. The major resources of knowledge are the other theoretical courses provided in the educational programme, in addition to the students' personal interpretation of, and interest in, the design brief. Therefore, students need to integrate all forms of knowledge and skills as they learn in the design studio, which requires them to take control of their learning and be confident in their learning ability.

Thus, to further the discussion of independent learning in the design studio context, the research offers the following four key features derived from analysis of the literature on learning in the design studio:

1. Dealing with open-ended problems and unpredictable solutions:

Learning design, unlike many other topics, is fundamentally based on tackling problems rather than acquiring theory and then applying it; moreover, the design process is endless, and a design problem has no correct answer (Lawson, 2006). In most other courses, unlike the design studio, when problems are given the students know that a solution has already been determined. Where problems are presented, they are usually solved by applying a body of acquired knowledge to the problem according to a learnt method. In contrast, the design studio offers problems without known results. Some technical aspects of the design problem may be predictable within certain limits, but the precise solution is expected to be original. This means that students are typically confronted, often initially as a surprise, with the reality of there being no definitive or determinate solution, instead only a range of approaches. Moreover, while designing the problems generally grow more complex, more factors are expected to be addressed, and the solutions grow more sophisticated which presents an additional challenge (Nicol & Pilling, 2000). Students' responses are likely to be unique and individualistic, and generally the initial response generates a further set of questions that need to be answered (Architecture Benchmark, 2010). Students may also 'get stuck', meaning that the particular design iteration they are working through is exhausted or has reached a dead end. At this point, a student may need to abandon a concept and be open to alternative ones (Arida, 2010). Accordingly, a student, in response to the design problem, may produce dozens of design proposals before the final design solution is arrived at. This situation, for students at an early point in their studies, can prove a daunting and confusing period as they frequently lack confidence in their learning ability (McClean, 2009).

2. Learning by doing:

For a beginning student, learning in the design studio can be mystifying; it may not be very clear what the instructor/tutor expects the student to do. Students found themselves in the design studio and are expected to learn and design successfully. At the same time, the design tutor cannot really explain design until the student has already begun generating a response to the design problem, creating a basis for the beginning of collaborative learning activity. Schön (1983, 1985, and 1987) has discussed learning design as a process of "reflection in action" and notes the oblique way in which the studio tutor challenges students to enter the design process. In return, students generate design solutions/proposals as a response to these comments. Accordingly, the collaborative activity between the student and the tutor and the conversation between them becomes the means of this learning, requiring students to continually reflect on their work both alone and with others: most significantly with their design tutors (Webster, 2004). These conversations are an important element of learning and teaching, ranging from the *desk tutorial* (one-to-one) and the *group tutorial* to *formal crit/review* (jury critique), where tutors suggest changes and refinements on students' work, and make critical comments, or simply raise questions on its development (Roberts, 2004). The main aim of these conversations, in their different forms, is to make students grasp that architectural design is a process of reflection-in-action, and also to enable them to learn to do this by themselves (Yanar, 1999).

3.   Critique culture:

In addition to the one-to-one tutorial and group tutorials, the crit or the review is another powerful tool to get feedback from the design tutor and professionals. It was from the Ecole des Beaux-Arts that the crit was first developed in a closed jury format where students were encouraged to study the classical orders and 'model' their designs on the classical architecture. This process of following a

tradition excluded students from any form of self-expression. The Bauhaus school on the contrary, transformed this closed crit into an open review where those interested in the work could discuss it (Flynn, 2005). This change moved the student more into the centre of the learning process where the student's own opinions on the use of materials and how space might be formed were sought by the tutors and external reviewers.

Blair (2006) describes the crit as a main formal point for assessment providing regular guidance and support to students. The studio crit allows an opportunity for a verbal exchange between the student, his/her peers and their tutor, and a critical analysis of the presented work with an explanation of the thinking process the design student has gone through. In crits, students display their work, drawings and models and engage in a discussion with critiques about the work and get feedback from them. Students are expected to reflect on the comments received during the crits and use them to develop the work even further. The importance of the crit is not limited to assessing students' work and how far they were able to acquire and apply knowledge in the form of the design solution, but also aims to offer students the opportunity to acquire more knowledge by offering them sufficient framework for guidance, either to complete their projects or to consider such knowledge in future projects (Salama & El-Attar, 2010).

However, almost every research study that has been written on the design crit includes a section discussing its stressful nature to students and its subjectivity on the part of critics/reviewers (Anthony, 1978; Flynn, 2005; Salama & El-Attar, 2010; McCarthy, 2011; Sara & Parnell, 2013; Volakos, 2016). Instructors from different backgrounds can give students differing feedback which may cause confusion on the part of students. Flynn (2005) explains that the crit might lose

its aim for different reasons, for example, when the tutors' comments can be overly negative, or the language being used by tutors is too obtuse to be understood by the student. On other occasions students may not be given the opportunity to be involved in the discussion about their work, either because of the tutor or because of the setting itself; i.e. the crit is too crowded and students' work cannot be seen.

In her analysis of the design crit, McCarthy (2011) draws on an extensive number of focus group interviews with architecture students showing that while design crits may cause anxiety to them, they are still seen as a highly valued learning tool, and more importantly, a unique element of design education which students appreciate. This view is supported by Sara and Parnell (2013) who write that while students are aware of the crit's potential as a learning tool, many students experience the crit as a fundamentally stressful, fear-inducing event

4. Social communication within the studio:

Williams et al. (2007) have argued that "learning is socially constructed, and architectural practice involves social practice". Therefore, "authentic learning requires dialogue with others" (Challis, 2002). Accordingly, the learning environment functions both as a learning centre and a complex social organisation. This is also valid for design studios and it can be claimed that this is the most essential characteristic of design studios. In the studio, students learn a lot about architecture and how it is taught from observing the class above them, and through the informal learning that happens between students in the same studio. As a result, communication, with and without the presence of the design tutor, is a key word in defining learning in the design studio. As Wender and Rogers (1995) claimed, the significant component of a design studio in architectural education is the verbal interaction between the occupants (student to student, student to tutor). Communication with others exposes students to a

diversity of points of views (Parnell, 2001), and enhances participants' self-awareness and their self-critique (Brookfield and Preskill, 1999); it fosters an appreciation among participants for the diversity of opinion that invariably emerges when viewpoints are exchanged openly and honestly, and accordingly increases understanding and renews motivations to continue learning (Brookfield and Preskill, 1999)

In his doctoral study, David McClean's (2009) work sets out the case for the development of individual independent learners in UK architectural education through their relationships as a cohort. In the study the importance of the peer group as a vehicle for studio-based learning and pastoral support emerged strongly. This feature of the design studio was positively reported in a progress report of studio culture in the UK (Vowels et al., 2012). Both staff and students appreciated the role of peer learning that happens in the studio and its role in supporting the fundamental shift in thinking, especially at the first year in architecture school. Both the social dimensions of studio, and the opportunities for collaboration and sharing, act as stimulants to learning (Parnell, 2001).This view is also supported by Thompson (2017) who holds the view that the design studio supports a sense of belonging among students and that this feeling has a significant impact on the shaping of architectural identities throughout one's education.

II.II.III. Notes on Learning in the Design Studio

The points presented in the previous section suggest that the process of learning through projects offers the student autonomy in learning and gives them the opportunity to be active learners.

This view is supported by Clune (2014) who points out that the studio appears as an ideal environment for developing lifelong learning as it encourages independence,

reflective analysis and critical thinking. It also fosters several skills according to Henry (1995) including the following:

1. Self-direction – the capacity to carry out a competent piece of work independently.

2. Inventiveness – the creative use of resources, methods and explanations.

3. Decision-making skills – deciding what is relevant and what is not.

4. Problem-solving abilities.

5. Integrative skills – the synthesis of ideas, experience and information from different resources.

6. Interpersonal communication skills – communication with others.

However, a few negative aspects can be spotted from the literature on learning in the design studio. The design process can be experienced as both irrational and absurd (Siegel & Stolterman, 2009) and students may rely on the tutor to provide architectural knowledge related to the design problem and expect the brief to have clear instructions to be followed, rather than having variables to be explored individually. The design studio assumes the mastery of the tutor and the student has to believe in the power of his tutor (Salama, 2005). This can be seen in Schön's analysis of the design studio, in which he placed the student as a passive receiver of her tutor's non-questionable knowledge, and accordingly teaching is reduced to a one-way flow of knowledge (Yanar, 1999). In this scenario the tutor is not at any point making an effort to understand whether the student agrees with him and instead of suggesting some alternative ways of seeing and doing things or directing the student to construct alternative ways of setting the problem, the teacher gives solutions (Yanar, 1999). Moreover, as the design tutor is the one who decides what the studio project is, and defines its objectives, he/she positions the students as passive learners who do not control any valuable aspects in their learning process (Bakarman, 2003). This asymmetrical relation of power (Dutton, 1987) is widely

discussed in the literature on architecture education as it may negatively affect the learning process (Anthony, 1991; Parnell, 2002; Salama, 2005; Webster, 2007). The architectural studio model has its own culture and values that are as influential in a student's education as the actual projects they complete. Thomas Dutton (1991) has called the consequences of this culture the "hidden curriculum" of studio learning in an indication of the unstated values, attitudes, and norms that stem from the social relations of the school and classroom as well as the content of the course. This culture is passed on throughout the years, and patterns are built upon generations of students, educators, and practitioners.

In a report of the American Institute of Architecture Students, Koch et al. (2002) described studio culture as the experience, habits, and pattern found within the architecture design studio, which students throughout the globe generally obey and accept. Among those aspects, full devotion to the studio is compulsory for acceptance in the architecture community, and architecture is the product of individual artistic struggle. Table 2 shows a set of more myths, culturally reproduced by students, alumni, and educators, as published in the AIAS report (Koch, 2002).

Table 2: AIAS studio culture task force (2002)

Design Studio Cultural Myths
Architectural education should require personal and physical sacrifice
The creation of architecture should be a solo, artistic struggle
The best students are those who spend the most hours in the studio
Design studio courses are more important than other architecture or liberal arts courses
Success in architecture school is only attained by investing all of your energy in the studio
It is impossible to be a successful architect unless you excel in the design studio
Students should not have a life outside of architecture school
The best design ideas only come in the middle of the night
Creative energy only comes from the pressure of deadlines
Students must devote themselves to the studio in order to belong to the architecture community
Collaboration with other students means giving up the best ideas
It is more important to finish a few extra drawings than sleep or mentally prepare for the design review

It is possible to learn about complex social and cultural issues while spending the majority of time sitting at a studio desk
Students do not have the power to make changes within architecture programmes or the design studio

Studio culture may negatively influence the mentality of students and promote certain behaviour and patterns (Abdallah et al., 2011). Collaboration and social communication is an essential part of independence, however, some myths promote working in isolation as collaboration might result in giving up a student's best ideas. This also is a call for not exchanging ideas or expertise between peers. Students also lack power of change and do not have any control over the learning process within the design studio, which makes them less engaged in terms of learning, and accordingly may affect their independence. Out of these 14 myths six items are related to time management and students spending most of their time at the design studio. This indicates that spending time in the studio is the best way to learn design, which may limit students looking for external learning sources. This in return contradicts the independent learner who looks beyond the given material and looks for additional sources of knowledge beyond the design studio.

To encourage independent thinking, however, studio tutors should be aware of their responsibility of creating an appropriate environment in which students could take the lead in controlling and developing their design learning and share the responsibility together. It is necessary to make it clear to students that their work needs to reflect those deeper higher-level processes. These include processes of analysis, synthesis, and evaluation (Light et al., 2009) and is not limited to spending time in the studio imitating the tutor or copying others.

McLaren (1988) was able to identify three categories of tutor. The first type of tutor is the 'entertainer' who has an informative teaching style but makes little attempt to interact with students, which stimulates superficial learning, and accordingly students will remain unreflective learners. The second is the 'hegemonic overlord' who tends to impose certain views on the students; the tutor's style is highly prescriptive and accordingly

students will not be engaged and not encouraged to respond to the tutor's comments. The third category of tutor is the 'liminal servant' who is interested in assisting his/her students to construct their own knowledge through critically reflective dialogue. In a study on design tutors, students expressed the view that their ideal tutor must have several characteristics like those of the liminal servant (Webster, 2004).

Also, the development of self-assessment is required as it enables the students to feel that assessment is not a control mechanism but a natural feature of learning, as this ability to self-assess represents a transition from dependent tutor-led learning to independent lifelong learning (Nicol and Macfarlane-Dick, 2006). To overcome negative feelings about assessment, Salama and El-Attar (2010) suggest three points; they recommend that design tutors should be aware of the true reasons behind the crit system which should be concerned with educating the student and fairly assessing their performance. Also, tutors should have a clear criterion of evaluation and share it with the students. And finally, to weaken or even remove the grading power of external jurors, such that the educational values of the jury may increase. Volakos (2016) adds an important suggestion to strengthen the value of the assessment, which is encouraging students to engage in their course mates' crits and to teach them how to express and exchange both positive and negative opinions though the process.

To conclude, it can be said that learning in the design studio has some factors that guide students in their journey towards independent ways of learning. These factors can simply be categorised into two groups: course-related factors, and student-related factors.

Course-related factors:

1. The aim of the design studio is to develop a unique and personal process of discovery for each student and to promote critical, creative and pragmatic thinking (Ibrahima et al., 2012; Koch et al., 2012; Dutton, 1987).

2. Dealing with design problems develops various skills students can apply in future courses and in their careers (Koch et al.; Yanar, 1999; Clune, 2014) and integrates different forms of knowledge in order to propose a design solution (Lueth, 2003).

3. The fact that the tutor cannot help the student unless the student tries to take the first step and produce a solution initiates a shift from teaching to learning. The guidance of the design tutor functions as Vygotsky's 'Zone of proximal development' in which students progressively internalise a design process they can first carry out only with the help of their tutor.

Student-related factors:

4. Students can benefit from communicating with others; students learn from their tutors and from working with each other or from other students from different years and levels (Lueth, 2003; McClean, 2009; Vowels et al., 2002).

5. The uniqueness of design problems, and the nature of the design process itself require the students to be self-confident, and to be aware of what he/she is learning and how (Koch et al., 2002).

Based on the above discussion, it can be argued that there is no correct and definite way to teach design, and hence to learn design, which reflects the studio uniqueness as a learning setting. The process of designing and producing refinements and alternative design proposals is believed to increase the efficiency of the design process and lead to better quality solutions (Bucciarelli, 1996; Lawson, 2006); social communication with peers can positively enhance the learning process (McClean, 2009; Vowels et al., 2012) and presenting at crits offers students additional opportunity to acquire more knowledge which they can apply in future design projects (Salama and El-Aattar, 2010). Accordingly, these aspects of the design studio offer a great opportunity for learners to develop independence in a short time. However, Parnell (2001) noted that students at their first

year are expected to be surprised, if not shocked, with the new mode of learning where students learn by doing and required to adopt and adapt a new learner identity in relation to the tutor.

In view of all that has been mentioned so far, and for the purpose of this thesis, independent learning in studio-based subjects may be defined as "a process of transition for students from a tradition of vertical thinking fostered by their previous education, to a point where they can construct solutions to open-ended, complex, and wicked problems, and accordingly practice design independently, through passing a series of changes in terms of how they think/learn and with whom they interact or learn from".

II.III. Summary

The chapter shows that independent learning occupies an important place within the literature which attracts increasing attention in the context of higher education in the UK.

It is agreed in the literature that the transition into higher education in general, and independent learning in particular, is challenging for students. Independent learning needs to be underpinned by monitoring to identify students who are struggling and in need of support. There is also a need to clarify with the students the difference between higher education and previous learning in school and college; individual responsibility for learning needs to be explained and practised. One must also develop understanding of the teaching and learning requirements of different disciplines in order to better promote learning independence.

Another important conclusion drawn from the review of the literature has been that little prior research has been conducted to examine the issues of independent learning within the context of architecture and especially from the point of view of first year students. There is seeming a consensus on the need to develop students as 'independent learners', yet there is no simple definition of what that means. The researcher is not aware of any academic studies that define independent learning in the design studio, or

how the uniqueness of design problems promotes independent learning in students during their first year at architecture school. This accelerates the need for more research efforts and investigations within this particular context. The research argument is that understanding how first year students experience design, and how they progress towards independent learning in the design studio, could greatly enhance the way students learn. As part of this process, it is also important to recognise the changes that occur to students' learning in relation to different stages of design process.

In pursuit of this understanding, the research study intends to cover the aspects contributing to the individual student's independence in the design studio. It will investigate the barriers that prevent students from transitioning into learning independence and what perspectives they hold regarding this issue. Accordingly, the following chapter will present how the research obtained the students' perspective on independent learning, identify the research methods and indicate how data was collected and analysed in order to explore our understanding of the transition into learning independence within the design studio context.

CHAPTER THREE
Methodological Framework

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Methodological Framework

In the previous chapter, we reviewed the literature related to independent learning in higher education and within the design studio context to explore how project-based learning may contribute to students' learning independence. It was found that the transition into higher education in general, and independent learning in particular, is challenging for students especially when they must cope with a new learning identity and working in a learning environment with which they are not familiar, such as the design studio. It was also found that few studies have been conducted to understand how transition happens in architectural education. To elaborate on this, it is first necessary to understand the transition process, as seen through the eyes of students themselves, and to explore the barriers and challenges they face during transition. This will form the basis for discussion on how the design studio facilitates this transition and enable understanding of how learning independence can relate to success in architectural design education.

The aim of this chapter is to describe the methodological aspects of this study. Its sections are logically ordered to reflect the design process. The first section introduces the research questions. This leads to a discussion of finding the best methodology together and the rationale for the choice of approach. The chapter then addresses the two components of the study and the processes of data collection and analysis. A description of the research phase is then presented. The chapter ends with the challenges and ethical considerations.

III.I. Research questions

The purpose of this thesis is twofold. First, the research aims to develop a better understanding of the learning issues associated with students' transition from dependent to independent learning. Second, the study provides an important opportunity to advance

our understanding of the evolving conception of learning within the context of the design studio, by analysing students' accounts of their learning process during their first year in architecture school. The primary research question is as follows:

What are the perspectives of architecture students on their adoption of independent learning?

With this in mind, the thesis more specifically addresses the following research questions:

1. What are the key elements in design that support the development of independent learning?
2. To what extent does the practice of independent learning change over time?

III.II. Choosing a methodology

Many studies in the field of education focus on developmental issues, such as how individuals change over time (Shirish, 2013). Although the question of independent learning is asked in higher education reports (HAE, 2015; QAA, 2015; NUS, 2012), there is a need for such a study in studio-based fields in particular. As there are few data available on this phenomenon, it was clear that obtaining information in our case was essential. Thus, this work began with a consideration of the kind of information required and the best tools for obtaining it.

Having examined the literature on independent learning and described the nature of design studio education, it was necessary to identify how these two could be brought together as narratives of students' evolving conceptions of independent learning within the design studio context. This research aids understanding of learning experiences associated with students' transition from dependent to independent learners by analysing their accounts of their learning process. The research questions thus require an approach that enables students to convey their points of view over an extended period

of time. Rather than attempting to impose definitions, or barriers to independent learning from the literature, the purpose of this study is to learn how these students understand their experiences of learning transition in their first year of architecture school. This reliance on researching in depth and over time is an important feature of the study.

With respect to our focus and the need for in-depth knowledge, the methodology for this research should address the following issues:

1. It should help to understand the learning transition process through the eyes of students.

2. It should explore whether a measure of learning independence can relate to/predict success in architectural design education.

3. It should provide knowledge about the ways in which the design studio affects this transition.

4. It should nevertheless be flexible and allow for the emergence of new ideas and avoid early use of theories and concepts.

III.III. Developing the methodology: a mixed-methods study

Learning independence is investigated in various ways in the recent literature. Some studies rely on quantifying learning independence by asking participants to fill in self-report questionnaires (e.g., Henri et al., 2018; Scott et al., 2015), whilst other studies utilise qualitative data, such as participants' learning journals, diaries, interviews, and open-ended questionnaires (e.g., Hockings et al., 2018; Hamad, 2018; Thomas et al., 2015; McClean, 2009). Other studies take mixed-methods approaches (e.g., Brooman and Darwent, 2012; Morris, 2011; Xhaferi & Xhaferi, 2011).

In line with the previous studies and above research questions and methodological requirements, this thesis adopts a methodology that combines qualitative and quantitative methods. The rationale for this is that neither quantitative nor qualitative

methods are sufficient by themselves to capture the full range of trends and details of the problem in question. When used in combination, quantitative and qualitative methods complement one another and allow for more complete analysis (Green et al., 1989; Tashakkori & Teddlie, 1998).

As Johnson et al. (2007) explain:

> *Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e. g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration.*

Qualitative research involves the collection, interpretation, and analysis of subjective data, such as what people do, feel, or say (Schwandt, 2007). In this method, participant observation, individual in-depth interviews, and focus groups are employed to gather the opinions and feelings of the participants. The data are subjected to a process of interpretation in which the researcher endeavours to extract meanings and attribute it to specific social or human problems (Denzin, 2005). The analysis of this data requires the content to be categorised into common elements so that emerging themes can be identified. The findings of qualitative research are informed by emerging themes and consideration of the significance of these themes.

A quantitative research method employs processes of counting and measuring of predominantly hard objective data. It can be used with large or small groups to test objective theory by examining variables and making comparisons between them (Creswell, 2009). Although questionnaires are sometimes used in quantitative research, participants are provided with a limited number of predetermined response options so that the data can be measured quantifiably. Instruments are often used for collection and statistical analysis of quantitative research data. Accordingly, combining qualitative and

quantitative research components thus expands and strengthens a study's conclusions and thus makes more valuable contributions to the literature.

The research for this thesis benefited from a number of qualitative interviews. However, this can be time-consuming and, as such, is most suitable for researching smaller numbers of participants. Therefore, a quantitative student survey was employed to provide a mechanism for the collection of a large amounts of objective data from a manageably sized sample group of 40-90 participants, providing considerable breadth to the study. Moreover, this combined methodology enabled us to make inferences as to how the students developed as independent learners over time.

The study of change over time is the main feature of longitudinal studies. Ritchie and Lewis (2003) define a longitudinal study as one which involves more than one episode of data collection. Similarly, 'The Encyclopaedia of Survey Research Methods' (2008) defines a longitudinal study as one in which the research settings involve multiple follow-up measurements – on achievement, performance attitude, or perception, for example – for a random sample of individuals, over a period of time and with logically spaced time points. In our research, we will use repeated qualitative and quantitative measures with the students, as a longitudinal study provides the most reliable data on change in knowledge or attitudes (Holland et al., 2006).

Table 3: Features of longitudinal research (Holland et al., 2006)

Features of Research	
Purposes	Description & understanding of a specific situation Reporting of participants' perspectives Portrayal of events in subjects' terms
Foci	Perception & views of participants
Key Terms	Regularity Authenticity Exploration & rich reporting of a specific context
Characteristics	Wide database gathered over a long period of time Can collect both qualitative & quantitative data Commitment & dedication from participants

Time	Time/periods between waves can differ according to the study purpose Time-consuming to process data
Data	Student's opinions & views (semi-structured, in-person interviews) Questionnaire, diary, documents

Ethical Aspects	Ethical approval is required
	Main benefits for students:
	     Carries students' voices
	     Gives opportunity to tell their story

III.IV. The quantitative component: Measuring students' independent learning

Quantitative research originated in the natural sciences as a means of studying physical phenomena, but it is increasingly applied to the social sciences, including educational research (Berry, 2005). The quantitative method uses processes of counting and measuring of predominantly hard objective data. It can be used on large or small groups by examining variables and making comparisons between them (Creswell, 2009). Quantitative data are often gathered through surveys and questionnaires that are carefully developed to provide numerical data that can be explored statistically and yield results that can be generalised to larger populations. Statistical analysis is used to summarise and describe quantitative data, with graphs and tables used to visualise and present the raw data. Statistics can be descriptive or inferential. Descriptive statistics help us to summarise our data, whilst inferential statistics are used to identify statistically significant differences between groups of data. The statistical tests used in this research are explained in detail in the following chapter and analysed by different tests, including the t-test, and with the help of Statistical Package for the Social Sciences (SPSS) (version 25) (2017).

A quantitative questionnaire enhanced this study by providing a mechanism for measuring students' level of independence at different times during their first year in architecture school, thus providing considerable breadth to the study. However, quantitative research alone would not meet the aims of the research.

III.IV.I. The questionnaire structure

To gather data on the students' confidence in their learning independence, the Autonomous Learning Scale (ALS) (Macaskill and Taylor 2010) was used. The purpose of the questionnaire for our study was to measure students' confidence and track changes in their learning independence throughout the year.

Other instruments for measuring learning independence traits do exist, but each has problems that make it inappropriate for our research. Therefore, prior to choosing this scale, a review of other scales and literature on measures of independence was conducted.

The Self-directed Learning Readiness Scale (Guglielmino, 1977) is the most widely used measure, but it is psychometrically unsound. Problems have been reported with the construct validity of this scale and the recommendation is to discontinue its use (Macaskill & Taylor, 2010; Candy, 1991; Field, 1989, 1991; Straka & Hinz, 1996). The Motivated Strategies for Learning Questionnaire (Pintrich, 1991) is widely used, and this measures independence and other aspects, but its main focus is motivation and learning strategies. Additionally, the scale is long, with many questions, and it may not be compatible with some pedagogies and modern teaching practices (Chen et al., 2013). The Effective Lifelong Learning Inventory (Crick et al., 2004) was developed as a generic measure for children and adults. This scale, however, is lengthy, with a large number of questions that were reported to be open to multiple interpretations (Kirby et al., 2010). The Lifelong Learning Questionnaire (Kirby et al., 2010) was developed as a brief and generic measure. Although it has reasonable reliability, it showed some differences between students in different disciplines and institutions, and its developers report that the factors contributing to the lifelong-learning attributes measured in the questionnaire require further investigation. Other scales target specific student populations, such as The Self-directed Learning Readiness Scale for Nursing Education (Fisher et al., 2001).

The ALS (Macaskill and Taylor (2010) is generic and brief, with two subscales measuring independence of learning and study habits. The ALS is reported to have a high degree of face validity and satisfactory internal reliability (Brooman & Darwent, 2014) and is widely used in research (e.g., Henri et al., 2018; Zhoc et al., 2018; Yurdakul, 2017; Firat, 2016; Macaskill & Denovan, 2013; Brooman & Darwent, 2014; Scott et al., 2015). The table below reviews the most widely used scales of learning independence.

Table 4: A review of the most widely used scales of learning independence

Scale: The Self-directed Learning Readiness Scale

Date	1977
Use	Generic measure
Dimensions measured	Measures the complex of attitudes, abilities, & characteristics that comprise readiness to engage in self-directed learning
Types of questions	Five-point Likert scale Ranging from 'almost true' to 'almost never true.'
Number of questions	58 items
Evidences of Validity and reliability	Problems have been reported with the construct validity of this scale; recommendation is to discontinue use
Cost	Available online for high cost

Scale: The Motivated Strategies for Learning Questionnaire

Date	1991
Use	Generic measure
Dimensions measured	3 subscales Motivation, learning strategies, & management of sources
Types of questions	Seven-point Likert scale Ranging from 'not at all true of me' to 'very true of me'
Number of questions	81 items
Evidences of Validity and reliability	The reliability of the scale proven in several studies. It shows sound structure. Can reasonably claim factor validity for the scales
Cost	No cost

Scale: Self-directed Learning Readiness Scale for Nursing

Date	2001
Use	Context-specific (nursing)
Dimensions measured	3 subscales Self-management, desire for learning, & self-control
Types of questions	Five-point Likert scale ranging from 'strongly disagree' to 'strongly agree'
Number of questions	40 items
Evidences of Validity and reliability	Reasonable evidence of construct validity
Cost	No cost

Scale: The Effective Lifelong Learning Inventory

Date	2004
Use	Generic measure
Dimensions measured	7 subscales Change and learning, meaning making, critical curiosity, creativity, learning relationships, strategic awareness, & resilience
Types of questions	Five-point Likert scale, ranging from 'strongly agree' to 'strongly disagree'
Number of questions	72 items
Evidences of Validity and reliability	Not easy to complete because of its length, vagueness, & openness to multiple interpretations
Cost	Available online for cost

Scale: Lifelong Learning Questionnaire	
Date	2010
Use	Generic measure
Dimensions measured	5 subscales Goal-setting, applying appropriate knowledge & skills, engaging in self-direction & self-evaluation, locating information, & adapting learning strategies to different conditions
Types of questions	Five-point Likert scale Ranging from 'strongly disagree' to 'strongly agree
Number of questions	14 items
Evidences of Validity and reliability	Shows some differences between students in different disciplines & institutions. Factors that contribute to the lifelong-learning attributes measured here have yet to be investigated.
Cost	No cost

Scale: Autonomous Learning Scale (ALS)	
Date	2010
Use	Generic measure
Dimensions measured	2 subscales Study habits & independence of learning
Types of questions	Five-point Likert scale Ranging from 'very unlike me' to 'very like me'
Number of questions	12 items
Evidences of Validity and reliability	High degree of face validity with experienced academics. The factor structure & the internal reliability of the scale have been confirmed. Scale has been widely cited
Cost	No cost

In the ALS questionnaire, participants respond to 12 items with one of the following: 'very unlike me', 'unlike me', 'neutral', 'like me', or 'very like me'. These items (see Table 5) suggest that independent learners are those who take responsibility for their own learning, are motivated to learn, gain enjoyment from their learning, are open-minded, manage their time well, plan effectively, meet deadlines, are happy to work on their own, display perseverance when encountering difficulties, and are low in procrastination when

it comes to their work. Items 2 and 10 on the scale contradict the definition of an independent learner, thus they are reverse coded.

These 12 items strongly agree with our understanding of independent learning and highlight the themes discussed in the previous chapter (Chapter 1). Following comparison with the other available scales, the ALS was adopted as the tool for our research.

Table 5: Autonomous Learning Scale (Macaskill & Taylor, 2010)

Statement	Rate				
I enjoy finding information about new topics on my own	Very Unlike Me	Unlike Me	Neutral	Like Me	Very Like Me
I frequently find excuses for not getting down to work**	Very Unlike Me	Unlike Me	Neutral	Like Me	Very Like Me
I am good at meeting deadlines	Very Unlike Me	Unlike Me	Neutral	Like Me	Very Like Me
My time management is good	Very Unlike Me	Unlike Me	Neutral	Like Me	Very Like Me
I am happy working on my own	Very Unlike Me	Unlike Me	Neutral	Like Me	Very Like Me
Even when tasks are difficult, I try to stick with them	Very Unlike Me	Unlike Me	Neutral	Like Me	Very Like Me
I am open to new ways of doing familiar things	Very Unlike Me	Unlike Me	Neutral	Like Me	Very Like Me
I enjoy being set a challenge	Very Unlike Me	Unlike Me	Neutral	Like Me	Very Like Me
I plan my time for study effectively	Very Unlike Me	Unlike Me	Neutral	Like Me	Very Like Me
I tend to be motivated to work by assessment deadlines**	Very Unlike Me	Unlike Me	Neutral	Like Me	Very Like Me
I take responsibility for my learning experiences	Very Unlike Me	Unlike Me	Neutral	Like Me	Very Like Me
I enjoy learning experiences	Very Unlike Me	Unlike Me	Neutral	Like Me	Very Like Me

The student's overall score on this scale reflects their level of learning independence. Higher scores reflect a higher level of independence and a more positive attitude.

In the questionnaire, students rate themselves on a five-point Likert scale, from 'very unlike me', which is given a score of 1, to 'very like me', which is a given a score of 5. The higher the respondent's score, the more positive their attitude to independence and the more positive their study habits are deemed to be. However, items marked with a

double asterix are reverse-coded and must be reflected before analysis. If an item is reversed, a student who has answered 'very unlike me' receives a score of 5 ('very like me' is given 1, and so on). Coding and analysis will be discussed in more detail in the following chapter.

III.IV.II. Validity and reliability

The ALS was developed for a two-part study of psychology students at Sheffield Hallam University, in response to the lack of reliable and valid measures of autonomous learning. In the first part of the study, first-year psychology students (n=214) were asked to respond to a number of items that reflected the core components of autonomous learning. These statements, which were derived from the literature, were refined after consultation with a group of four experienced academics with expertise in autonomous learning and were also subjected to exploratory factor analysis. The Cronbach's alpha, which is the most common measure of internal consistency (reliability), was satisfactory, being greater than the recommended value for all the items.

 In the second part of the study, responses from another sample of students (n=172) were measured against the Self-directed Learning Readiness Scale originally developed for nursing (Fisher et al., 2001), but which had had its nursing-related items removed. The 12-item scale was psychometrically sound, demonstrating the same structure for the two samples of students with satisfactory internal consistency.

In summary, ALS was chosen for our study for the following reasons:

1. The 12 items of the scale agree with our understanding of independent learning, as explained in the previous chapter.
2. The scale is short and easy-to-use and -interpret.

3. The items selected for the scale have a high degree of face validity with experienced academics, and the internal reliability of the scale has been confirmed using two groups of university students.

4. The concurrent validity of the scale was measured against another scale and found to be satisfactory.

5. The scale is reported to have satisfactory concurrent validity and good internal reliability: α =0.78 (Brooman & Darwent, 2014).

6. The scale has been used in many investigational studies (e.g., Henri et al., 2018; Zhoc et al., 2018; Yurdakul, 2017; Firat, 2016; Macaskill & Denovan, 2013; Brooman & Darwent, 2014; Scott et al., 2015).

III.V. The qualitative component: a narrative study

As this study explores the evolving conception of learning independence of first-year students and seeks to understand their adaptation and how they make sense of learning transition in the design studio context, a qualitative research approach was chosen. Merriam (1988) notes that, 'Research focused on discovery, insight, and understanding from the perspectives of those being studied offers the greatest promise of making significant contributions to the knowledge base and practice of education'. The research therefore set out to explore the meanings that the students attributed to the learning events, people, and ideas that they encountered during their first year by inviting them to share their experiences in a series of interviews conducted over a period of one academic year. The study thus adopted a narrative inquiry approach.

III.V.I. The what, why, and how of a narrative study
III.V.I.I. What is narrative study

A 'narrative' can be any text or discourse, or it might refer to a mode of inquiry in qualitative research (Chase, 1995), with a specific focus on the stories told by individuals (Polkinghorne, 1995). According to Chase (2003), a narrative can be oral or written and may be elicited or heard during fieldwork, interview, or a naturally occurring conversation.

Narrative inquiry works on the premise that we make sense of our lives through narrative (Wesbter & Mertova, 2007). Clandinin and Huber (2010) define narrative research as 'the study of experience understood narratively' and 'a way of thinking about, and studying, experience'. Narrative research has an underlying philosophy that enables the illumination of real people in real settings through the 'painting' of their stories to clarify their meaning (Wang & Geale, 2015). Atkinson (1998) remarks that, 'Story makes the implicit explicit, the hidden seen, the unformed formed, and the confusing clear'. In other words, human experiences are captured by understanding different individual personal stories. Researchers and practitioners across a range of disciplines promote narrative inquiry and narrative strategies as a way of better understanding themes of personal experience from an individual's point of view (Riessman, 2008). This leads to high flexibility in the use of narrative research.

III.V.I.II. Why narrative study

Interest in narrative as a method of inquiry and as a general element of educational research is increasingly popular in a range of disciplines (Wesbter & Mertova, 2007). Narrative research was discussed by Connelly and Clandinin (1990) as a methodology used in education to describe the personal stories of teachers and learners. Clandinin and Connelly (2000) suggest that educational experiences should be studied narratively, as humans are storytelling organisms who, both individually and socially, lead storied lives. Clandinin and Connelly (2000) stress that narrative research in educational settings is much more than seeking out and hearing a story: the narrative approach allows for rich descriptions of experiences and exploration of the meanings that participants derive from these experiences.

Narrative research possesses a number of characteristics which make it a good methodological fit with this study's central concerns. By choosing which events or experiences to report and organising them in a particular way, narrators indirectly signal

the meanings that they would like the listener to take away from the story. In our study, the students' contributions during the interviews provide important information concerning how they view themselves and their learning experiences.

The narrative approach amplifies voices that may have otherwise remained silent. It utilises story-telling as a means of communicating participants' realities to a larger audience (Riessman, 2008).

Another major characteristic of narrative research is that it is well-suited to exploring processes which unfold over time (Murray, 2009). Since the students were interviewed over a one-year period — beginning shortly after their induction week and extending to the time of their final submission at the end of the academic year — the narratives reflect significant shifts in their perspectives and understanding of their learning experiences.

III.V.III. How to conduct narrative research

In narrative inquiry, the researcher asks questions that help the participants to interpret and experience their own world, rather than seeking to explain or predict the participant's world for them. This provides an emic perspective, or 'an insider point of view', and hence elicits a deeper understanding. This insider view is not treated as some kind of objective truth, but rather as a reflection of the student's view at the time of the interview.

The methodological implication of our research is that the data do not need to be narratives: the aim is not just to collect stories, but to examine what narrators say in various ways.

III.V.II. Instruments and data collection

Narrative data takes many forms, including interviews, personal diaries, written assignments, and so on. This research uses first year students' stories, collected using semi-structured longitudinal interviews. These interviews were planned to reveal students' views of their independent learning experience, in detail and over time.

There are a number of reasons for using interviews as a data collection method. First, this is a relatively rich method of data collection, compared to other methods, such as questionnaires. Face-to-face interaction with interviewees gives the opportunity for a clearer sense of their perspectives. Second, as Kvale and Brinkmann (2009) argue, 'The qualitative research interview attempts to understand the world from the subject's point of view, to unfold the meaning of their experiences, to uncover their lived world prior to scientific explanation'.

Moreover, Seidman (2013) notes in his introduction to 'Interviewing as Qualitative Research', 'If the researcher's goal …is to understand the meaning people involved in education make of their experience, then interviewing provides a necessary, if not always completely sufficient, avenue of inquiry.' Interviewing, thus, may be most suitable for accessing personal perspectives of students' first-year learning.

Interviews can broadly categorised as, structured, semi-structured, or open (Kvale & Brinkmann, 2009; Mishler, 1986). In structured interviews, the researcher follows a strict sequence of pre-set questions, without wavering. Richards (2003) considers this an oral questionnaire. In open interviews, the interviewer and interviewee discuss an issue of particular interest, with no definite questions in mind (Connelly & Clandinin, 1990) but with the possibility of some prompting or probing questions to explore a particular aspect of the issue. Semi-structured interviews, however, have a set of core questions to anchor individual interviews and to provide coherence. They also give a certain degree of flexibility so that, as the interview progresses, the interviewer can ask follow-up questions for interviewees to clarify or elaborate. In this way, we allow the interviewer to pursue in-depth information on a certain area. Additionally, the interviewer sees and speaks to the interviewee and usually reports the responses verbatim, which increases the validity of the data.

However, Atkinson (1998) suggests that less structured interviews are more appropriate for studying narratives. This study used an interview guide, with pre-set questions – for the first two waves of the interviews, in particular. As the interviews progressed, we framed one or two open questions, derived from the preliminary data, as suggested by Chirban (1996). Our questions were not intended to test hypotheses, but to understand the lived experiences of the students and the meaning they made of those experiences (Seidman, 2013).

III.V.III. Analysing narrative data

Data analysis is a major concern of qualitative research. Concerns often result from the cumbersome data generated by qualitative methods and the lack of 'well-established and widely accepted rules for the analysis' of them (Bryman, 2016). The absence of fixed rules and procedures gives much flexibility to the ways in which researchers may handle the analytic process (Bloomberg & Volpe, 2018).

In narrative research, a multitude of different techniques and approaches can be employed to analyse data (Elliot 2005). There is no formula for the best way to analyse the narratives we collect (Coffey and Atkinson, 1996). We may examine the narrative data by focusing on the discovery of common themes or salient constructs and organising these into categories. In this way, we attempt to fit participants' details into patterns and themes. Polkinghorne (1995) calls this type of thematic analysis in narrative research 'analysis of narratives', with findings arranged around descriptions of themes that are common across collected narratives, as in many other qualitative research studies.

'Thematic analysis' or 'analysis of narratives' is a descriptive method that reduces the data in a flexible way that dovetails with other data analysis methods (Vaismoradi et al., 2013). It is commonly used because of the wide variety of research questions and topics that it can address (Cooper et al., 2012). Thematic analyses of open-ended responses

in transcribed interviews can explore the context of teaching and learning at a level of depth that quantitative analysis lacks, whilst allowing flexibility and interpretation when analysing the data. It is worth mentioning that data analysis begins when data collection and transcription start. Researchers produce notes to summarise their observations, and this represents the first attempt at analysis, as these notes draw attention to ideas and themes that may prove important for subsequent data collection. In this sense, analysis begins early and is iterative and cyclical in nature.

Another way of examining the data is borrowed from literary studies and socio-linguistics (Elliot 2005). This approach to 'narrative analysis' takes many forms and structures. Researchers may be interested in the content of the narrative and focus on the actual events and experiences it recounts, such as the characteristics of the events and actors. Alternatively, the researcher may be interested in the structure of the narrative. For example, the often-cited structural model of narratives proposed by the American socio-linguist Labov in the late 1960s could be used as an analytical frame, and the schematic elements of the narrative structure could be identified and analysed.

Despite the growing interest in narrative in the social sciences, there is not yet a single analytic approach that can define narrative analysis (Elliot, 2005). Consequently, no standard approach or list of procedures is generally recognised as representing the narrative method of analysis, though there are a number of ways in which an interest in narrative might inform the analysis of data. Coffey and Atkinson (1996) suggest that narrative analysis is a valuable approach to the analysis of qualitative data, as it complements and counteracts 'thematic analysis', which is based on coding and categorising. By analysing the structure or form of the narrative, researchers can avoid reducing the data and losing important details in the thematic analysis – where themes tend to be removed from the specific narrative contexts in which they naturally occur. In

this way, structure narratives enrich the analysis by preserving the form of the data (Coffey & Atkinson, 1996; Elliot, 2005).

This research analysed our data using two different approaches. The first is a narrative analysis approach, which presented 10 stories from 10 students, of one or two pages each. Each story represented narratives collected from the five interviews, restructured following the Labovian model and demonstrating its own direction. This 'restory-ing' approach was chosen to discover the nature of the student's learning experience.

The second approach was a thematic analysis of narratives. The thematic analysis approach is suitable for answering questions such as, 'What are the key elements in design that support independent learning?' and 'What are the challenges that face students?

By using both methods in combination, we were able to answer the research questions and enhance our understanding of students' perceptions of independence and how it changes over the time. Moreover, the approaches revealed different aspects of the design studio that helped to promote independence, as well as aspects considered challenges to learning independence.

III.V.III.I. Narrative analysis: re-storying the experience

Each student had a unique story about their experiences of independent learning in the context of architectural design. The students had different experience frames, sets of interests, and skill levels. In addition, each student had a different conception and set of expectations of learning independence in higher education. All these aspects were narrated during the interviews.

Prior to the analysis, we thought about the fundamental issue of how to tell a story. The story concerned the transition into independent learning in the context of architectural design. To answer this question, we sought a framework that structured the telling of the

stories in terms of (1) where and how the story began and ended, (2) the turning points of the story, and (3) the meaning of the story.
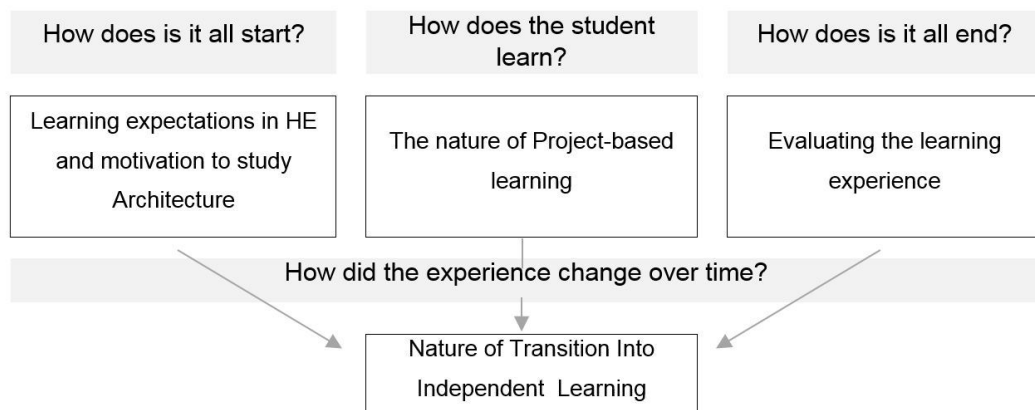
Figure1: How to tell the story.
(Elements to be considered in building students' stories)

Labov suggests that a fully formed narrative of personal experience has a six-part structure. These parts reveal the nature of the experience and enhance our understanding of the narratives, as shown in the following Figure.
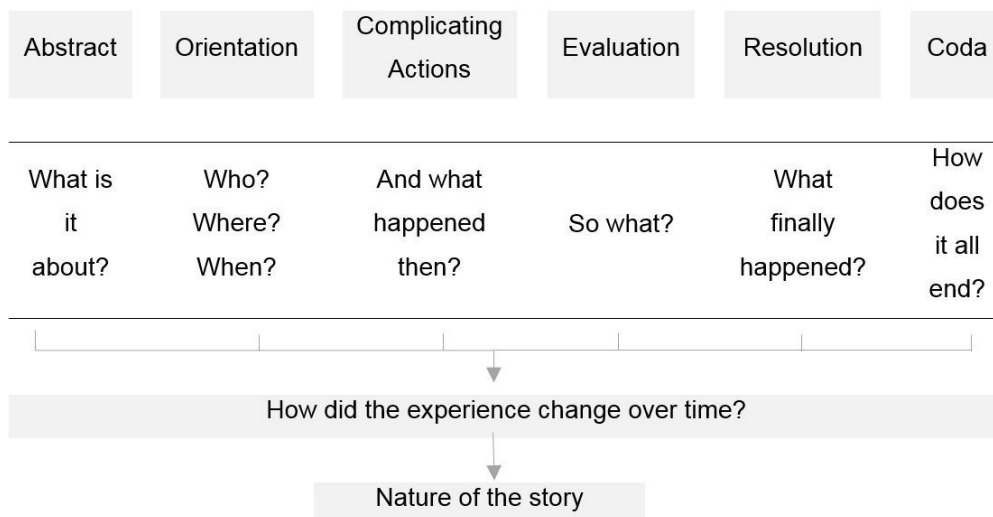
Figure 2: The structure of narrative (Labovian model)

We adopted Labov's structural model to build up the stories in a systematic, yet flexible way, reflecting the diversity of experience in relation to learning independence in the

design studio. This re-storying approach facilitates the exploration of the data and enables us to think creatively about how to interpret it.

III.V.III.I. Features of the Labovian model

The six parts of Labov's model are abstract, orientation, complicating action, evaluation, resolution, and coda (Labov, 2010). Labov uses the term 'abstract' to refer to the introductory part of the narrative. This may be, literally, an 'abstract' or a brief summary of the events, or it may be simply a line or two that sparks the reader's interest. The role of the abstract is to attract the listener's interest and to persuade the listener to want to hear the rest of the story. The next stage is 'orientation'. This introduces and identifies the participants in the action: the time, the place, and the initial behaviour. The orientation section provides answers to the potential questions: 'Who? When? Where? What were they doing?' Following orientation is the 'complicating action'. This refers to the actual events of the narrative and the occurrences that move it ahead. Complicating actions provide answers to the potential questions: 'and what happened then?' Most adult narratives are more than simple reporting of events. A variety of evaluative devices are used to establish the evaluative point of the story (Polanyi, 1989). 'Evaluations' may be clearly stated or they may be implied. Evaluation thus provides a response to the potential question of, 'So what?'

Following this is what Labov calls the 'result' or 'resolution': this is the conclusion. At this point, the narrator indicates that the story has ended and a final action has occurred. The end of a narrative is frequently ended by a Coda, a statement that answers the question 'how does it all end?' By 'coda', Labov means that the narrator has highlighted the relevance of the story by connecting it with everyday life or with other events or actions that fall outside the story frame. The coda does not have to be present, and it may be present without being explicitly stated.

Table 6: Features of the Labovian model of narrative

Phase	Elements to be narrated	Narrative function
Abstract	Learning expectations in higher education & motivation to study architecture	Signals that the story is about to begin & draws attention from the listener
Orientation	Nature of project-based learning; tutorials, crits, tutors, & peers	Sets the scene & thus helps the listener to identify the time, actors, place, & activities of the story
Complicating Action		Describes the actions & events that occur in the story
Evaluation	Learning objectives, self-assessment, grades, relationships with others	Provides comments & reveals the attitudes of the narrator towards the narrated events
Resolution		Explains the outcome of the story
Coda	How does is it all end? Reflection on the whole experience	Often a generalised statement, brings the listener to the present time

It is not necessary for all six to be present in every narrative. For example, some narratives may not have a coda. Additionally, these components need not appear in a specific order, and each may be present in a variety of ways.

Reflecting on the six Labovian components, each story begins with an abstract in the form of a title that gives us a glimpse of the nature of the student's experience. 'Orientation' is the physical context of the story, such as where the learning happens (the design studio, the construction site, etc.), as well as the people involved in the students' learning (their peers, upper-year students, tutors, critics, etc.) 'Complicating actions' explain learning events, such as crits, portfolio review, discussions, and so on, and how students experienced these. 'Evaluation' reveals students' attitudes towards these events and how they were able to reflect on them. The previous three components, however, do not have a specific order but are narrated in a variety of ways. The final part of each story ends with a resolution and a coda, expressing how each student reflected on their first-year experience and bringing us to the present moment.

III.V.III.II. Thematic analysis: beyond the surface of the data

In thematic analysis, as in narrative analysis, we used the same data collected from the 50 interviews and applied a different focus. In the narrative analysis, the focus was on

the individuality of each experience and each student's own perception and level of understanding. Though each story focused on its main events and how the student made sense of their own experience, the thematic analysis explored the subsurface of the students' narratives and illustrated the themes and patterns to identify common threads in the interviews, such as challenges and the effect of others on independent learning.

Braun and Clarke (2006) state that thematic analysis is a foundational method of analysis that must be defined and described to solidify its place in qualitative research. Qualitative research generally employs thematic analysis in which particular pieces of evidence are identified to support general concepts and categories. Thematic analysis as an independent qualitative descriptive approach is described as 'a method for identifying, analysing, and reporting patterns (themes) within data' (Braun & Clarke, 2006: 79). It involves the search for and identification of common threads that extend across an entire interview or set of interviews (DeSantis & Noel Ugarriza, 2000).

Thematic analysis is a flexible and useful research tool, providing a rich and detailed account of data (Braun & Clarke, 2006). It examines narrative materials produced by interviewees by breaking the text into relatively small units of content and submitting them to descriptive treatment (Sparker, 2005). The steps of a thematic analysis are described in the following table.

Table 7: The process of thematic analysis (Braun & Clarke, 2006)

Phase	Description of the process
Familiarising with the data	Transcribing data, reading & rereading the data, noting down initial ideas
Generating intimal codes	Coding interesting features of the data across the entire data set, collating data relevant to each other
Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme
Reviewing themes	Checking the themes work in relation to the coded extracts & the entire dataset, generating a thematic map
Defining & naming themes	Ongoing analysis for refining the specifics of each theme & the overall story that the analysis to the research question & literature, producing a report of the analysis

Following the completion of this process, and after transcribing the data, NVivo 12, a qualitative data analysis (QDA) computer software package, was used as follows:

1. The transcripts were physically read by the researcher as a part of the familiarisation process, which helped to develop some preliminary ideas about codes. The transcripts were then loaded onto the NVivo – 12 platform.

2. In this phase, data were organised in a meaningful and systematic way. We used open coding, meaning that we did not have pre-set codes but developed and modified the codes as we worked through the coding process. This reduced large amounts of data into small chunks of meaningful initial codes.

3. In the next phase, we examined the codes and noted clear themes. For example, we had several codes that related to tutors and feedback. We collated these in an initial theme that we titled 'Perception of learning'.

4. At this phase, the research repeated the previous two steps to modify and develop the identified preliminary themes. For the previous example, the 'Perception of learning' theme merged with another to create 'Support and feedback'.

5. The final step involved highlighting important quotes to support the themes and creating mind maps to refer to when building an argument for the analysis.

In summary, for thematic analysis, we categorised the interview data into small chunks to identify themes in the dataset as a whole, regardless of 'who said what'; while in narrative analysis, we combined each participant's data into a single narrative and re-storied this, using the Labov narrative model. In this way, (1) we discussed each theme that emerged from the dataset, going beyond the surface of the data to answer the research questions, and (2) we had a significant opportunity to see through the eyes of the students and better understand their experiences from their perspective.

III.VI. The primary data sources

The best source of such concealed information is the students themselves, and it can be elicited by allowing them to explain the narrative of their learning process. In particular, first-year students are those experiencing the learning transition, thus they are the most authentic source. The students' interviews provided us with an insider's point of view: an emic perspective of the research problem.

The sample for the quantitative study consisted of two groups. The first group comprised 87 students who undertook the ALS questionnaire at the beginning of the year (phase one), and the second group comprised 83 students who undertook the ALS questionnaire at the end of the year (phase two). As both surveys were voluntary and anonymous, the students were asked at the end of each questionnaire if they wanted to include their university number. In this way, we could recognise a new sample of 34 students who had completed both questionnaires.

Table 9: Phases and sample sizes for the ALS study

	Survey 1	Survey 2	Both surveys
Sample size	87	83	34
Time of survey	Beginning of the academic year (ALS1)	End of the academic year (ALS2)	ALS1 + ALS2

The sample for the qualitative study consisted of 10 first-year students enrolled in the 2017/2018 architecture programme at Cardiff University. This research made the assumption that the profile of the students in the Welsh School of Architecture was typical of that of other schools of architecture, and thus could be considered reasonably representative. This was justified on the following grounds:

1. The students came from a wide range of academic backgrounds, with varied social and academic skills.
2. They are expected to be highly qualified in terms of A-level results (or equivalent).

3. They came from predominantly middle-class backgrounds and a variety of cultural backgrounds, representing students from the UK, EU, and elsewhere.

4. They showed a wide range of learning independence, with five scoring highly for independence on the ALS and five achieving average scores.

During the period of the research, first-year students undertook two major design projects which varied in time, complexity, and learning outcomes. All students were given the same brief at the same time. Each project was led by a design tutor who met the students once a week for a 30-minute one-to one tutorial, in addition to frequent meetings with the year chair every two weeks.

Workshops and site visits were also arranged during the year. The first semester consisted of a series of short exercises and a main project in which students were asked to create a new spatial proposition, focusing on sustainable production and/or consumption of food, whilst generating new collective experiences for communities in Cardiff. In the second semester, students undertook a longer design project and a study trip abroad. Students visited Lanzarote to become familiar with the site and its conditions and to conduct research of the sky and land of Lanzarote, which served as a starting point from which to develop their Ideas. The project was to design an observatory in Lanzarote/the Canary Islands. The students were asked to conceive a building proposition for a relatively simple spatial program. As the iteration is a key component of successful design (Adams, 2002), the students were encouraged to think about what they would do to develop their work over the year, and they were offered additional time to iterate and present their work for a portfolio review.

At the end of the year, the students participated in a vertical design studio which brought together students from the first and second years to combine potentially different skills, knowledge, and levels of development in the studio, for work on a design task. Each

design studio has its own way of doing things, prioritising themes for research through advanced design and making methodologies.

III.VII. Phases and time scale of the study

The study was structured in three phases, spanning a total of one academic year. This enabled a detailed investigation of the students throughout the first year of their studies.

Table 10: Phases and time scale of the study

	Date of completion	Significance of timing	Number of respondents
ALS$_1$ questionnaire	2.10.2017	Enrolment week	87
Interview Wave 1	10.10.2017	First week of study	10
Interview Wave 2	14.11.2017	Project 1	10
Interview Wave 3	18.12.2017	crit 1	10
Interview Wave 4	16.4.2018	Project 2/crit2	10
Interview Wave 5	11.5.2018	Portfolio submission	10
ALS$_2$ questionnaire		End of academic year	83

III.VII.I. Phase 1: Autonomous Learning Scale ALS$_1$

First-year students enrolled on the architecture degree programme in 2017/2018 and delivered by Cardiff University were invited to complete a paper-based questionnaire on their attitudes to learning and their study habits (see Appendix 1). At this point, students had yet to gain any experience of the course delivery. Hence, we used the Macaskill and Taylor (2010) ALS, as this is a generic and non-subject-specific questionnaire. At the end of the questionnaire, the participants were asked to provide details of their gender, age, and nationality, as well as what they did before entering architecture school.

III.VII.II. Phase 2: Collecting Narratives

To gain a fuller understanding of the students' experiences, particularly with respect to their engagement with and transition onto the course, the interview questions were sorted into five waves.

To identify participants, we met the first-year chair on several occasions to explain the research aim and to discuss the projects on which the students would be working during the academic year. The researcher attended a meeting of the cohort and explained the research topic, asking the students to complete the questionnaire and to give their names if they were interested in the interview part of the research. Of 92 students who attended the meeting, 25 expressed an interest in the study. After measuring their level of learning independence, we emailed 10 students with high levels of independence and other 10 of average level. Only 11 of these replied, and the final numbers was five students of high independence levels and five of average levels, and one male student and nine female.

With the permission of the participants and following the ethical standards of Cardiff University, each interview was audio-recorded. The interviews were loosely focussed on a set of questions to ensure a clear impression of the students' evolving conceptions of independent learning and their learning experiences. Notes were also taken during the interviews, allowing for more effective summaries of the interviews after transcription. The interviews were transcribed within two weeks of the interviews to allow for initial interpretations.

During the interview process, we avoided the use of compound and leading questions – as Gillham (2000: p.10), Simon and Barbara (2007), and Kvale (2007) advise – to maintain the pattern and structure of semi-structured interviews. The questions were prompts to encourage the students to talk freely about their experiences. The author performed all the interviews herself, and a pilot study was considered unnecessary as the interviewer could make clarifications and ask supplementary questions during the interviews. Each interview lasted between 20 and 30 minutes. The researcher met with each participant at significant times during their first year (e.g., after their first crit, after portfolio submission, etc.). The first interview asked the students to describe themselves,

their personalities, and their past learning experiences. Accordingly, the first open-ended prompt was as follows: 'Tell me about yourself and what you did last year'. The next prompt – though it was not always the second question, as this depended on the participant's answer to the first question – was, 'Tell me how you came to study at architecture school'. The goal of the two prompts was to invite participants to unfold phases in their lives from high school or college and to probe them to think about their upcoming experiences in architecture school in light of their previous ones. The first interview also allowed participants to describe what they expected from their design studios. The second interview focused on understanding how students felt about their learning experiences. Participants voiced their thoughts and feelings about their learning experiences in their design studios and how they made sense of these. They were asked to describe their design project and how they worked with their design tutor, as well as their thoughts and feelings about and expectations of their first crit.

The aim of each wave of interview was as follows:

Wave 1: The first series of the interviews sought basic factual information to generate a profile of the students in terms of their studies in high school, conceptions of learning in higher education, and reasons for choosing architecture.

Wave 2: Their initial impressions of studio-based learning were the main topic in the second wave, in addition to any challenges/fears around project-based learning.

Waves 3 and 4: The ways in which students acquired understanding of their individual progression and performance with respect to learning intentions and outcomes were discussed in Waves 3 and 4. Perceptions of feedback formed an important part of the discussion, as a key component in the students' learning processes. Similarly, perceptions of the practice of the 'review' or 'crit' were discussed.

Wave 5: The final wave aimed to complete the tracking process. Respondents were asked for their reflections on their first year of study, with the purpose of gaining an insight into their thoughts on the learning experience when viewed through a longer reflective lens. In addition, follow-up interviews were conducted with the participants at the mid-point of their second year to reflect on their first-year experiences and the changes they had made or lessons they had applied based on those experiences.

III.VII.II. Phase 3: Autonomous Learning Scale ALS$_2$

Students were invited at the end of academic year to complete the same questionnaire to identify any significant shifts in learning independence over the duration of the study. The data collected from the ALS questionnaire in the two phases (**Phase 1** during enrolment week and **Phase 3** at end of academic year) were used to determine the following:

1. Any significant change in attitude regarding independence between the beginning of the academic year and the end

2. Any significant correlation between students' final marks at the end of their first year and their level of independence

In summary, a combined method was appropriate for the purposes of this study. Qualitative and quantitative components in combination enabled proper description and analysis, which made it possible to answer the research questions.

III.VIII. Challenges and ethical considerations

Ethical considerations are crucial to a research design, and these can arise during any phase of the research process (including when selecting participants, collecting and analysing data, and reporting findings) (Bloomberg & Volpe, 2018; Maxwell, 2012). Ethical issues are vital in both qualitative and quantitative approaches, particularly when human subjects are involved (Punch, 2009). The basic ethical issues to be considered include ensuring participants are fully informed of the purpose of the project. Second,

confidentiality should be guaranteed and participants must be allowed to withdraw at any time. The researcher should also obtain participants' informed consent to participate in the study. Narrative research is a challenging approach, given these procedures and the characteristics of the method. The researcher must collect extensive information about the participants, and it takes a keen eye to identify in the source material the particular stories that capture the individuals' experiences.

Prior to commencing this research, ethical clearance was sought from the ethics committee of Cardiff University, as the study was to rely heavily on students as a source of data (see Appendix 2). Each interview then began with a preamble, which explained the purpose of the research and stressed that the participants would remain anonymous to protect their privacy. Pseudonyms were assigned for clarity, to portray participants' experiences effectively, and to maintain the 'human element' in the telling of their stories.

A practical concern was that longitudinal studies require participants' commitment and dedication. The Year 1 Chair assisted in the issuing and collection of the questionnaires by inviting the researcher to attend two annual meetings with the students. We explained the requirements of the study to the participants, giving all relevant information, including the likely demands on them. By explaining the objectives of the research plan and being ethically appropriate, we ensured the respondents fully understood the importance of regular and comprehensive completion of the interview study. We also sought to ensure retention of the participants by paying them £30 each for their participation in the study. Consequently, the resource implications of undertaking an ethically and methodologically robust process, appropriate to the objectives of this study, were minimal.

CHAPTER FOUR
Autonomous Learning Scale Results

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This chapter reports and discusses the statistical findings obtained from the students' responses to the Autonomous Learning Scale. Information relating to age, gender, prior learning experience, nationality, and design marks was analysed to explore the effect of these factors on learning independence and how learning independence changes over time (see research questions 1, 2, and 4 on page 6). This chapter concludes with a discussion of the results, supported by graphs and tables, and the identification of this work's limitations.

IV.I. Introduction

Students enrolled on the architecture degree programme in 2017/2018 delivered at Cardiff University were invited to complete a paper-based questionnaire on their attitudes to learning and study habits. At this point most of the students had yet to gain any experience of course delivery. Hence, the autonomous learning scale (ALS) of Macaskill and Taylor (2010) was used, as it is a generic questionnaire that is not subject specific measuring two subscales – independence of learning and study habits – that characterise an independent learner. The reliability and validity of the tests were discussed in a previous chapter (refer to chapter 3). At the end of the questionnaire the participants were asked to fill in information on their gender, age and nationality, as well as what they did before entering architecture school. ALS statements are listed in Table 10 below.

Table 10: ALS questionnaire of Macaskill and Taylor (2010)

Item	Statement	Subscale
1	I enjoy finding information about new topics on my own	Independence of learning
2	I frequently find excuses for not getting down to work	Study habits
3	I am good at meeting deadlines	Study habits
4	My time management is good	Study habits
5	I am happy working on my own	Study habits
6	Even when tasks are difficult I try to stick with them	Independence of learning
7	I am open to new ways of doing familiar things	Independence of learning

8	I enjoy being set a challenge	Independence of learning
9	I plan my time for study effectively	Study habits
10	I tend to be motivated to work by assessment deadlines	Independence of learning
11	I take responsibility for my learning experiences	Independence of learning
12	I enjoy learning experiences	Independence of learning

In the questionnaire, students were asked to rank their response to each statement in the form of "very unlike me", "unlike me", "neutral", "like me" and "very like me" (5-point Likert scale). These responses were then ranked with 5 corresponding to "very like me", 1 "very unlike me", and 3 being "neutral". The numerical codes of responses varied such that in some instances a score of 1 indicated high autonomy but in others it indicated low autonomy. Items marked as "reversed" are reverse coded items and the ratings have to be reversed before an individual's score can be computed. If an item has to be reversed, a person who has circled 1 for that item now receives score of 5 and so on. Accordingly, 1 = 5, 2 = 4, 3 = 2, and 5 = 1. Prior to analysis all data were recoded so respondents who generated high scores were rated as students of higher levels of readiness for independent learning and with more positive attitudes to learning, and respondents with low scores as students of lower levels of readiness for independent learning.

IV.II. Hypotheses

Students were invited to answer the same questionnaire twice during their first year, ALS1 during the enrolment week and ALS2 at the end of the academic year. The collected data from the ALS questionnaires gathered at two different times within the first year will be used in the following way (refer to research questions on page 6 question 1 and 4):

1. To test if mature students exhibit a higher degree of learning independence than students entering higher education straight from high school,

2. To test that male and female students do not differ in their learning autonomy level.

As both questionnaires were voluntary and anonymous, a separate additional question was asked at the end of each questionnaire as to whether the students wished to include their university number. In this way, the researcher could recognise a new sample of students who completed both questionnaires and accordingly additional tests could be run on their responses as follows:

3. To determine whether there is a significant change in attitude towards independence between the beginning of the academic year and the end of it.

4. To investigate if there is a significant correlation between students' final marks at the end of their first year and their level of independence.

Table 11: Phases and sample size of ALS (refer to chapter3)

	Survey 1	Survey 2	Both Surveys
Sample size	87	83	34
Time of survey	Beginning of the academic year (ALS_1)	End of the academic year (ALS_2)	$ALS_1 + ALS_2$

Pearson's correlation test and t-test were used to test the hypothesis that more mature (older) students perceive themselves to be more autonomous than younger students coming to university directly from school (at 18–20 years of age). Pearson's correlation test was used as well to determine whether more independent students had better academic performance in their design studio at the end of the year. One-way analysis of variance (ANOVA) was also used to compare the independence level of students from different nationalities. A paired sample t-test was used to test the hypothesis that autonomy increases as students progress through university. Two independent t-tests were used to test the hypothesis that male and female students do not differ in their level of learning independence. Post hoc analysis was used when needed (see below). All quantitative statistical analyses were carried out using the software package SPSS V25.0 (IBM).

IV.III. Tests and Analysis

Before beginning any statistical analyses, it is essential to examine the distribution of the dataset. If the dataset is normally distributed, the analysis of data uses a set of tests derived from the field of "parametric" statistics, and if any are not normally distributed then "non-parametric" statistics are used. A graphical inspection of the data and normality tests were used to check the normality in this research. The histogram is a traditional means of displaying the shape of a group of data. The ideal shape to look for in the case of normality is a bell-shaped distribution. This should be symmetrical around the centre, such that the right side of the centre is a mirror image of the left. When it is symmetrical, and the mean and median of the data are approximately equal (visually represented by the peak of the curve), we can deduce that the dataset is normally distributed. Another graphical method of checking the normality is to draw a Q-Q plot. If the data are normally distributed, a reasonably straight line should be observed.

The distribution of our dataset is shown in the following plots (see Figure 3).
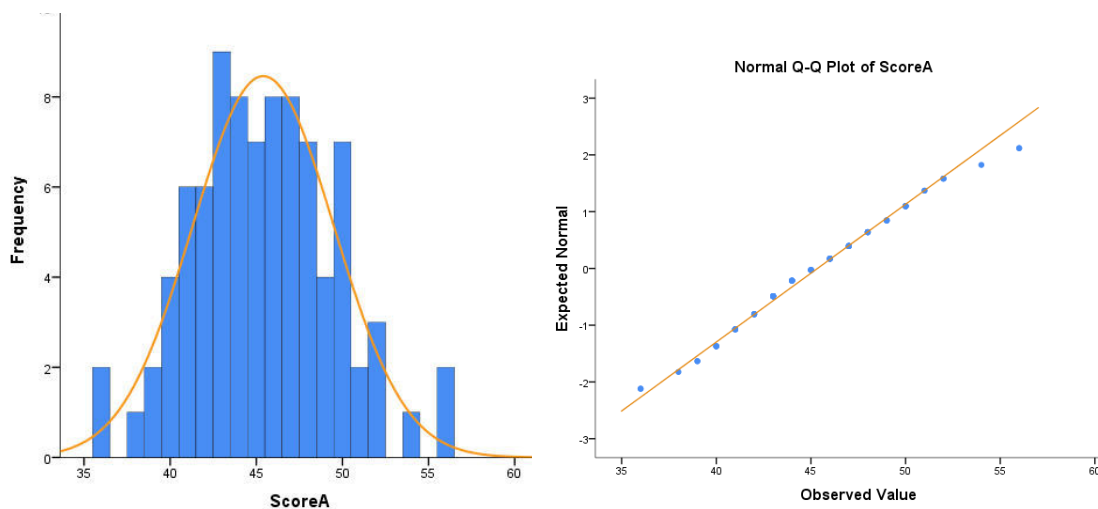
Figure 3: ALS Data Distribution

In addition to the visual test of normality, the research used D'Agostino skewness test, and the Anscombe-Glynn kurtosis test for the assessment of normality (see Table 12). Both skewness and kurtosis are numerical measures of the data shape which give a more precise evaluation. Skewness is a measure of a dataset's symmetry, and kurtosis measures how tall and sharp the central peak is, relative to a standard bell curve. If both values fall between -1 and 1, then the distribution is approximately symmetric, hence we can use parametric tests.

Table 12: Descriptive statistics of ALS_1

	N	Mean	Median	Min	Max	SD	Skewness	Kurtosis
ALS_1	87	45.34	45	36	56	4.12	.230	-.006
Independence of learning	87	26.59	26	17	33	2.94	-.418	.906
Study habits	87	18.51	19	12	25	2.66	-.050	-.006

IV.IV. Types of Statistical Tests
IV.IV.I Correlation tests

These tests describe whether one variable increases or decreases in line with another. For instance, if students' marks increased as their level of independence increased, then it is said that a correlation exists. Another example would be if students' level of independence increased as their age increased, then it is said that a correlation exists. A correlation coefficient of zero would indicate that the two variables are independent and accordingly no relationship exists between the two. The cut-off values for the correlation coefficient are highlighted in Table 13 below.

Table 13: Correlation coefficient values (Boslaugh 2008)

Correlation	Value
Weak	0.10 to 0.29
Moderate	0.30 to 0.49
Strong	0.50 to 1.00

There are two separate correlation coefficients, Pearson and Spearman. Both have the same interpretation but are used depending upon whether the variables are normally distributed or not.

IV.IV.II Tests comparing two or more groups of subjects

It is possible to use statistical tests to determine whether two groups of subjects or more are significantly different. For example, it is possible that female students are more independent than male students.

Parametrical statistical tests such as the independent sample t-test determine the statistical significance of the differences between two groups of subjects. The "Mann-Whitney-U" test (sometimes referred to as the Wilcoxon rank sum test) provides a non-parametric alternative. Variance analysis ANOVA provides a similar parametric test where there are more than two groups of subjects. The "Kruskal-Wallis H" test is the non-parametric alternative.

IV.IV.III. Post hoc tests

Tests comparing groups of subject tell us whether we have an overall difference between groups, but it does not tell us which specific groups differed – post hoc tests do. Because post hoc tests are run to confirm where the differences occurred between groups, we use them only when we have shown an overall statistically significant difference in group means (i.e. a statistically significant one-way ANOVA result).

There are a great number of different post hoc tests suitable for use. However, for a one-way ANOVA, if the data met the assumption of homogeneity of variances, Tukey's honestly significant difference (HSD) post hoc test is to be used. If the data did not meet the homogeneity of variances assumption, then the Games Howell post hoc test is to be used.

IV.IV.IV. Repeated measures test

In a repeated measures test, the same subjects are being tested under different conditions or at different times. The paired sample t-test, sometimes called the dependent sample t-test, is an example of a "repeated measures" statistical test when the same participants are tested twice in different conditions. Although "paired samples" suggests that multiple samples are involved, there is really only one sample and two variables. The non-parametric equivalent for this test is the Wilcoxon signed ranks test.

IV.V. Phase One – ALS$_1$

The data gathering process was initiated by the issue of the ALS questionnaire at the first year meeting for the new students. Of the 87 students who completed the questionnaire, 67 had come to university straight from secondary education or high school, 12 had been in previous higher education programmes, two in employment, and the remaining students after a break in education. Fifty-eight students were female and 29 were male; this imbalanced male: female ratio is a characteristic of that year in architecture school. All students provided information about their age at entry to university, of which 81 were 17–20 years old, four were 21–24 years old, and two were 25–27 years old. Thirty-eight students were home students, 31 from the rest of the EU, and 18 were international.

Table 14: ALS$_1$ sample size

	N	Gender		Age			Nationality		
		Male	Female	17–20	21–24	25–27	UK	EU	INT
ALS$_1$ sample	87	29	58	81	4	2	38	31	18

The results of ALS1 reveal that most students showed positive attitudes to be active rather than passive learners in the process of acquiring knowledge, and they were ready to take responsibility for their learning and respond to challenges. Most of the students (70.1%) showed average confidence in their ability to learn independently, and almost a third (29.9%) showed a higher level of confidence and more positive attitudes towards

independent learning. Students' ALS responses at the beginning of the year are summarised in percentages in Table 15.

Table 15: Percentages of the ALS$_1$ items and traits

Item	Subscale	Item Description	Percentage
1	Independence of learning	I enjoy finding information about new topics on my own	79.3%
2	Study habits	I frequently find excuses for not getting down to work	10%
3	Study habits	I am good at meeting deadlines	71%
4	Study habits	My time management is good	58.7%
5	Study habits	I am happy working on my own	79%
6	Independence of learning	Even when tasks are difficult, I try to stick with them	94%
7	Independence of learning	I am open to new ways of doing familiar things	66.3%
8	Independence of learning	I enjoy being set a challenge	80%
9	Study habits	I plan my time for study effectively	44%
10	Independence of learning	I tend to be motivated to work by assessment deadlines	70%
11	Independence of learning	I take responsibility for my learning experiences	91%
12	Independence of learning	I enjoy learning experiences	91%

As it can be read from the table above, students showed positive attitudes to be active rather than passive learners in the process of acquiring knowledge, and their scores on most of the items were relatively high, taking into consideration that item 2 is negatively worded (in this case 90% of students have a positive attitude to getting down to work). However, it is worth noting that for both items 4 and 9, concerning time management and planning, students' responses were not that high compared to the rest of the items.

Results from both subscales (Independence of Learning and Study Habits) of the questionnaire at the beginning of the year are shown in Table 16 below.

Table 16: Descriptive statistics of ALS$_1$

	N	Mean	Median	Min	Max	SD	Skewness	Kurtosis
ALS$_1$	87	45.34	45	36	56	4.12	.230	-.006
Independence of learning	87	26.59	26	17	33	2.94	-.418	.906
Study habits	87	18.51	19	12	25	2.66	-.050	-.006

IV.V.I. The impact of student age, gender, nationality and experience prior to enrolment

IV.V.I.I. Student age

Students' responses were analysed to determine whether any significant age differences were present. A Pearson correlation test was run to determine the relationship between level of independence, study habits and age. The following table shows the correlation coefficient of students' scores in relation to age.

Table 17: Descriptive statistics of ALS_1 in terms of age

Age	N	Score	Min–Max	Mean	SD
17–20	81	Overall score	36–56	45.41	3.85
		Independence of learning	17–32	26.49	2.83
		Study habits	13–25	18.66	2.46
21–24	4	Overall score	36–50	42	6.05
		Independence of learning	22–30	26	3.65
		Study habits	12–20	16	3.36
25–27	2	Overall score	43–56	49.5	9.19
		Study habits	31–33	32	1.41
		Independence of learning	12–23	17.5	7.77

Table 18: Correlation between independent learner traits and age

Trait of Independent Learner	Correlation Coefficient	P-value
Independence of learning	-.171	.114
Study habits	.210	.051

As shown in Table 18, the correlation coefficient relating to students' independence of learning to age is -.171 and the p-value (0.114) implying that there is no significant difference between the correlation coefficient and zero. Moreover, the correlation coefficient relating to students' study habits to age is .210, and the p-value (0.051) implying that there is no significant difference between the correlation coefficient and zero. Therefore, there is very little evidence of a relationship between age and study habits or independence of learning.

IV.V.I.II. Student gender

Students' responses were analysed to determine whether any significant gender differences were present.

Table 19: Mean values for ALS scores for all students by gender

	N	Score	Mean	Min–Max	SD
Male	29	Overall score	44.52	36–56	4.13
		Independence of learning	26.10	17–33	3.43
		Study habits	17.72	12–24	2.88
Female	58	Overall score	45.76	33–56	4.08
		Independence of learning	26.84	20–32	2.66
		Study habits	18.91	13–25	2.47

Table 20: Differences in independent learner traits among gender

Trait of Independent Learner	Mean (SD) Male	Mean (SD) Female	P-value
Independence of learning	26.10 (3.43)	26.84 (2.66)	.271
Study habits	17.72 (2.88)	18.91 (2.47)	.05

Two independent samples t-tests on the two means, with gender as the independent variable, suggested that there were no significant differences between the genders. In terms of independence of learning, the p-value (Asymp. Sig. (2-tailed)) is 0.271, and the p-value for study habits (Asymp. Sig. (2-tailed)) is 0.05. It is concluded that there is no significant difference between males and females in attitudes towards independence of learning nor study habits scores.

IV.V.I.III. Experience immediately prior to enrolment

Responses reveal a range in the experience of students prior to enrolment and, one might reasonably suppose, in the maturity of students. It is particularly notable that a substantial percentage of respondents who did not enter directly from school (totalling 13.2%) had prior experience of higher education. It is assumed from this that these students will have been familiar with issues of transition to greater learning

independence. Responses were also received from students who had entered academia from the world of employment or had taken a year out.

Table 21: Mean values of ALS scores for all students by experience prior to enrolment

	N	Mean	Median	Min–Max	SD	Skewness	Kurtosis
Secondary education	67	45.52	45	36–56	3.9	.152	.-.009
Other	20	44.75	43	33–56	4.8	.533	-.265

Table 22: Differences in independent learner traits among students with experience prior to enrolment

Trait of Independent Learner	Mean (SD) Secondary Education	Mean (SD) Other	P-value
Independence of learning	26.41 (3.0)	27.20 (2.74)	.300
Study habits	18.80(2.45)	17.55 (3.13)	.064

Two independent samples t-tests on the two means, with previous experience as the independent variable, generate a p-value of 0.300 for independence of learning (Asymp. Sig. (2-tailed)), and a p-value of 0.064 for study habits (Asymp. Sig. (2-tailed)). It is concluded that there were no significant differences between students who entered directly from secondary education or had different experience prior to architecture school.

IV.V.I.IV. Nationality

Students' responses were analysed to determine whether any significant differences were present relating to nationality. Table 23 shows the mean values for level of independence scores for all the students by nationality.

Table 23: Mean values of independent learner traits among nationalities

Trait of Independent Learner	Nationality	N	Mean	SD
Independence of learning	UK	38	25.9	2.46
	EU	31	27.6	3.06
	INT	18	26.3	3.29
Study habits	UK	38	17.71	2.53
	EU	31	19.06	2.58
	INT	18	17.20	2.75

Table 24: Differences among nationalities

Trait of Independent Learner	Mean Square	P-value
Independence of learning	Between groups 11.934 Within groups 10.978	.036*
Study habits	Between groups 23.268 Within groups 6.313	.045*

The data provides statistically significant evidence that the mean scores of independent learning are not the same for all nationality/groups. In terms of study habits, P = .045 and P = 0.036 in terms of independence of learning. Therefore, it is confirmed that there are differences in both traits among nationalities. There are several possible explanations, for example, two groups might be similar, with just one group having a different mean, or there could be differences between all three groups. As statistically significant evidence was found that the mean number for learning independence is not the same for all nationality groups, the next step is to run a post hoc test.

Table 25: Post hoc analysis – differences among nationalities

Trait of Independent Learner	Nationality I	Nationality J	Mean Difference (I-J)	P-value
Independence of learning	UK	UE	-1.7	.031*
		INT	-0.4	1
	EU	UK	1.7	.031*
		INT	1.3	.05*
	INT	UK	0.4	1
		EU	-1.3	.05*
Study habits	UK	UE	-1.35	.045*
		INT	0.51	.122
	EU	UK	1.35	.045*
		INT	1.86	.047*
	INT	UK	-0.51	.122
		EU	-1.86	.047*

Post hoc Tukey's test showed that EU students had more positive scores compared to the UK and international students with regard to independence of learning (p-values are .031 and .05), and more positive attitudes in terms of study habits as well (p-values are .045 and .047).

IV.VI. Phase 2 – ALS$_2$

IV.VI.I. Changes at the end of the academic year

Students were invited again at the end of the academic year to do the same questionnaire to identify any significant shifts in learning independence over the duration of the study. The collected data from the ALS$_1$ and ALS$_2$ were analysed by using two independent samples t-tests to determine whether there is a significant change in attitude towards independence between the beginning of the academic year and the end of it. Results from each questionnaire are shown in the following tables and illustrated graphically in figures.

Table 26: Differences in students' responses during one academic year

	N	Mean	Median	Min–Max	SD	Skewness	Kurtosis
ALS$_1$	87	45.34	45	36–56	4.12	.258	-.006
ALS$_2$	83	43.54	44	31–54	4.626	-.196	-.083

Table 27: Differences in subscales during one academic year

Traits of Independent Learner	Mean (SD) ALS$_1$	Mean (SD) ALS$_2$	P-value
Independence of learning	26.59 (2.94)	26.18 (2.84)	.349
Study habits	18.51 (2.66)	17.10(3.188)	.003*

Two independent samples t-tests on the two means, with time as the independent variable, suggested that there was a significant negative change between students' responses (ALS$_1$ and ALS$_2$). In terms of independence of learning, the p-value, (Asymp. Sig. (2-tailed)) is 0.349, and the p-value (Asymp. Sig. (2-tailed)) is 0.003 for study habits. This revealed a negative change, but only with regard to study habits i.e. time management skills and commitment to finish work on time.

To confirm the accuracy of the previous finding (the changing score of students at the end of the year), a matched-pairs t-test was run for those students who did both surveys 1 and 2.

Table 28: Differences in students' responses during one academic year

	N	Mean	Median	Min–Max	SD	Skewness	Kurtosis
ALS_1	34	45.65	45	38–54	4.19	-.084	-.850
ALS_2	34	44.20	44	33–52	4.86	-.461	-.632

Table 29: Differences in subscales during one academic year

Traits of Independent Learner	Mean (SD) ALS_1	Mean (SD) ALS_2	P-value
Independence of learning	26.41 (3.30)	26.61(2.75)	.412
Study habits	18.64 (2.58)	17.44(3.20)	.008*

A matched-pairs t-test on the two means, with time as the independent variable, suggests a significant negative change between students' responses (ALS_1 and ALS_2). In terms of independence of learning, the p-value (Asymp. Sig. (2-tailed)) is 0.421, and the p-value (Asymp. Sig. (2-tailed)) is 0.008 for study habits. This means that students had a significant decrease in terms of study habits items only.

To elaborate in depth on this, each item at ALS_1 and ALS_2 was compared. It can be seen from the data in Table 30 and Figure 4 below that students tended to find more excuses for not getting down to work compared with the beginning of the year (item 2). Their ability to meet deadlines also decreased (item 3), and their confidence in their time management decreased through the year (item 4). Accordingly, their problem with planning their time, which was stated at the beginning of the year, had significantly increased as well, and can be read from item 9 as well.

Table 30: Changes in study habit percentage during the academic year

	Item 2	Item 3	Item 4	Item 5	Item 9
ALS_1	10.0	71.0	58.7	79.0	44.0
ALS_2	37.7	66.3	40.9	74.6	37.9
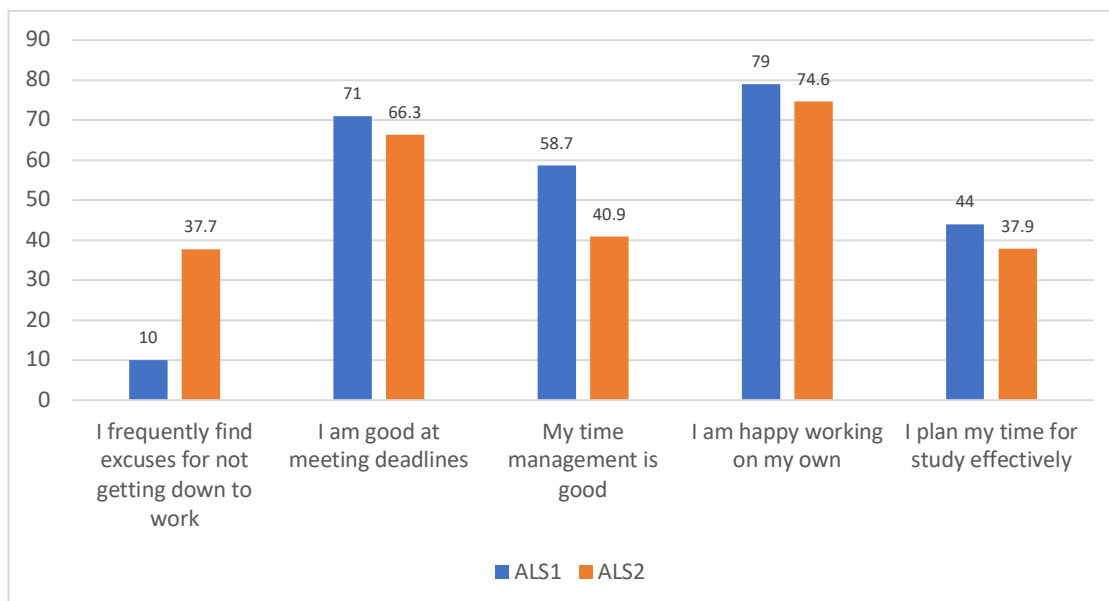
Figure 4: Changes in study habit percentage during the academic year

However, students' responses in terms of independence of learning decreased in most cases; students were able to identify that they were, and still are, motivated by deadlines through the year (item 10). Figure 5 below shows a positive change occurred for items 7 and 12 revealing that students became more open to new ways of doing familiar things and enjoyed different learning experiences.
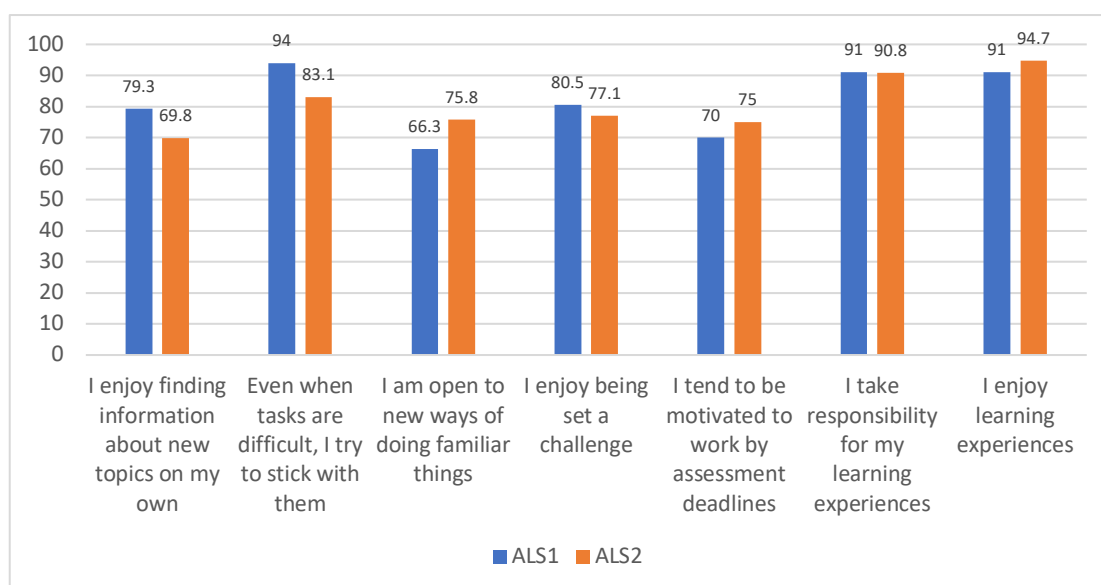
Figure 5: Changes in independence of learning percentage during the academic year

Table 31: Changes in independence of learning percentage during the academic year

	Item 1	Item 6	Item 7	Item 8	Item 10	Item 11	Item 12
ALS_1	79.3	94.0	66.3	80.5	70.0	90.8	90.8
ALS_2	69.8	83.1	75.8	77.1	75.0	84.3	94.7

As the tables and figures suggest, there appears to be a change in terms of study habits, but not independent learning, which confirms the previous test's results.

IV.VI.II. Correlation between level of independence and students' design marks

To explore whether there is a correlation between students' independent learning scores and their final marks in the design module, a correlation test was performed and the results are shown in Table 32.

Table 32: Correlation between ALS and design marks

Survey	N	Correlation Coefficient	P-value
ALS_1	34	.381*	.026
ALS_2	34	.597*	.000

* Correlation is significant at the 0.05 level (2-tailed).

A Pearson correlation coefficient was computed to assess the relationship between students' scores on the autonomous learning scale at the beginning of the year and their final marks in the design module at the end of the year. There was a positive correlation between the two variables, correlation coefficient (r) = 0.381, significant value p = 0.026, and even stronger correlation with the end of the year's ALS scores (r) = 0.597, p < 0.000. The result means that there is statistically moderate positive correlation between students' independent learning scores and grades in both cases at the beginning and end of the year.

While the correlation test represents the linear relationship between students' score on ALS and their design marks, and strength of association between them, the following regression test will describe how the ALS score is numerically related to students' design

marks and accordingly predict the values of students' marks on the basis of the values of the ALS score.

Table 33: Regression model summary

Model	R	R Square	Adjusted R Square	Std Errors of the Estimate
1	.597	.357	.337	6.303

Table 34: Coefficients

Model	Unstandardised B	Coefficients Std Error	Standardised Coefficients Beta	t	Sig.
Constant	14.7	12.291		1.196	.240
ALS	1.124	.267	.597	4.214	.000

Both the regression analysis and the Pearson's correlation coefficient suggest a strong positive linear relationship between design marks and a student's level of learning independence at the end of the year. The simple linear regression confirmed that ALS can significantly predict students' design marks at the end of the year (β = 1.124, p<.000). The R2 value was 0.357 so 35.7% of the variation in marks can be explained by the model containing only the ALS score. The final predictive model is:

*Design Mark = 14.7 + 1.124*ALS*

The following scatterplot in Figure 6 illustrates the previous results visually.

Design Mark
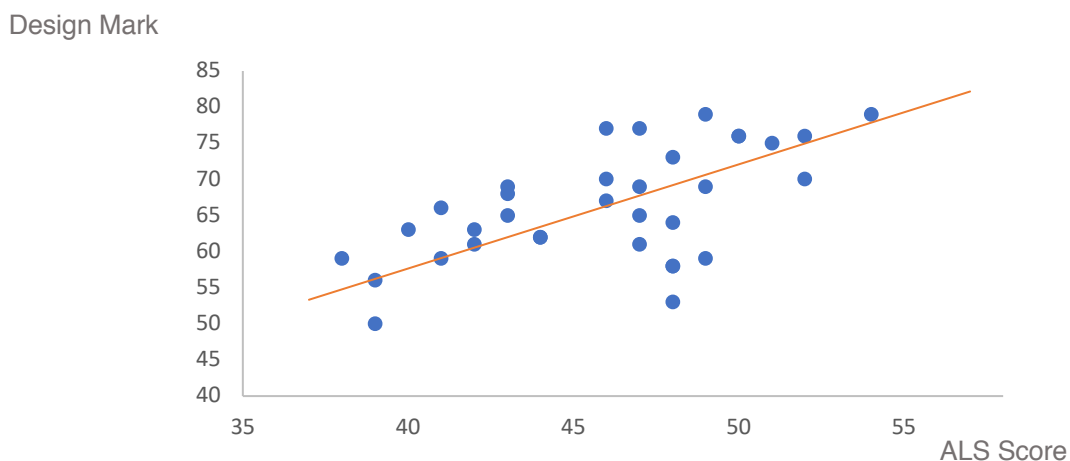
Figure 6: A scatterplot summarising the correlation between students' marks and ALS

IV.VII. Discussion and Limitations

The results of the surveys did not show any effect of student maturity on their level of learning independence; students (aged over 20 at the start of their programme) do not perceive themselves as more autonomous than other students. Moreover, no significant differences were found among students' gender but differences were found among nationalities; EU students perceive themselves as higher autonomous learners than UK and international students. It is expected from previous research that international students would struggle in their first year in terms of learning independence (Bamford 2008, Biggs and Tang 2011 Thomas et al. 2015). Bamford (2008) suggests that international students have some difficulties in adjusting to a new academic environment and would like further support on certain aspects such as materials and study skills.

Additional challenges such as living away from home, dealing with a different language, settling into accommodation, adjusting to local social norms and building support networks are likely to influence academic performance, and more profoundly so in the first year for international students (Thomas et al. 2015). Despite these potential difficulties, international students gained an average level of learning independence scores, lower than EU students but still as good as local UK students. This confirms the Higher Education Academy report on the "Teaching International Students Project" as it was suggested that even though international students are likely to be unsure about what is required in their new learning context they may be perfectly capable of learning independence.

The results of ALS_1 reveal that most students showed positive attitudes to be active rather than passive learners in the process of acquiring knowledge, and they were ready to take responsibility for their learning and respond to challenges. Most of the students (70.1%) showed an average confidence in their ability to learn independently, and almost a third (29.9%) showed a higher level of confidence and more positive attitudes towards

independent learning. However, the results from ALS_2 reveal a significant change in students' confidence in learning at the end of the year; the previous rates significantly changed to (80.7%) with an average confidence in their ability to learn independently, and less than a fifth (19.3%) with positive attitudes towards independent learning.

At the time of distributing ALS_1 many of the architecture students would be relying on past experience (usually high school/secondary education) to complete the autonomous learning questionnaire. It may be the case that students entered university believing that the skills they have used previously will stand them in good stead at degree level. A study by Goldfinch and Hughes (2007) suggests that overconfident belief in skills may be a problem for first year students. However, experiencing a degree-level challenge led the students to change their responses and develop a more realistic attitude of their learning and what is expected of them.

The following table presents an overview of students' responses and the change in their attitudes in their first year.

Table 35: Students' ALS responses in percentage at two different times

Item	Item description	Percentage ALS_1	Percentage ALS_2
1	I enjoy finding information about new topics on my own	79.3%	69.3%
2	I frequently find excuses for not getting down to work	10%	37%
3	I am good at meeting deadlines	71%	66.3%
4	My time management is good	58.7%	40.9%
5	I am happy working on my own	79%	74.6%
6	Even when tasks are difficult, I try to stick with them	94%	83.1%
7	I am open to new ways of doing familiar things	66.3%	75.8%
8	I enjoy being set a challenge	80%	77.1%
9	I plan my time for study effectively	44%	37.9%
10	I tend to be motivated to work by assessment deadlines	70%	75%
11	I take responsibility for my learning experiences	91%	84.3%
12	I enjoy learning experiences	91%	94.7%

It is apparent from Table 35 that students' responses become more negative as the percentage of the responses received decreased for most of the items. For items 4 and 9 for example, at the beginning of the first year 58.7% of the students stated that they

have good time management and only 44% of them plan their time effectively. These rates decreased to 40.9% and 37.9% respectively. These responses suggest that students have a serious problem with dealing with their study time and how to plan it.

In a study by Macaskill and Denovan (2013) on first year learning in university, 212 psychology students completed the ALS at the beginning of the year and scored an average of 28.60 with a standard deviation of 6.66. The same students completed the ALS questionnaire after five months and showed a significant change in their learning independence with an average of 38.12 and standard deviation of 5.33.

Table 36: Comparison of ALS scores between architecture
& other disciplines during one academic year

	N	Mean Score	SD
Architecture students (ALS_1)	87	45.34	4.12
Students from other discipline (ALS_1) *	212	28.60	6.66
Architecture students (ALS_2)	83	43.54	4.626
Students from other discipline (ALS_2)*	212	38.12	5.33

Sample reported in Macaskill and Denovan (2013).

Architecture students had higher scores both times (ALS_1 and ALS_2), and even when their score dropped, they still had higher scores than psychology students. This difference in both scores could be explained by reference to the nature of the subject itself; in the Student Academic Experience Survey (2017), architecture students reported the highest independent study hours among all students in other subjects. Another factor that could be taken into consideration is the entry requirements; architecture students are generally expected to be highly qualified in terms of A-level results or equivalent and, accordingly, more likely to be more independent.

In this study the sample size is modest, and given that the sample was obtained primarily from only one school, in future, studies should recruit students across different universities to validate the difference between subjects, i.e. studio-based subjects and other disciplines.

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It was also questioned whether there was a significant correlation between students' overall marks in their first year and their scores on the autonomous learning scale. Previous research studies have connected independent learning to success and better learning (Hamad 2018, Derrick, Ponton & Carr 2005, Mattarima and Hamdan 2011). In this research, the students' overall marks in their design module were used to test if there was a significant correlation between students' academic performance and their scores on the autonomous learning scale. The end of year marks include some non-design supplementary exercises, nevertheless, the overall mark is considered by those who teach the subject to be a convenient measure of a student's ability to learn design. Students' end of year marks are considered a reflection of their learning, representing a balanced view of their performance over the year which was assessed by a range of different staff to compensate for any bias (Roberts 2004). The results of the surveys show that the students who had higher scores on ALS than others had gained higher marks at the end of the year. These results are consistent with those of previous studies and suggest that a higher learning independence level provides higher academic performance.

IV.VII. Limitations

Although it was recorded if students were entering their first-ever degree course, or if they had previously entered a course, the numbers were too discrepant in order to compare them in any meaningful way. And accordingly, students were classified into two groups only: students who came straight from secondary education and those who had not e.g. year out, work, etc.

The current study has only examined students in their first year from one architecture school in the UK, and accordingly the generalisability of these results is subject to certain limitations. Students may show different attitudes during their second and third year in higher education, or other students from other disciplines may show a decrease in their

responses through the year.

In the ALS, participants had limited options for responses, and these responses are based on students' self-perception rather than objective assessment.

Although the results suggest that time management was the biggest challenge facing students during their project work, the ALS did not explore in depth the reasons for any change in students' attitudes. The ALS findings were expanded on by collecting qualitative data that helped in explaining how and why students' attitudes changed over the year. The next chapter will unpack students' understanding of independent learning which could not be revealed by a quantitative study and will shed light on their learning experiences and perceptions of independence within the design studio context.

CHAPTER FIVE
Ten Stories from First Year Studio

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Ten Stories from First Year Studio

This chapter presents the narrative-based analysis portion of the study as an output of the analytical steps described in Chapter 2, comprised of 10 narratives from the research participants. This represents an exploration of the various ways of reading, interpreting, and representing the stories of the research participants and how each of the individuals navigated his or her first year. This seeks to enhance our understanding of the students' perceptions of learning independence and how this changed over the time (see research question 2 on page 6).

Underlying the narratives is the unseen story of students' journeys towards learning independence and how the design studio is able to foster it within a range of different individuals with different learning experiences and backgrounds. All names used in this chapter, as well as in the next chapters, were changed to protect the participants' privacy (refer to chapter 3).

V.I. Building up the narratives

To build up the narratives, stories about learning in the design studio were collected through five interviews with each participant during one academic year.

As a consequence of the focus on learning events and the interest in students' perception of their experience we have chosen to adopt and adapt the Labovian Evaluation model (refer to chapter 3). The simplified adaptation of the Labovian model provides a set of clear criteria and framework for the narratives, and helps to structure the narratives. It also helps consideration of the data and facilitates more in-depth analysis.

The narratives began by giving an overview of the students' learning context; the participants also narrated reasons for choosing architecture as a discipline. Accordingly, we shifted our focus backwards in time to a previous learning experience of the student

e.g. secondary school. Some students had to go back even further to a childhood experience, while others went forward in time e.g. getting a degree and choosing a career path.

In simple words, the participant's learning stories were restructured and re-storied using the students' own words. This restructuring demanded a rigorous organisation of interview material into distinct narratives to answer readers' questions on what the story is about, its characters and settings, and how the participant wanted to be understood (refer to chapter 3, pages 62-64).

By adopting the Labovian model, it was possible to examine how the learning experience progresses: does learning in general, and specifically students' perception of independence, get better, worse or remain much the same? The research study also looked for evidences of independence in the language used or meanings attributed to the words narrated by students.

The Labovian model then helped the explanation of questions such as "Why is the student narrating a particular learning event, such as the crit, in this particular way", "What is his/her perception and conception of that event?", or "How can it be related to the whole learning experience?" and "How does it contribute to build learning independence?" Restructuring the narratives, accordingly, gives a clearer context of each learning experience and provides explanations for why students behave in certain ways, or why and how they felt in certain conditions.

Building up the narratives in this way has many uses and advantages. Firstly, it made us think creatively about the data and how we interpret them; the narratives served as a starting point for analysis by offering surprising insights about how students make sense of the learning events in the studio, such as crits and tutorials, and their conception of independence. Secondly, narratives are a good way to set the scene for the readers

about the data collected from students without losing the inherent individuality and strength of different experience (Dickie, 2018). Thirdly, narratives enabled better understanding of students' perspectives on what actually happens in the design studio and how they learn about architecture from their design projects. And lastly, it is believed that by achieving a better understanding researchers and even students themselves may better learn about and recognise design studio strengths and how it promotes learning independence, and its weaknesses and the barriers to independence.

At the end of each narrative, a commentary section is included outlining the conclusions drawn from that narrative, and at the end of the chapter a fuller discussion reviews all the narratives.

Charles
You simply learn from failure

*W*hen I was eight, I started drawing houses. I enjoyed it and I kept doing it and realised that is what I wanted to do. I studied construction and architectural design for two years in college. It wasn't like school when we were told what to do. And last year I studied graphical design as well. It was self-taught; I learnt most about it by reading architectural books and magazines. They kind of prepared me a lot for going to university.

This year we had two main projects; one is about creating a food space for the global gardens here in Cardiff, and the other one is an observatory in Lanzarote. We also had a trip to Lanzarote to see the site and do some research and after that, and before the end of the year, we had the chance and time to develop our work for the portfolio review… and that's it.

In the first project we visited the site in Cardiff, and as soon as the tutor had said the project will be in this site the idea said "Hello" to me. I just looked at the site and thought of the brief and that was it. And during the year you basically just sit with your tutor and have a chat about what you designed and tell the tutor about the changes you made...you tell him what you're doing, and he tells you "work more on this..." or maybe suggests something to look at; it's a back and forth process. I did a couple of changes, but they made the design a lot better. And after that came the crit; you put up everything you've done like concepts, elevations, any images that relate to the project and you talk about your design and what inspired you and such. It's largely for assessment purposes; they want to see how you've designed the project, so you've done this wrong, and next time you will do it better. Basically, you just present your work and ideas and convince them why you've done this. I was quite nervous and didn't do too well because I've never done something like that before and I don't really enjoy speaking in front of a large crowd. There were couple of points I missed but I understood most of what they said.

After the first project we went to Lanzarote and I quite enjoyed it. We were really looking forward to it, maybe because it was a free trip abroad, but I think it helped quite a lot of people in terms of seeing a different architectural style and how buildings worked really well with the landscape. It was helpful as well to walk there and imagine what it would be like putting a building there. It just kind of allows you to sort of look at how your project will emerge in the landscape. But the most challenging thing was coming up with a design that would work. I remember I did a concept while we were up there in the site and my tutor straight away turned around and said, "No this will not work, this isn't contextual". I did some sort of sky research on Constellations of the Night Sky as I wanted the design to reflect that and thanks to my tutor, we kind of agreed that it wasn't really working. So, I took a couple of steps back and did what we have been asked to do beforehand, which are a land and a sky study and how I could bring that into a design, and I came up with a better design. I was quite happy with it, and I did well with it in the crit; way better than the first one mainly because I just planned a bit more. I literally just sat there and looked at my work and sort of wrote down what I would speak about which I hadn't previously done. So, I think

that helped quite a lot, and obviously after doing a couple of them you kind of know what's going to happen. Critics mentioned a couple of points need to be addressed which I've been thinking about, but time was a bit too short, other than that, I think it worked quite well.

Interview 4
Interview 5

So, for the portfolio review I did a section showing the playing of lights, showing how the light comes in and how it should affect the materials and materiality. There was an initial idea of doing it from the beginning; however, time was a bit too short. So, I kind of put it off to the portfolio review. I also did a much more detailed model. It's clearer than the elevations and shows how they would look all the way.

Interview 5

At the end of the year we had the vertical studio in which we worked with second year students on a small project. It was quite good to talk to them and find out how the second year works, and the project itself was quite interesting. We spend most of our time in the studio; we always bounce ideas off each other, and we talk all the time about our projects. It's basically like another little family. And you could see that some students were struggling; some people had come from artsy backgrounds and had no clue on the technical side, so I was kind of thinking maybe they could do like a module alongside just to kind of teach them more on the practical side.

It was a little frustrating at first to keep changing my work because I spent a lot of time on it but after that I realised changes make the project a lot better and it made me feel quite happy, and that I have my own stamp…I think you simply learn from failure.

V.II.I Commentary section on Charles' learning experience:

Pursuing a Diploma in Architecture and Construction helped prepare Charles for independent learning in university, as he was able to understand that learning in higher education, unlike learning in high school, is about developing one's own learning. In the narratives, Charles showed a number of evidences of learning independence; his personal interest in drawing and design was the main influence for choosing architecture to study at university, which shows an indication of independency at an early stage. Moreover, in addition to the skills he gained at college, he taught himself graphic design to help the expression of his work. During his first year, Charles emphasised the fact that design modifications were of significant importance that led to a better design solution, saying "it's a back and forth process. I did couple of changes, but they made the design a lot better", and he was able to take steps back and start the design with a fresh eye whenever he felt unsatisfied with his design proposal. This shows his understanding of the iterative nature of the design process, and through discussions with his tutor, and a process of experimenting, he was able to reinforce his design proposals, which gave him confidence and a feeling of ownership/authorship of his design work.

However, Charles has not completely understood the importance of some of the learning events. Although he was able to see some beneficial aspects of the field trip, he missed its main aim. Visiting and understanding the context of Lanzarote was key to enabling students to develop a sensorial exploration of its sky and landscape. It was expected that the students collect material samples, create a photographic register, and document their experience of the landscape in any medium that they saw fit, in order to understand the existing opportunities and problems of the site and transform this experience into a meaningful design proposal. For Charles, the field trip was more like a paid trip from school in which students could see a different architectural style and see the site and imagine how his project will fit in it without doing any deep research on its context.

Furthermore, when he talked about the first project, he perceived the crit as an assessment point "for assessment purposes" in which he has to defend and convince the critics of his work "You just present your work and ideas and convince them why you've done this". This perception changed by the time of the second project; he was able to see that the crit is an opportunity to get feedback and to become involved in a discussion with the critics that would result in improving his design proposal "Critics mentioned a couple of points need to be addressed which I've been thinking about".

Overall, Charles showed an inclination to become an active and independent learner. Charles' learning independence is also conveyed by his understanding that learning from mistakes is not only acceptable, but within the context of a reflective process, is essential to produce a powerful learning experience. He believes that learning design is about learning from one's failures "I think you simply learn from failure". This, accordingly, puts him in a controlling position of his learning experience. He also demonstrated the ability to reflect over his designs; he was able to identify some of the shortcomings in his proposal and he identified ways to improve them, which shows that he was self-critical and responsible about his learning. In addition to his positive engagement with other students in the studio, he demonstrated the ability to recognise his learning needs, such as the need to prepare and organise his thoughts for the crit which made him in control of his learning experience as well.

Amalia
All-nighters

I did a foundation course in art and design specialising in 3D at UAL. I did that for a year and alongside that I took two mechanics modules. It was because I considered a lot of career options and I realised architecture is a good option…. I like arts, but I don't want to be an artist. I don't want to be a painter and I like engineering; I wanted a combination, so it works perfectly for me.

We had tutorials every Friday for the design module; at the beginning I was scared because it was the first time I was going to work one-to-one with my tutor. I was nervous; I thought she was scary, but she was nice. The first week was difficult for me… I was behind. For the first project everyone got the same site and you choose what to design. There was nothing in the brief; you design from scratch, and I designed a Learning Centre where people come and learn about how to grow food.
I remember having vague ideas and I read a book called 'The Vertical Farm: Feeding the World in the 21st Century' ... the tutor suggested it and it was quite efficient. I wanted a base, so I based my work around that book, and then I did a mind map because my mind was full of ideas. I also talked to my course mates about our ideas and they asked me for advice and vice versa. I talk to them mainly because we are in the exact same boat.

For the first crit I stayed two days in a row in the studio; didn't sleep at all, but the crit was really good. They gave me some good points but in general they liked the concept and my ideas. There were three of them and they all had their own opinions, so for example one was "I don't think this would work" and the other was "No I think it would" ... and I think that was good because they have different kinds of knowledge. For some points they mentioned I couldn't grasp the idea but then they showed me pictures and explained it a bit more so I kind of get what they were saying.

Then we had a field trip to Lanzarote. It is an island and I didn't research it before going there so I expected it to be green and tropical but when I first landed it was brown. It was beautiful; black land contrasting with the white houses, and sometimes at sunset it was red. It wouldn't be the same if we just looked at pictures of the island instead of going there.
We were given a brief and because it was eight weeks, we had to first explore three things. The first one was a sky study; unfortunately, we saw the stars once for only 20 minutes and I struggled to find inspiration and I didn't see the point of stars. The second week was a land study. I was most interested in the texture of the rocks because that's what I saw the most. And the third week was about finding a measuring device in astronomy and that was when I found something really cool, "the armillary sphere", which is used to navigate. And the star I liked was the North Star: the Navigation star. When we were there it was hard to look at the stars, so I wanted to do a platform where you could stand in a specific angle to face the stars. After this I found out you wouldn't be able to stand on that angle and you would just fall off. So, I reversed it; I took that angle and did some calculations, so you would lean on that platform then your body will be angled. There are 14 stars in total so I made 14 platforms, each for a specific star, and then the

Interview 4

distance between the platforms is actually proportional to how far those stars are away from each other. And then I linked everything together, but I wish I could have had this realisation two weeks earlier. The second project was very stressful. There was a lot of work to do and I was already a bit behind, and I think it depends on the tutor as well. My tutor for the first project loved my idea straightaway and told me: "OK this is what you can do…" and my tutor for the second project was more relaxed, he was not very forceful. I'd like the tutor to be a mixture of strict and pushy and when giving students advice he wouldn't say it in a harsh tone.

Interview 4
Interview 5

The second crit was good; I presented better than in the first one. I didn't sleep for 36 hours and I stayed in school, you know… All-nighters again! The 24-hour access is the best thing. I was here with some course mates; we helped each other a bit, asking each other questions….
In the first crit, I wanted to show the process and the development of my work so I had lots and lots of sketches, but the feedback was that you need to show more the final design. I showed my final design through a model but they wanted pictures and drawings, which is why for the second crit I created more digital images. They liked the development through the rendering and Photoshop, but they said that I could make it better by playing with different textures and making it more realistic. And that's what I did for the portfolio review.

Interview 5

I believe you are supposed to defend your project to the very end like a lawyer; if you defend it better, you'll get a better grade, and that's one thing that I realised quite late on.

V.III.I Commentary section on Amalia's learning experience:

As in the previous narrative, Amalia chose architecture based on her personal interest in design, after taking a foundation year in art and design.

During the narratives, there was a complete silence on her previous learning experience, and she was not able to reflect on her learning background or to embed it in her design work. Although she was familiar with the format of studio-based learning, she had a problem in dealing with the design brief and still expected to be given direct and clear instructions. Her previous learning experience did not change her point of view on the role of the design tutor, or make her more independent; she still thinks of the tutor, not herself, as the centre of the learning process. This explains why she preferred her first tutor as she was pushing her and giving her direct instructions, and this dependency on the tutor also explains why she defines a good tutor as someone who gives instructions rather than being, as she described, relaxed and not forceful. Although she read a book as an additional learning source, this was only because it was suggested by her tutor, not as something she would do for her own benefit. However, in the second project, she grasped the importance of being in the site and accordingly developed a design proposal based on her personal experience of Lanzarote. But she wasn't able to manage the workload efficiently, and spent nights working at the studio demonstrating a problem with workload and time management.

All this suggests Amalia as a dependent learner. In addition, she misunderstood the role of the crit and limited its purpose to assessment only without seeing it as an additional opportunity for learning. She also believed that how a student presented in the crit is the most important factor for getting a high grade and neglected any benefits of engaging in discussion with the critics about the work, which reinforces her position as a passive learner who works for the sake of grades only. She stated that the quality of the work

depends on the tutor, and she used the word "they" more than once referring to the critics and tutors when talking about her work. This reliance on the tutor is contradictory with what is expected from students in higher education, in terms of being responsible for their own learning, and their position in the centre of the learning process. And even when Amalia stated that it is normal to have different point of views on her work, it was in the context of relying on the tutors for providing knowledge, which shows an association with power over her and accordingly dependency upon tutors. This, in addition to working for better grades, could be the reasons why, when she developed her work for the portfolio, she followed the suggestions of the critics only and did not reflect on her work from a personal point of view. Moreover, it is also worth noting how Amalia used words such as "stressful", "scary", "tired", and "nervous" in expressing a lot of negative emotions during the year and reflecting her disengagement in the learning process. The only positive aspect of the design studio which she was able to perceive was working with other students and helping each other.

Julia
Sometimes a push from the tutor means a lot

Interview 1

I was kind of a nerd in high school. I took the IB and studied English, maths, literature, arts, physics and business management. I had a schedule for everything... usually I stick to them, and I think this is how I got good grades.

Interview 1
Interview 2

People told me that I would be a good architect because I like to create things; I think I chose it because people encouraged me to do it. I read about it, and thought it was interesting and I liked it. I had a concern that I wouldn't be good at it because I saw the other students' sketch books, and they were different. I mean it's obvious that we don't see things in the same way and I'm kind of challenged by that.

Interview 2
Interview 3

We started designing a project about food and space and how society nowadays is trying to integrate the idea of cultivating your own food in your own garden. I didn't have any problems with the brief; it was open, and clear. We had to do maps for the site, and we had a reading week. I looked at the maps and I saw there was a lack of community feeling within global gardens; people didn't know their neighbours and how to share knowledge about gardening etc… I thought of it as a building which has a fire in the middle, so people could sit around it and share their stories because fire has a mystical power that invites you to sit around and talk and it represents shelter and warmth. And then I went to the tutorial; we changed the shape a little bit according to the idea of being elevated and how it should look like a temple or something organic.

Interview 3

We were all given the same brief and I think it was beautiful that our work was both different and similar. I was laughing with my friend that we had the same idea and the same shape but still there were different things and the final models were different.

Interview 3
Interview 4
Interview 5

I spent four weeks on the project. It was good at first but then worse at the end because of time. I think the worse night was when I came back home from School at four in the morning …I'm not complaining about this because I like spending time at the studio; I like working with my friends. I love working, so I didn't feel it was a big problem. I talked to my tutor about the project and she said that I had no confidence at all. And at some point, I actually wrote to her "I'm stuck, help me". I think the first semester taught me a lot of things the hard way. But to be honest, I think of the crit as a very positive thing; it teaches you and even when it is negative, it's constructive.

The second project lasted for eight weeks not four, which is a huge difference because you actually get to have more ideas and change your ideas and I changed my idea completely at some point. I made sure to manage my time wisely; on one hand because I had more time, on the second hand because I already knew how stressful it is. Also, because it was more interesting, it was more out of the ordinary. I spent a whole night here and I stayed late nights for two weeks and it was fine. I think it was more successful.

I was interested in colour. I studied the colours and landscape of Lanzarote and then the colours of the sky. And then I read a book I borrowed from the library and it gave me an idea. My tutor suggested for me to study the theory of colour and I found this documentary about the history of colour and that is when my concept came. Accordingly, I had more confidence and my second crit was a lot easier. After the crit I added two more drawings. I didn't have them then because I didn't have time to make them right. I improved another drawing by adding more life to it and I tried to make new model, but that didn't work out.

Interview 4
Interview 5

In fact, I feel it's a very friendly environment in comparison to high school, and I like talking to people and getting feedback and we always help each other out because we come from different backgrounds. We have architectural families as well; we go out together and they help me with my Photoshop skills…we have close relationship, socially and educationally. I have a friend that studied at UCL and their studio is open until 10.00 pm so he has to go home with all his stuff and come back again the next day in the morning. And I think that way you will lose a lot of time. So, I think the 24-hour access here is very good, but my parents were a bit worried because I spend all my time at the School, really late sometimes. And I told them I enjoyed it. If I didn't think it would be useful, I wouldn't have done it. And one of my flat mates couldn't believe that I'm working all the time and I don't mind that. But I told her that for me it is different because my work has immediate results; I can see my product and I get feedback and learn fast, for her she has to study for six years and then hope that she has learnt it. So, I don't think the fact that we end up here until 3:00 am in the morning is a problem since you know you do it for your own sake.

Interview 5

I met an architect this holiday and he told me to look at the building like a living body and that just opened my mind so much because just from that tiny piece of information I got that the project has to breathe; it moves, it sweats… that conversation was helpful… I think sometimes just a tiny bit of information helps you a lot.

Interview 4
Interview 5

I feel good, especially after the review when I talked to my tutors and they said it's very good that you've made a lot of progress and it was really nice to hear a bit of encouragement and not just talking about the project. Sometimes a push from the tutor means a lot.
I'm proud of myself but the grades aren't the same as I used to get in high school. In high school I was used to getting high grades; here I got a whole range of grades... I think that's because the idea of doing something creative, maybe I put more effort in, and I work a lot more than somebody else and still they get a better grade despite that I worked more. But it's fine, I don't mind it, I always try to do my best and that's it.

V.IV.I Commentary section on Julia's learning experience:

Although Julia was advised to study architecture, she chose it after research on what it will be like to study the subject, which made her curious and interested in it.

When entering architecture school, she saw that other students' work differed from hers, and were even better, and she was able to see this difference as a positive thing that challenged her to try her best during her first year in the school.

She was able to recognise that she went on different phases while working on her projects, and admitted that at certain points in the year, especially during working on the first project, she felt stuck and asked for guidance and support from her tutor. However, she positively stated that design modifications and even stuckness are inherent components of the learning process and she talked about how they were essential to learn and prepare her for the second project.

Even though Julia did not explicitly say it, she felt that encouragement and guidance from tutors are not enough. Moreover, when referring to her conversation with her flat mate and with her parents, she talked about spending nights working at the studio and having stress time as a normal and accepted feature/myth of the design studio.

During the field trip she used her time there to research what was an interesting aspect of the island; she studied the colour of its landscape and sky in order to use this study as a starting point for her proposal. This shows Julia's engagement in her learning and choosing what she thinks is interesting made her motivated to work and enjoy the design project. When developing her concept, Julia indicated that she researched and followed her tutor's suggestion of searching colour theory. This research served to help her explore material and colour in depth, which in turn, made her develop her work more. Julia did not limit her learning to her tutor's suggestions; she was happy to seek out valid

additional sources of information from books, online learning resources, and informal discussion with professionals.

She expressed several additional indications of learning independence. She revealed her positive feelings about the open brief, and how fascinating it was to see students bringing their own experiences and different backgrounds and responding in various ways to the same brief and site, which exhibits that she is aware that there is not only one single solution to the design problem. When describing the design briefs, she used positive words such as "open", "clear", "interesting", and "out of the ordinary." She also stated that she learnt to manage her time better in the second project, and even though she spent most of her time working at the studio, she was able to spot a positive feature of learning design which is getting immediate results and a lot of feedback.

In comparison to high school, she felt more independent and engaged; she valued the feeling of community and of students helping each other in the school. She also believed that grades do not reflect effort and learning development, and even though she did not get high grades as she used to in high school, but she was able to self-assess and reflect on her overall learning and feel proud of her progress. This reinforces why she explained at the end of the year, just as she did at the beginning of the year, that she always tries her best to learn.

Sara
Tutors must give us a reality check

Interview 1

My dad is a carpenter and I enjoy the practical side of doing things, but I felt I need to know the vision behind doing them, so I entered architecture school. I feel like with the subjects I did in high school I'm least qualified to study architecture and I feel I should've done a foundation year in art, but at the same time this is why I came here to improve my skills in drawings and problem-solving.

Interview 2
Interview 3

The first project was so vague, it was just like "to design a global garden". We could have designed absolutely anything and that's why I find it hard because you don't know what the tutor expects from you and every week it seems your design changes. We had a reading week and I read a book about round tables and the significance of bringing people together. So my project came as a place where people can come together and share the food and cook in a kitchen. My tutor obviously knew that I don't really have an architectural background and he gave me the architectural movements to research, like modernism and gave me buildings for inspiration like Alhambra. We were expected to bring a model each week, but my models didn't really develop; they were just completely different models each week because I had different idea every time. My brain didn't really have a process as I just jumped from one idea to another. I've realised that I should develop my designs rather than completely change them.

Interview 3

I remember that at my first crit I was very embarrassed about my pin-ups, but I came with a really good model that I'm very proud of. Some of the feedback was vague, and I felt I should pretend I did understand what the critics said.

Interview 4
Interview 5

In the second project the brief was a bit obscure: to design an observatory inside a volcano. During the field trip I learnt how to integrate buildings with the landscape rather than disturbing them. What I liked when we visited César Manrique's house was that he had so many open elements. He had circular skylights that allowed the silhouette of palm trees to appear, which I thought was amazing; and there was a window cell that was basically made from the rock from the outside coming inwards …that was amazing.
I wanted to focus on the aspects of the volcano that I really liked, and I wanted other people to experience the volcano in a similar way. My design kept changing because I wasn't inspired. One time my design was just a tower which didn't really look aesthetic within the volcano and there were so many complications, so I changed it. In the end it looked more like a collection of tubes. I wanted the users of my observatory to see through my eyes how I saw the volcano, and the best way to do this is through tunnels where people can feel the texture of the rocks… I wanted them to be square rather than to be circular… I wanted to mimic the buildings within the city into the volcano so that's why I wanted them to be white and square. This design came only a week before the crit as I struggled finding solutions or ways to express my concept; I just find it hard for your ideas to flow when you're under so much pressure.

Interview 4
Interview 5

The crit went well although I didn't sleep that night and I didn't leave the studio at all. I thought it went really well and the critics spoke relatively well but when I got my written feedback it wasn't as positive as on the crit day; I guess the external people were just sympathetic. It just seems a bit silly having finally coming to a conclusion what you'd like your building to look like but only having a couple of days or so to get all this done. Especially since that I really struggled with drawings; I didn't take art, and this is a quite new to me and often it's forgotten that we don't all have the same artistic background. I used to prefer working from home, but lately I spent a lot of time in the studio and I feel like my design is getting better because I'm getting other students' opinions. I asked them for advice a lot, especially when it comes to drawing techniques. I also enjoyed the vertical studio; we spoke to people of the community about what they want to improve in their town… it was nice to work with students from second year and to work with the residents of Grangetown as well.

Interview 5

I think although I'm always working, I'm not always making progress. I had a job and I wasn't very good in managing my time, so I think I need more guidance on how to progress a bit faster. I wish the tutors would push me a bit more when I am slacking and actually give me a reality check like you're not producing enough work in this amount of time. But now I'm learning more to prioritise and spend time on things that will perhaps get me a better grade. I enjoyed the project although I'm bit disappointed with my grade, but I tried my best.

V.V.I Commentary section on Sara's learning experience:

Sara first identified what she considered a central struggle in her learning: the absence of artistic background. In both projects, the brief was "vague" and "obscure" to her.

Sara also noted a need for help in tying her ideas together. In the narratives she criticised the way they were taught by suggesting a need for more direction from tutors and the need to take into consideration students' different levels and learning backgrounds. She also wished the tutors to keep a constant check on their students' progress and give guidance when required. This suggests Sara as a dependent learner who sees the tutor as the centre of the learning process as the tutor should provide all required knowledge and learning materials. Her use of expressions such as "tutor expects", and "we were expected" suggests a power relationship with the tutor and accordingly her lack of independence.

Moreover, when she had an opportunity to learn and develop her project from the critics' comments, she pretended to understand what they said rather than exploring and benefiting from their suggestions. It is possible, however, that this disengaged behaviour has emotional roots of being embarrassed and afraid of judgment. Instead, Sara sought help from her peers and felt motivated while working around them. The previous point suggests Sara as a passive learner.

When talking about the field trip, she demonstrated a good understanding of the purpose of the site visit; she wanted to reflect her personal sensorial experience of the island into a spatial experience that represents the context of the island. However, she was not able to execute her ideas because of what she described as being "under pressure".

During the narratives, she used a lot of negative expressions to describe her feelings about learning design; words such as "least qualified", "struggled", "wasn't inspired", "embarrassed", and "external people were just sympathetic" showed her lack of

confidence in her own abilities to learn independently and accordingly decreasing her self-confidence.

Despite all these dependency traits, Sara stated that she enjoyed her overall experience, valued working and engaging with the community and appreciated the support and help from her peers. As a reflection on her first year experience, she stated that she needs to manage her time more wisely. In her opinion this means, not to work on her procrastination problem, neither on developing her drawing skills for instance, but instead, to spend more time on tasks that will guarantee her a good mark. This focus on her marks reflects her misunderstanding of the purpose of learning, and instead of developing and gaining lifelong skills, her focus is towards getting better marks only.

Zain
You are left on your own

*L*ast year I finished my A levels. I've always found architecture like the most important art-related subject; I wanted to do something that benefited other people, and helped society, and the best way to do that is by creating shelters. I've always wanted to design things and I've always wanted to help people, so this is the best thing for me to do. My biggest fear was that architecture is a very independent-base course [sic]. You have to plan your time and figure out what you're going to do without teachers always being there for you.

It took me a while to understand the first project; it was quite broad and I wasn't sure about it… I thought it had to be a green house. My initial thought was to design a greenhouse but from other students I realised that it could be anything you wanted it to be, like a cookery school or whatever. It was scary; I felt a bit confused because there's a lot to do for the first time and we hadn't been taught about it yet. I was a bit lost, but I just realised that other people were able to do it. So, I started by making sketches and looking for inspiration on the internet. I just had no idea what I was doing. I didn't feel like I was learning anything; I was just drawing and it's really hard to learn stuff when you're copying.

It was very stressful, but I talked to second years; they are really nice to talk to and they are willing to help. Tutors don't spend much time with students; I was in a private school and I had a very strong relationship and contact with my teachers. Here, tutors don't even know your name; it's only 30 minutes a week. Everyone tells me to be independent. They expect you to know everything but actually you are left on your own. My tutor didn't understand what I was doing and kept telling me to think about something else and to change it but didn't give me ideas or a reason why to change it. My first crit was stressful. I had it early in the morning. Because of my lack of time I messed up a bit. They were just telling me what was wrong and then criticising me on that... I would've liked them to appraise me a bit and then tell me what I could've improved.

The second tutor was better as he gave more time for his students, and he didn't care how long he had to spend at the studio with us. He was teaching us how to draw the human body the way he knows how to draw and that was useful because I didn't know how to draw people and he'd also teach me how to estimate scale with arms… So, he'd just take time out of his day just to teach us things that would develop and help us with the project. It was unrelated, but it would make you think how you could take that back into your project basically.

For the second project, we had to design an observatory inside a volcano, and it was an eight-week project, double the amount of the first time. I was more focused and determined this time because I didn't do well in the first project; luckily, I had a better tutor this time. It is obviously good to see the site and to get the feel of what it's like to be there… yeah, I remember it being windy there and that's how I got the idea of different temperatures

because some areas are really hot and some areas are really cold, and I also remember experiencing different visual landscapes because of different colours.

I focused on the sense of touch, because that was what I was interested in the most, the different textures, especially the contrast between rough and smooth textures in the volcano and then because I was so interested in contrast, I'd thought it has to do with light and dark... The thing is I didn't have enough time to think in depth about the actual design. We only had a week and I think I was trying to rush too much, and I had a lot of pressure to think of a design that didn't really relate to my concept. So, my original design was like a range of triangles on the slope that would make you look at a specific direction, but it didn't really make you experience textures and give you this sensory experience that I wanted. The reason for that is that I didn't plan my timing very well; I literally spent several weeks researching, and I didn't really think about design until last week, but at least I knew what I was meant to be doing which is contrary to the vagueness of the first project.

Interview 4
Interview 5

I didn't get a great mark... a "bare pass"; therefore, after the crit I changed the design especially since I had more time to think about it in depth. So, the final design is a pathway that makes you experience all the different things like vegetation, texture and the colour of rocks. So the pathway will take you through all different experiences, and it is wide enough so you can overhang your legs at the edge and like sort of experience the landscape. And you got framing views that are huge to emphasise the direction that you are meant to look at; and then the other side of the path there's like partition walls ... to give you a sense of "the unknown" like not knowing what you are about to see next and what you are going to experience.

Interview 5

I think crits were helpful, especially with my public speaking. I mean I used to be quite shy; I don't like presenting, but you get used to it. No one's really good at taking criticism but you get used to it as well, and instead of seeing it as a negative criticism you just see it as a way of improving. And they do give us the time to improve... It's not even that bad.

Interview 5

I knew what I was doing, and I felt like I learnt. My tutor said my work has improved but the mark is still the same, which means that I can't improve things or maybe I'm not capable.

V.VI.I Commentary section on Zain's learning experience:

At the beginning of the year, Zain talked about how she decided to study architecture based on a personal interest in design, art, and contributing to society. This decision, however, was accompanied by a fear of the difficulty that she may face, which is the requirement for being an independent learner in architecture school. This initial indicator of Zain's lack of independence appeared more clearly later during the year.

Zain did not understand the brief for the first project and reflected that by using negative words such as "scary", "vague", and "stressful". Many evidences in the narrative show how she was not engaged in learning during the year; she complained about how tutors lacked having a strong and personal relationship with their students and not spending enough time with them, and when she did not understand the brief, instead of approaching her tutor, she copied other students. This misconception of the brief led her to feel, as she described, "lost", and accordingly she did not feel that she was learning. In addition, this position as a passive learner and her reliance on the tutor to teach her everything are reinforced when she used expressions of asymmetrical relationships such as "they expect you to know everything", and "we hadn't been taught it".

She believed that her work was not understood by the tutor and accordingly she did not understand why her ideas were criticised or why the tutor wasn't suggesting ideas and alternatives. This illustrates her as a passive learner who relies on the tutor and expects him to be the centre of the learning process who should provide her with design alternatives "but he didn't give me ideas or a reason why to change it". However, in the second project, she showed some progress, as she had a motivation to work on her design and was inspired by her personal experience of the site. She stated in the narrative that she had a "better tutor" who unlike the first one, spent most of his time in the studio with the students and taught them about design in general. She felt motivated because of the collaborative engagement of the tutor with his students in the design

studio. Although this matched her expectations of what she needs from her tutor, it shows her dependency and reliance on him. However, she spent too much time on researching in order to develop her idea, and as a result had little time to execute the design she had in mind. Zain couldn't grasp the fact that in design, thinking and designing are parallel and should sustain and reinforce each other. And when she had a chance to improve her work, Zain completely changed the design and proposed a brand-new solution, for the sake of getting a better mark. She was disappointed by the low mark she received and was surprised that her mark did not change at all after changing the whole work. She believes that the mark, not development or progress, is the true reflection of learning. This illustrates that Zain could not develop the capacity to think like an architecture student, which explains why even though she felt that she is learning and developing, she expressed anxiety about her academic abilities.

Lea
He didn't say good things, only bad things about my work

Interview 1

*L*ast year I took a gap year; I kind of started my own project, my own business: I did some paintings and was selling them.
Before I came to the UK I talked to my parents and we ended up going to architecture school, because I really like art and history and I'm really good in maths and the combination of these subjects ended up with the idea of architecture school.

Interview 2
Interview 3

Each week we have tutorial time. The first week you have to come up with the purpose of your building; I came up with mine straight away and I didn't change the concept of my building, but like, constantly each week, I was changing the design of the building. I was looking at Greek architecture, and I remember my first comment from my tutor; he just said "It's completely wrong", and I changed my design dramatically and ended up with a complicated structure, completely different.
We were meeting once per week, and he was kind of asking me questions "Why have you done this? Why this? Why not this?" At the beginning I was really irritated because he wanted us to redo everything and start from beginning and the time is passing, and you get nervous because you do have to do everything. After three weeks I realised that you need to prove your point of view. You don't just agree with him; you need to tell him why you done this and then he is going to agree with you.

Interview 3

My first crit was one of the most horrible ones from the whole group, because my tutor is strict. It is hard to make him smile and make him positive about your work; he always criticises you. We were stressed and he was criticising the whole work and he didn't say good things, only bad things about your work. And there were another two; the three of them were criticising me the whole time, maybe it was my mistake because I didn't keep silent. I was trying to give reasons and I was trying to explain why I did it this way, not that way, so they were asking me a lot of questions. Inside my head I was like "I hate you" but after the crit I changed my mind because they told me that this is what will happen in real life, with clients and stuff.

Interview 4

I still feel a little bit uncomfortable in presenting my project, not just in front of students but also teachers and judges. I feel nervous about this, but I'm not worried about workload; I'm here to learn and study. Our year chair told us "you shouldn't care about the grade, don't expect to get great grades", and we were like "OH REALLY!" ...You know we were trying so hard and we put in so many efforts. You look around you and see other people working, and you just think "I don't have this drawing" so you kind of copy as a monkey. There are always things to do and you don't have enough time to finish; you work until the deadline. We went to Lanzarote for few days and were told that this is our site for the second project.
I'm thankful to our chair that he gave us this opportunity to know this place and have this interesting brief and I know for the second year we're going to have more realistic projects and they're going to be less extravagant and less dramatic. It was a nice experience to have… we didn't have borders or rules; we could do whatever we want and that's interesting. We didn't have

limitations. The project was interesting because the task was uncommon; it was a different experience. We don't stick with same tutor for the whole year and I think that's good because you got the experience from the majority of them.

For me the second tutor was an inspiring person and I learnt a lot from him, and I got really high grades for this project. I can look at my project and be proud of myself.

Interview 5

The critics for the second project wanted me to look more deeply on how I can use local material and how it can be used in my building, so after the crit I did research on some of Frank Lloyd's work; the external architect suggested me to do that, to be honest. And that inspired me for the next level of the project. Also, I did a more appropriate drawing of the building in its context, and I did a sketch just to show how it's going to be placed on the exact space on the volcano. It's quite interesting to know what other people think about your work because sometimes they can tell you interesting information as they have different perspectives… it's very interesting.
I was staying in the university working all night for this project, and I think I'm getting better, but it also depends on the tutor. Some of the tutors are asking for too much work so they put too much pressure on you.

Interview 4
Interview 5

I became less stressed about the crit; we've done some lessons in AutoCAD so we're a little bit more sure about what we're doing, but still we have a lot of questions and quite a lot of gaps to cover that hopefully we'll do next year. And It would be really helpful if they could, rather than having normal tutorials all the time, create workshops for students to have some practical knowledge on how to do practical stuff.

Interview 5

We also worked with second year students; it was a very nice opportunity to work with them because they have more experience. They taught me how to work on Rhino and other things that tutors missed. I had good grades for the last project, I got "comprehensive", which is really high. It's more that 70 compared to the first one and I'm happy about it.

Interview 5

V.VII.I Commentary section on Lea's learning experience:

The narratives show how it took Lea some time to make the transition into independent learning. For the first project she explained how she "had to" come up with a purpose for the building, suggesting a power relationship with the tutor. She also changed her work each week and copied other students' work, which exhibits a lack of understanding of the design brief. Moreover, she talked about how it was hard to please her tutor and "make him positive about the work". In her tutorials, Lea wished the tutor had identified what she was doing well, instead of focusing on her design shortcomings. This reliance and dependence on the tutor did not last long, as after several tutorials she realised that tutorials are not about following instructions, but more of a discussion that helps to develop the work: "After three weeks I realised that you need to prove your point of view, you don't just agree with him".

She also described how her frustration with the harsh way tutors judged her work in her first crit changed, when she realised that this type of criticism is due to the nature of design and that is what really happens with real life projects. She valued the feedback and how it was communicated as it was perceived as being from the real world of architecture. This shows that, to Lea, the crit is not limited to defending work and receiving feedback in order to get good marks, but it is also appreciated when is contextualised in the wider realm of professional practice.

This, with other evidences, demonstrated that Lea has a good grasp of the fundamental features of independence; she was able to take control of her learning and appreciated the open brief and the opportunity to develop the work all the time. She was positive about having different point of views on her work and appreciated having different tutors with different knowledge during the year. However, Lea did not realise how essential it is to learn independently from different resources other than tutors. This was obvious when she talked about what she has informally learnt from second year students "They

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taught me how to work on Rhino and other things that tutors missed". Lea also mentioned the marks several times, which highlights how she is still paying much attention to the end product of her work, yet she was able to reflect sufficiently on her learning experience and was able to identify her learning needs and objectives which she is looking forward to fulfilling in her second year.

Su Lee
They don't work as much as we do

Before I came here, I took a gap year. I was unsure about what to do next; I wanted to take a break from education, because, ever since I was born throughout your life you go through education, education and education which is exciting but at some point, you wonder how it is life without a programme. It influenced my study now, because I have another perception of life. Before the gap year I was more like an introvert but doing the gap year I interacted with a lot of people and I discovered my extrovert side, now I could go around and interact more, ask for advice and, share my ideas with other students more openly. I took some 3ds Max classes, as I wanted to become a fashion designer. My parents are Asians; they wanted a doctor. They told me to look at other prospects and this was when I found architecture. They are paying for my studies; I think it's only fair.

In the first year meeting we were informed about the first project; the year chair gave us the specifications, precedents ...etc. At the beginning we were supposed to pick a purpose of the building. It's not a greenhouse; it could be a building that processes food, or it could be something with the water or whatever. It was really good to choose anything.

I worked on the functionality of the building, then I started to have tutorials with my tutor and we worked from the interior to exterior, but by week 2 it changed completely because it wasn't functional, so I went back and read the brief and started over; my tutor suggested it actually... If it was a good design, I would have defended it, but he was right, so I started all over again. Each Friday we meet up and he tells us what we should have for next week, and then in the one-to-one tutorial he asks specific things about my project; well he asks me a lot of questions. Basically if I can't come up with a good answer it has to go away; you have to defend it...

I was pretty confident about my work. I've done well; I know I'm bad at presenting, but I think my design and drawings speak for themselves. During the crit I was so tired, and I wasn't able to present as good as my drawings were. I was so tired because I kept working all night and half of my brain was dead; I will never do this again. The critics were really nice, no criticism, everything they said was put in the form of suggestions and I took notes. I think my tutor and the critic shared the same view; it was less stressful than I expected.

Our second project was based in Lanzarote. We were supposed to build an observatory and it was a really exciting project. I've never thought that we'd get to do something like that. I thought we'd start with a residence or something like that, but an observatory in a volcano! I liked how houses in Lanzarote combine water and trees in the inside. So, I thought of using that for my space. To create a space where you can sit to watch the solar eclipse which I've been studying, and to be surrounded by water and trees; this way people can feel connected more to the Earth.

I think that the first project was more difficult but not because of anything in particular but because it was the first project. It was like a lot of information together and then in the second semester you have like the second try.

I used to work a lot more in the studio but I'm more sceptical now. I don't like it when people can see you working, and I don't want to live with the paranoia that people might be stealing my ideas.

Interview 5
Interview 4

I didn't know which approach to have when it comes to design. In the first semester I used 3ds Max but my tutor said that if I use 3D modelling it is kind of cheating because other students don't have that experience so they may feel threatened or discouraged, but at the same time some students have ten years' background in art painting and I've never painted in my life. So, everybody has an advantage and a disadvantage. I've noticed that although my renders are not that realistic, but my design is much more in depth because I have more time to focus on it. I think that tutors should be more flexible when it comes to the medium of drawing or exploration that students have.

Interview 4

I think at the crit it's 50% your work and 50% your speech and the way you present your ideas, and in the first semester I didn't allow myself time to think about how I'm going to present. All the tutors are saying it's rewarding but at the same time it demands so many sacrifices; I'm not being dramatic and I know I'm only in my first year but the change…OMG! [sic] ... In comparison to people from other courses…. I have eight flat mates and they all study different subjects like journalism, media, and they don't work as much as we do.

V.VIII.I Commentary section on Su Lee's learning experience:

Su Lee's parents influenced her decision in entering architecture school; she chose architecture as it was the subject most related to her interest in fashion design. At the beginning of the year, Su Lee gave several indications of being an independent person. She was excited and interested in the subject of design; she took a gap year and developed her interest and learnt a 3D modelling software, and she was willing to collaborate with others and ask for advice.

During the year, she was pleased with the open brief; however, when talking about tutorials she demonstrated dependency on the tutor in different ways. She relied on the tutor to give instructions, and additional learning material, and she explained that if he was not satisfied with her answers she felt that her work had to be changed. This illustrates that she perceived the tutorial not as an informal discussion of the work, but as an oral test with right and wrong answers. Su Lee misinterpreted the nature of the design process and assumed that design problems have correct solutions that should remain and wrong solutions that should be discarded.

As the narratives show, she complained about workload and how she spent nights working on the project which exhibits a time management problem. The crit is fundamentally a communicative event; however, as Su Lee was tired because of working all night, she could not communicate and present her work as she planned to. Moreover, she stated that she did not do well in her crit because of her lack of sleep and accordingly she used 3ds Max for the second project. This approach allowed her to avoid hand drawings which she is not good at, but also gave her more time to think in depth about the design itself and how to develop it. Su Lee comments, "but my design is much more in depth because I have more time to focus on it". To Su Lee, work quality, hence learning, are proportional to time spent working on the project and not on developing her design ideas or learning new design skills. This suggests Su Lee is a passive learner,

who is not open to develop her skills and learn new ways of expressing her ideas. Another aspect that illustrates her as a passive learner is her misinterpretation of working in the studio. She considered it as a negative competitive aspect of the learning environment, while working around and with other students is often regarded as a motivator of the studio. This also contradicts with Su Lee's statement at the beginning of the year when she asserts she is open to different points of view and willing to share her ideas with other students more openly. And finally, even though the criteria for assessment was explained to the student at different times during the year, she misjudged the criteria and believed that students are being evaluated based on their presentation skills as equally as on the quality of the work itself.

Diana
It's about how much time you spend on your own investing in learning

Interview 1

Last year I was in high school; I didn't do A levels. I studied different subjects, Latvian, English, maths, history and also did physics and biology. I used to create timetables; I stick to them, but perhaps not in everything, but I do try to plan everything.

As I really like art and maths, and I thought architecture would be a great subject that combines the two different fields in one subject. In architecture many doors are open, and you can do a range of things, whereas if one would study medicine for example, then their future is kind of already determined, and you have to go into that field, whereas in architecture it's really broad and there are many different fields we can access.

Interview 1
Interview 2

I realised university is about independent work; we have lectures and they help, and they provide some information, but it's largely based on our own research, and we have to go to the library and find more information and broaden our knowledge. I think, definitely, there is less time for social life, but if time is managed well, I think there is definitely still a possibility to have a great time while studying.

Interview 2

I guess the beginning was quite challenging because we're just given the brief and you suddenly have to come up with a design proposal and it was quite hard to start, but I really enjoyed making models... It's a new discovery for me to think how the people would feel within the space and try to visualise it. The first project was to create a food space which can have different uses; it's a place where people could come together to cook or to eat or to do other activities… It's open.

I spoke to my tutor because I was struggling to figure out what I wanted to do. I had a shape in mind, but then I thought it would be really hard to build and draw, so I started doing a completely different design and then I got stuck even more because that wasn't really relating to my concept. I was really lost and couldn't figure out what to do, so I talked again with my tutor and she gave me feedback and it helped. She said "Yes, go with the first idea" so it was encouraging to have that green light and I did go back to the initial idea, which was nice because that was coming more naturally. I started by doing some sketches and models. I know some people had to change their model and their design every single week but it hasn't happened with me luckily; I had to make minor changes only.

Interview 2
Interview3

I was bit stressed because it's the first time I did something like that, unfortunately, because most of us have finished high school and we never really had anything similar; we've never made models; we've never done technical drawings… At first it was a bit intimidating because you feel kind of lost and you don't know where to even start. Then you think that maybe my project wasn't good enough because… I was still doubting, and I didn't have that confidence. Before the crit I was really worried and nervous, I started comparing myself to other students; I had a low self-esteem and I just wasn't confident in what I was doing. Your course mates can be a positive impact, but it can lead you to the wrong direction; I think comparison is your biggest enemy.

When I received my crit feedback, which was really good, it boosted my confidence and made me realise that there is no good reason why you should compare yourself to others and that it's really about your own work and ideas and trusting yourself.

Interview 4

For the second project we started with a sky study and I looked at the lunar phases and the lunar cycle and why there are different phases. I continued with a land study and I decided to look at the layers of the earth and what happens during a volcanic eruption. I looked at the magma chamber which is embedded in the ground and then how lava overflows and it becomes exposed during the eruption, so I was inspired by that and I wanted to create this journey from being totally exposed to being surrounded and imbedded by the ground.

I presented my work and the crit went really well; they didn't really ask me to change anything, but they suggested that I work on my plans just to make them clearer. I thought everything that was suggested would be beneficial; so I added rock texture and colours and then did some model photography. I took pictures of the models and played with the light. So now you have a clearer understanding of how it could feel inside that space and what would be its visual impact. I can look at my project and be proud of myself, because at the beginning of the year I couldn't even imagine that I could do this.

Interview 5

We also worked with second year students. We had to build a pavilion at 1:1 scale which is interesting because you can actually see the design proposal being executed from drawings and see it as a physical intervention. Learning how to use different tools and the practical side of designing was a very helpful experience.

Interview 4
Interview 5

I was very satisfied with my work and mark and I wanted to respect what my tutor suggested. If I can personally judge my work, I see that there is big improvement. I've maybe created or developed my own style. I think that my time management has improved over all.

Throughout the year I've realised that it's a lot about independent learning. I learnt how to draw perspective by myself and it is necessary to learn perspective, but no one taught us that. So even though we have lectures and tutorials it's about how much time you spend on your own in investing in learning something new. I think I've learnt a lot and I've grown.

V.IX.I Commentary section on Diana's learning experience:

Although Diana expected learning in higher education to be independent and more self-directed, she struggled during her first project as she did not have an art or design related background. She showed dependency on her tutor several times during the first project, especially at the beginning when she "had to come up" with a purpose for a building. She did not have faith in her design proposal and felt obliged to abandon it, and spent two weeks feeling, as she described it, "stuck" until she got the approval from her tutor. Talking about having "the green light" also shows her lack of independence and that she was not controlling her learning nor being able to self-assess her work. This might be a reason for low self-esteem and lack of confidence, which was reflected in her choice of words describing her feelings during the first project; she felt it was "intimidating", and she felt "lost", "stressed", "worried", and "nervous".

Diana seemed to be less confident about her work, not because she did not have an image of how the final design would be, nor because she was not able to respond effectively to the project requirement, but rather because she seemed to get distracted by constant comparisons with other students. While working around others in the studio can be a great opportunity to promote independence from tutors by collaborating with peers and students from different years, she could not understand this feature of the design studio and was, on the contrary, negatively affected by it. She also was not open about design modifications and could not grasp the nature of design iteration as an important feature of learning design. She talked about how she was "lucky" that she did not make major changes in her design, and how critics did not ask her to change her work.

Nonetheless, she, as the narrative suggests, became capable of reflection and showed a few aspects of independence in her second project. Diana was able to create a design proposal based on her inspiration and personal experience of the site with less reliance

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on the tutor, and she enjoyed her learning experience and the new discovery of creating spaces and model making, saying that "learning how to use different tools and the practical side of designing was a very helpful and interesting experience". Through a process of reflection upon her learning, Diana came to understand herself better and the sources of her problems. Although she suffered with her drawings and kept comparing her work with others', she was able to teach herself how to draw perspective. She aimed at developing herself over time by turning what she perceived as a challenge into a learning opportunity.

Sally
If you're interested, you will learn a lot!

I have friends who study here and they told me it's a good experience and the school is very interesting. I want to be a real estate agent, but I also want to learn more about what am I going to tell people and to know more about the buildings. I have friends who introduced me to part of the programme, and they told me if you're not dedicated you probably won't succeed. And I know some friends who failed and that's why they told me to stay dedicated and motivated.

The first project was about designing a building for the global gardens without a specific function; you can choose the function yourself. The first thing I wanted to do was to design something for people. When we went to the site it was raining and muddy without any shelter for the people; I had one idea in mind, so I started sketching and doing a model to visualise it more effectively.

We had tutorials each week in which I and the tutor talk and exchange ideas. My tutor would say "this is very good, but your weaknesses are this and this and I'd want you to do this…" so I spent time thinking about his suggestions and how to do them my own way. I talk to second and third year students all the time; they told me that my ideas are good and gave me ideas how to present it and how to do my sections…small details that you don't know. My building was a steep one so people can climb on the roof and can plant plants, and inside you can socialise with others. The problem is that I work in chaos; I threw my early sketches away, so my pin-up didn't show the beginning stages of my work and how it developed. I worked for 10 hours a day and didn't sleep for two days before the crit because my sections and elevations were too technical and I want my work to show creativity, so I started taking photos, did more sketches, Photoshopping and putting in colours.
I felt confident; it is a way to show my ideas to others, nothing stressful. So, in my first crit I had three critics. It was more like a discussion with feedback; they weren't critical but made suggestions to make it stronger. I felt satisfied after the crit and I realised what my weaknesses are; I'm not that organised, and I didn't know where to start, and that affected my time management as it took me a while to know what were the first things to do… It's still happening; I tried but it still didn't work out. And because I didn't have enough sleep, I felt off during the crit and I didn't express my ideas clearly enough.

After that project we went to Lanzarote for five days and we went to different houses that one of the famous architects there created. We went to a lot of museums and we had a free day and free nights. I learnt about the creation of the whole island, the rocks, the people, and the community. We met a lot of natives. And our tour guide was a native woman. It was very interesting to get to know a person like her and just from communicating with the people of the island you learn a lot. It helped with my second project because you create something that you can relate to, and the feeling and remembering what it actually was to be there kept me motivated to work on this project.

Interview 4

But there are moments that you feel like you don't know what you're doing and you don't know if this is the correct way to present it or if it's just clear in your head, but I think if you look at examples, and you try out things you will learn. There is always a progress even if you made mistakes.

Interview 4

It was a hard project, but after four weeks of trouble I kind of stuck to one idea and tried to develop it and I kind of tried to connect my idea and my tutor's idea into something that is functional. Because my tutor was more of a teacher than a person who's giving advice, more of a person who wanted his ideas to be created than accepting what you had in mind.
So first we started with a sky study. And for this I chose the planet of Mars and I wanted to focus on similarities and differences between the planet Earth and Mars. Mars creates massive volcanoes that are not from tectonic movements because there is only one tectonic plate, and they happen when tension inside the crust becomes bigger and bigger and then erupts. But they're very similar to those on Earth because they have the same characteristics in chemicals inside the soil…So this is the thing that connects the two planets. So, as you walk inside my building, you will see different types of rocks, then you go down a couple of levels and you can see the open sky as I curved out the upper part and you will reach a point where you're in a room created out of the red rocks. And as the colour red is the colour of the planet Mars, I framed the rooftop to become a small opening that frames only Mars.

Interview 4
Interview 5

The crit was very good actually. It's kind of the same as the first crit, the same atmosphere. I learn from crits, for example, the critics gave me examples of architects who did similar concepts, and they told me how to improve even further. In school I had similar things like oral exams, but they weren't the same because they didn't give feedback, just asking you a question or two. But here with crits there was definitely a lot of feedback.

Interview 5

So, for the portfolio review I just played with some photos on Photoshop to show how the space would feel like inside. I'm satisfied because I'm really committed to every project we had and I'm feeling very good.
I started catching up with an old friend here on campus and I can see the difference in terms of programmes of studying, the trips we have and the exams that we don't have. Everything is positive compared to what she's studying. I prefer crits over exams; I don't just learn how to improve my work, but I also learn from other student's projects and I learn when critics give feedback to them.

Interview 4

At the beginning I didn't know architecture and how people study it. To be honest I haven't learnt a lot from the lectures, it's more on your own; if you're interested you will learn a lot. And what I like the most is how you can express yourself in a project. They give good feedback and they give you the chance to improve which is the best part.

Interview 5

You have to depend on yourself, and you have to push yourself to succeed in this course. I don't think grades are very important; the important thing is self-improvement and motivation. It was great to be honest, you are not limited by any restrictions or specific design proposition, I think of whatever I wanted to do.

V.X.I Commentary section on Sally's learning experience:

Sally chose architecture school primarily on consideration of future job opportunities and on the basis of her ability and interest in it. She demonstrated many aspects of independence at a very early stage; she appreciated the freedom allowed by the open brief, which made her in control of her learning and in turn provided the opportunity to develop her own learning. During tutorials, the feedback was seen as suggestions to develop the work and not as instructions that should be followed precisely, and even when she talked about her second tutor, who as she suggested, focused less on her ideas to be executed, she managed to link his suggestions with her ideas to create a design that belongs to her. This can be read in her use of words such as "to do them my own way", and "to connect my idea and my tutor's idea".

She described the crit as an event where she displays and discusses her work with the opportunity of learning by getting feedback in an informal way which deepens the design proposal. Interestingly, Sally was the only student who realised the additional learning opportunity offered by attending other students' crits. She was able to learn from and reflect on her work and the work of her peers, which shows her as an active learner who does not limit her learning to getting feedback on her work only. She also mentioned learning from upper year students by talking with them and discussing work with them.

Sally mentioned that learning architecture is largely based on the students' attitude and designing is a great opportunity to express themselves and their interests. Students should depend on themselves and if they are interested in the subject, they will learn more. Sally explained that self-improvement and motivation are the true measure of her learning, not grades.

Moreover, Sally was open to self-criticism and she was able to see that she works in an unorganised way, and that her work was very technical, and she wanted it to be more artistic and creative. She was wondering about the design process nature, and how to

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execute her ideas, which resulted in having moments of hesitations and accordingly affected her time management. She felt rushed during the first project and thought that there had not been enough time to pause and consider the work during the development of the project, simply because of her bad organisational skills. She tried to work in a more organised manner in the second project, and stated that there was more time to pause and reflect on her design proposal but still she could not manage to do it perfectly.

These evidences illustrate Sally as a mature and active learner in the design studio, who is able to identify her learning needs and work on them.

Rachael
You are not getting spoon-fed as you usually would

I did A levels before I came here. I felt like architecture is such a hands-on subject, I didn't really want to do something I'd get bored of, like always sitting in the library. I felt architecture is multifaceted; it is about a lot of different things. It could be about poetry, art, or politics, so it is a really broad subject that I knew I wouldn't get bored of. You can give back to the community by making shelters and stuff, and it helps you discover and explore different places as well. I think helping people was the main motivation.

Everyone used to say in A levels "you would have independence" but that's not really that true. For example, if we were given homework our teacher would kind of direct us like "You can do this; you can do that." Here, in our first project they didn't tell us anything; we had to do it ourselves. That's why we're all so stressed out, because we didn't even know if we're doing it right. There is no sense of direction; you can always ask for help, but they will never tell you what to do and I think that's the most difficult bit. You are not getting spoon-fed as you usually would. It's all left to you; you have to do everything yourself, and the time they give you is not enough to show your real potential. Someone I know dropped out; it was scary. You hear a lot of stories like architecture students don't get sleep, and you don't really know what you are going to expect.

It took me some time to understand the first project; the tutor asked me to do a model straight away, and I was new to model making so it was a bit difficult, but I believe because of that it made it much easier for the second project. It was difficult to find inspiration because it's not something I'm used to, but the tutor was really helpful. I really enjoyed the one-to-one sessions that we have every Friday, so it's not like you never know what you're doing and the tutor kind of push you on the right track. And also, we have this architecture family, and my architectural mom gave me her sketch book and I got inspiration from it. I asked her about the crit. She told me to sleep the night before, and she was right, I was so nervous and tired during my first crit because I didn't have any sleep… it's nice to have older students, they have already been on the same journey, and they are different from the tutors and are more understanding.
The critics understand that you haven't done anything like this before, so my first crit was like a casual discussion and I tried to understand everything they mentioned as I had different feedback on how to improve my work and I think it's good to have different perspectives but on one bad side it's hard to please everyone.

In January we went on a study trip to Lanzarote and we were looking at installations within a volcanic site, and we had a series of trips to César Manrique's architecture. They wanted us to do spatial expressions that represent architecture. It was challenging and very abstract; the brief was vague and accordingly everyone has a different thing to do. Basically, I was very interested in the rocks of Lanzarote and I wanted to mirror their colour and texture in my models, so my project became a kind of a museum of rocks.

They gave us eight weeks, and after the first four weeks we had like an interim crit, kind of like a mini crit, and architects came to see where we at. And then we had another four weeks to improve and to develop our work.

Interview 4

And then we had our real crit, in which one critic told me "it was your whole idea to show texture and colour of the rocks and you neglected it in your design". So for the portfolio review I've improved my sections and placed rocks inside them so you can feel the colour and texture when the sun hits the rocks inside the building'. And I also improved the model and added some topography to mirror the volcano. I like how they gave us a lot of improvements… I'm happy that they told me some technical things I could change, and my grades can change slightly, so now I know that my grade will go up a bit because I've done what they told me.

Interview 5

To be honest, I didn't know what I was doing most of the time because I was new, but with the second project I learnt what to do. And I was so much better in terms of time management as well. Well, for the second project I slept for three hours before the crit, which is a big improvement. They don't tell you what to do; they just direct you, and I like how they give us the freedom to do what we want to do and give us constructive comments. And here everyone has different experience from you; some people are more advanced, which is quite good because you see people from different levels from yours and you can improve your work or get inspiration from them.

Interview 5

I felt I was learning actively, they have this thing called "learning by doing" and it's getting easier for us and I learnt more with the second project. I feel that I will be even better for my second year.

Commentary section on Rachael's learning experience:

Rachael chose architecture based on her interest in design and her wish to help the community and to learn in different ways about different things and not be limited to a certain field.

Although Rachael expected independence as a requirement at university, she was dependent on the tutor to guide her and reassure her that she was "doing it right". She was confused over the nature of the actions she should take and therefore was "unable to find inspiration" for the first project. She preferred performing a given task with instructions from the tutor rather than exploring personal ideas. She believed that "there is no sense of direction" when it comes to learning design, which is, in her opinion, quite difficult. This illustrates her misconception of the nature of the design processes as she expected a clear instruction from her tutors on how to design. She also conveyed feelings of anxiety saying how it was "scary" to hear stories from students about sacrificing their time and was even more "stressed" when one of her peers dropped out.

She explained that because of not knowing how to design at the first project, her learning experience was messy, often illustrating dependency on the tutor. However, as the narrative progressed, going through such a messy element of learning did not prevent Rachael from developing and learning, but interestingly, it promoted her learning and confidence. She also talked positively about how her peers and second year students were very helpful in terms of support and how their different backgrounds are useful to bring different experiences to their learning. Moreover, she stated that tutors and critics were supportive and helpful. She valued the different perspectives offered by the critics, and explained that it is "hard to please everyone" which reveals her understanding that there is no right or wrong solution, and that she should interpret between the different opinions suggested by the critics. In the second crit, she appraised critics' comments and suggestions on her work and how she was able to develop the work further after the

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crit. However, like some other students, developing the work for the sake of getting higher marks was also evident in Rachael's narrative.

Through the narratives, Rachael revealed that she had a major problem with time management that she was able to overcome at the end of the year as well as understanding the importance of "learning by doing". This, in addition to her reflection on her learning experience in both projects conveys her ability to self-assess her learning, which caused her to feel more "active" and engaged in her learning than at any time before. It also made her feel positive and well prepared to develop her learning even further during her second year.

V.XII. Analysis of the Narratives

The findings of this narrative review indicate that although all students felt positive about the whole learning experience not all were satisfied about fulfilling their individual learning needs.

Tutors' actions played an important role in shaping students' experiences. Students varied in the way they perceived the role of their tutor, some of them saw their tutor as a coach, facilitator and in some cases a judge. Students' learning background is another important factor in shaping their experiences. Students' experiences differed from one to another in a wide variety ways, including their skills level, the ability to define their learning needs, the ways they approach the design brief, and their perception of the tutor's role in constructing their knowledge.

Accordingly, students had different attitudes about independence, and different responses to their learning environment. These differences were apparent in the narratives and can be illustrated by the following examples:

1. As the narratives show, students' individual interests were one of the main reasons, if not the main influence, on their programme choice. As well as having individual interests leading to specific goals, some students expressed a wider interest in learning, acquiring new knowledge and skills and contributing to society. This interest in learning shows students' tendency to independence and has the potential to keep them engaged across the year. However, the strength of students' interests, and accordingly their engagement, varied at the start and as the year progressed. Students such as Julia and Sally were motivated and expressed a strong sense of belonging to the learning community within the school, while others such as Zain expressed anxiety about her academic abilities and became less engaged with her peers.

2. While some students, such as Charles, Julia and Sally, saw tutors' comments on their work as an encouragement to take responsibility for their own learning, others like Sara, Amalia and Zain were expecting a direct and constant stream of instructions during tutorials. This expectation of clear instructions may be a result of students' misconception of the nature of the design process, in addition to their desire to please the tutor in order to get higher marks at the end of the year. Students did not realise that the design process is an iterative and not linear process with direct and expected instructions to be followed.

3. Rachael talked about the fact that when students were given briefs there were no guidelines on what to do, and students were expected to define what they wanted their projects to exhibit. She sought help from second year students, and while nobody actually told her how to make a building, she realised that she will learn by doing, and that will benefit her in the upcoming projects. Conversely, Amalia talked about how the brief lacked instructions and how she expected the tutor to provide her and her fellow students with instructions.

4. Zain never received encouraging words from her design tutor after the first week of the studio. She kept copying others, searching for ideas that would please him. She did not understand why her ideas were criticised, and the tutor did not know how she looked at the project. He could not identify the lens from which she viewed the design. This had the effect of devaluing Zain's own knowledge and denying its validity. Zain here, rather than exploring what interests her in the design brief and how to reflect that interest in her design, produced what she thought would please and win approval from the tutor for the sake of a better mark. Carless and Boud (2018) suggest that students' expectations to be told what to do to get high grades may prevent them from taking responsibility for developing their own knowledge and skills. Zain's behaviour then, akin to that of

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Schön's notion of the counter-learner (1983), occurred as she felt that the tutor did not like her design proposal, so she had to follow his suggestions even though they were not related to what she aimed to design in the first place. In this case, Zain's misconception of the tutor's role lead to passive reactions to engagement and accordingly did not result in independent learning. Similarly, Lea stated that copying other students did not help her to learn anything and wished the tutor had identified what she was doing well, instead of focusing on the design shortcomings. She described her frustration with the harsh way tutors judged her work in her first crit, but then accepted that this type of criticism is due to the nature of design and that is what really happens with real life designers. Many architectural tutors believe that the crit system prepares the students of architecture for the rigors of the 'real life' of the architect (Anthony, 1987). It measures the degree to which a student is able to acquire and apply knowledge in the form of a design solution in response to a hypothetical or real-life architectural problem. Accordingly, the crit is seen as preparation for presenting projects in the work world, and Lea seemed to understand and accept this fact when it was clearly explained to her.

5. Sara was embarrassed by the quality of her drawings as she did not learn how to sketch in class and wondered how the rest managed to work. Two students, Sara and Diana, were able to recognise their learning need to learn how to draw, as they did not take any art class in high school, yet their expectations to be taught drawing in the studio were not met. Therefore, Sara has a preference to use models to express her work as she felt more comfortable when it comes to designing models. She referred to this ability to produce neat models from the exposure to model making at home where her father works as a carpenter, and not for being taught this skill in the studio. At first glance, this reaction does not

seem problematic because Sara was able to identify a weakness in her projects and found a way to solve it; however, what actually took place is passive learning. To change the case of students in design studio from passive learners to interactive independent learners, we could look at what Diana did; she explained how the absence of direct guidance helps students to grow and work on their learning needs by giving an example of how she was able to learn drawing perspective by herself, driven by the belief that learning architecture is about how much you invest in the subject and learn on your own.

6. Students also showed different attitudes in terms of how they compare themselves with others. Julia compared the nature of design education with other disciplines such as medicine; she felt that learning design has immediate results and development happens all the time and can be seen and tracked, which is not the case with other disciplines. Similarly, Sally positively compared her studies with a friend in another discipline by stating that crits, trips and no exams are all positive features of her learning experience in architecture school. In contrast, Su Lee was irritated by the required workload she has in architecture school in comparison with her flatmates in other disciplines. While the previous examples show how students compare themselves to people outside architecture, Diana was constantly comparing herself with her course mates. Diana recognised a negative impact from comparisons with her peers as she believed that comparing oneself to others takes away confidence. However, she has lately realised that the design studio is about focusing on developing herself over time and not negatively competing with others.

Despite these differences, three major similarities were observed between all categories:

1. The narratives provide an indication that students' independence increased with time, and in most cases, students performed better in their second projects. Students referred to this development for several reasons: understanding the nature of learning by doing, familiarity with crits and pin-ups, the nature of the second project itself, and finally knowing that assistance is nearby, increased the students' confidence to work independently whether that support came from a better tutor or from course mates.

2. Most of the students were successful in perceiving what benefits would be derived from doing their work in the studio. It was obvious from the narratives that when the students were not in direct contact with their tutors, they were, as expected, working independently in the studio on their projects. Students talked about the growing informal design collaborations with their peers and accordingly spending more time in the studio; they reported that the informal teaching from one another was personally and educationally valuable to them. The more sceptical students (rerefer to Dianas' and Su Lee's stories) , however, offered the following reason for not working in the studio: not feeling comfortable working around others, either for the constant feeling of comparison, or for the sake of guarding students' ideas from course mates.

3. All students agreed on the crit as a positive informal discussion with constructive comments and feedback. Crits certainly affect the quality of students' learning, but, as Ramsden (2003) suggests, it is how students' experience assessment rather than the method itself that affects learning. Several studies within architectural education also supported the previous point and reported that students' nervousness and anxiety during crits, as well as the issue of not remembering what they have said or what has been said about their work, are barriers that prevent them benefiting from feedback (Healy, 2016; McCarthy,

2011; Blair, 2006; Anthony, 1987). As the narratives show, emotions such as stress and low self-efficacy decreased the students' ability to learn during the year. The narratives also suggest lack of sleep as another student-related factor preventing students from clearly understanding the discussion around their work. And students varied in the way they perceived this knowledge transfer; independent students appreciated the positive dialogue and used the feedback to learn more about architecture and developing their own designs, while less independent students were interested in following critics' suggestions in order to get better marks only. The crit role was not limited to providing feedback and assessing students' work, it had a significant role in developing students' presentation skills in order to communicate their design vision and rationale (Healy, 2016). This learning quality of developing communication skills promotes students' independence and develops a lifelong skill required as they become professional architects who need to communicate with professionals and future clients about their work. However, some students from both categories were not comfortable with presenting their work in front of others. This feeling might be caused by the students' shyness or their lack of ability to create a convincing argument reflecting the story of their work. Therefore, it is suggested that students must understand the fundamentals of argument and how it relates to their own discipline (Percy, 2004) and should be supported in the development of presentation and verbal communication skills (Koch et al., 2002).

Taken together, these points suggest that students during their first year in architecture school cannot be simply classified into two categories only: independent vs dependent. It is a normal aspect of maturation for a person to move from dependence towards increasing self-direction and learning independence, and the level of learning independence and the rate of change varies between students. Accordingly, we could

classify students into three categories: independent learners, dependent learners, and transitional ones.

Table 37: Categories of students' independence and their characteristics

Participants	Classification	Characteristics
Charles Julia Sally	Independent students	1. Students from this category take responsibility for their learning needs. 2. Are able to define their weaknesses and overcome them. 3. They actively search and find sources of inspiration, and go to tutorials to develop their own ideas. 4. They perceive crits as an opportunity to discuss and gain knowledge. 5. And finally, they understand the nature of the design process and welcome criticism and design modifications for the sake of developing their design abilities. 6. Accordingly, it can be said that independent students are more active in their learning, more engaged within the learning community, and more open to collaboration with others.
Rachael Lea Diana	Transitional students	1. Students in this category present characteristics that are intermediate between independence and dependence. 2. As the year progressed, students started showing moderate inclinations of independence and engagement yet some of their misconceptions remained the same and did not change. 3. Accordingly, those students that do not fit well into either of the other categories are to be rated as transitional.
Sara Zain Su Lee Amalia	Dependent students	1. Students from this category look for reinforcement and direct guidance from tutors. 2. Their perception of "learning" is still influenced by the traditional classroom mode and being guided by teachers, in which direct supervision and instructions are provided and students have to follow them in order to gain best results 3. . They look at crits as oral tests in which they have to defend their work. 4. They expect instructions in the brief and go to tutorials to pick up ideas from the tutor. 5. They misinterpret the design process and improve their projects to fulfil their tutor's demands and for the sake of receiving better marks.

Students varied in exhibiting features of independence; while some students have featured several traits of independent learning, others did not show any evidence of learning independence.

Charles, Julia and Sally showed strong inclinations towards being independent learners, and were more likely than other students to produce a more comprehensive mature design proposal, regardless of the nature and timing of the project. Sara, Zain, Su Lee and Amalia did not exhibit a pattern/evidence of independence over time; students in this category are dependent in different ways and for different reasons: misunderstanding of feedback, expecting direct instructions and full supervision, and working to get high grades only are the main symptoms of their dependency. The rest of the students; Rachael, Lea, and Diana, showed relatively moderate inclinations towards being independent learners, suggesting that the reason for exhibiting both dependency and independency is the unfamiliarity with studio-based learning. The narrative suggests, however, that certain design studio features do seem to provide valuable assistance to develop students' learning abilities. Crits, for instance, were seen as an opportunity to improve public speaking skills and boost students' confidence. The field trip was also an important feature that helped in students' engagement and motivating them to work on their designs.

Moreover, a strong correlation exists between students' attitudes to learning, independence and their tutors' attitude. In Diana's case, for instance, her tutor's encouragement and positive feedback boosted her confidence and accordingly made her more motivated to work. Kahu and colleagues (2017) stated that feedback, as it increases students' self-confidence, can lead to higher engagement. Tutors have the ability to influence students' motivation and self-esteem either positively or negatively. In all the narratives, tutors were influential on the work of the students. Students described how specific design ideas had originated from their tutors, or how a particular tutor had

directed them to explore a particular theme. In other cases, students felt their tutor was not interested in their design and therefore could not provide any support and guidance for them. Biggs (1999) has mainly been interested in learning and how to enhance teaching; he pointed out that students need to become involved in learning as much as possible and that active relations between students and tutors should be promoted. Commenting on Biggs, Roberts (2009) reminds us to focus on the student as the centre of the learning process and states: "Learning is about what the students do rather than what the teachers do' and, 'if students value something, then they see it as important, and will be motivated to learn".

In the narratives, students suggested that tutors should create a climate demonstrating respect, reassurance, and support, and they should make the material relevant to students' lives and help in the development of their self-esteem, in addition to helping students with different abilities and backgrounds to plan a personal development plan showing their learning needs and how to work on them. Additionally, tutors need to be clear about the aim and purpose of feedback and assessment. Assessment literacy, which reflects students' understanding of feedback and assessment, has been discussed in many studies recently. When students understand the nature of tutorials, and how feedback relates to the learning outcome, it will help them to become independent learners who can reflect on and review their own progress, development and learning (Jones, 2005). Students' learning improves when they have a better understanding of the purpose of assessment and feedback (Carless & Boud, 2018; Gibbs, 2015; Sadler, 2010). Assessment literacy enables students to progress in their learning by making the most of the feedback as they develop a clearer understanding of how this feedback relates to intended learning outcomes (Price et al., 2012). As we have seen in Lea's and Zain's stories, it was hard for them to make sense of feedback, or to

value it, when it appears that the tutor is uninterested in helping them to achieve their own personal goals.

Although all students realised that studio-based learning is a kind of guided learning and learning by doing rather than the usual learning, most of them had high expectations of guidance during their learning. The tutor's support is thought to be an important influence on the positive experience felt by students during the overall learning process. Another important factor influenced students' support and their overall learning experience. Students exposed themselves to peer review (course mates and upper year students) to gain skills and acquire knowledge which highlights how learning communities can positively affect learning. Students' narratives correspond with the claims of Boud et al. (2002) who emphasised the essential role of peer learning in which students do not have power over each other, and highlighted that students' experience can be enhanced through embedded peer learning opportunities. Peers can set norms, inspire and transfer skills to other students, and can affect the learning quality in the studio. While peer learning strongly motivates students to work and maximises feedback opportunities for them, it may lead them to rely on the class to provide the norms. The difficulty is that the class norms may be wrong, and this can lead to the propagation of myths.

A final point of interest generated by students' responses is another norm associated with spending long hours, and even nights, in the design studio with their peers before deadlines (refer to Julia's, Amalia's, Su lee's, & Sara's stories). Students named time management and lack of guidance as difficulties. Students believed that guidance is a crucial necessity in their learning, especially at the beginning of the design process as they were not familiar with the learning by doing method. Students mentioned time as a challenge, not because it was not enough, but because they experienced difficulties in translating their concepts into drawings and models, and time was passing while they were "stuck" or "uncertain".

These interesting points generated by students' narrative will be discussed in depth as themes in the next chapter. These themes will be linked to the ALS results in order to elaborate more on how students experienced transition into learning independence in the design studio context.

CHAPTER SIX
Understanding Learning Independence in The Design
Studio

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Understanding learning independence in the design studio

This chapter introduces the findings obtained from the thematic analysis of the narrative data to answer the following questions: what are the key elements in design that support independent learning? What challenges do the students face? (See research question 3 on page 6.)

To elaborate on the previous chapter and draw links between the students' respective narratives, the analysis brings the interviewees' views together (with five main sections representing the five key themes) – rather than dealing with each student in a separate section, as in the previous chapter. Accordingly, this chapter reveals the different aspects of independence that the design studio helps to promote.

VI.I. Introduction

It was apparent from the narratives in the previous chapter that most of the students entered architecture school with little or no experience of design or other subjects that contribute to architectural study at university. This has, however, many benefits. Students came to architecture education from a wide range of backgrounds, bringing with them the very diversity of disciplines and modes of inquiry that an architecture programme requires. Students also varied in the way they utilise the learning context when comparing secondary school to university. In the following quotes, for example, students talked about having personal relationships with their teachers in secondary education and attributed to them an almost parental interest in their learning. In contrast, when talking about university, students perceive their tutors to be disconcertingly distant. Furthermore, students did not expect to have a personal connection with their tutor or to receive direct instructions in the same way that they had experienced in high school:

"I was in a private school and I had a very strong relationship and contact with my teachers. Here, tutors don't even know your name; it's only 30 minutes a week."

(Zain)

The Student Experience Research (2012) shows that students expect independent learning to be an integral part of their higher education experience, however, not all students have the same conception of it, or a shared understanding of the role of university tutor. This was illustrated in students' narratives in the previous chapter. The range of opinions captured by the students' comments centred around some key ideas, namely 'tutorials', 'feedback', 'design decision', 'design iteration', 'freedom', 'relationship with peers', 'time management', 'ownership', 'enjoyment' and 'responsibility'. These ideas did not originate from one particular student but were scattered across all of them. While, on the surface, these ideas sound different, the degree of overlapping among some of them cannot be ignored. This led to the identification of five main themes which were labelled 'support and guidance', 'learning from others', 'learning responsibility', 'engagement' and 'challenges'. The five Major Themes and their sub-themes are shown in the following figure.
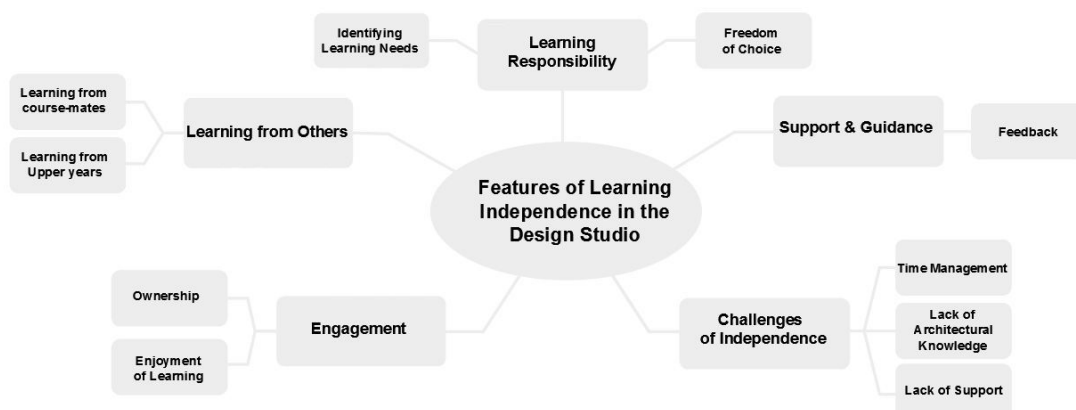
Figure 7: Themes emerging from the analysis

VI.II. Support and Guidance

Of the five themes identified, 'support and guidance' was the one which was more widely discussed by the students. When given the design brief, students usually engage in a process of research on precedents, site and context, as well as user needs and many other aspects, in order to propose a design solution. This characteristic of complexity is unfamiliar to them and requires support from their tutors. Tutors usually guide their students through tutorials which occur frequently during the course of the studio, sometimes once or twice per week. Schon (1983, 1985) analysed the design tutorial as a key interaction of the design studio, in which a discussion and collaboration on the design work takes place between student and design tutor. During the design tutorial, the strengths and weakness of what a student chose to address as a starting point for his/her design proposal are discussed and analysed. After every tutorial, students consider all the feedback they received from the tutor in addition to their own thoughts and continue to work on their own to develop the design work for the upcoming tutorial. The developed solution will be further discussed with the tutor and the process of refinement and development continues until the design proposal is satisfactory.

In our research, students easily adapted to this learning method even though it was unfamiliar to most of them. When asked about tutorials, one student explained:

> "During the year you basically just sit with your tutor and have a chat about what you designed and tell the tutor about the changes you made...you tell him what you're doing, and he tells you 'work more on this...' or maybe suggests something to look at; it's a back and forth process. I did a couple of changes, but they made the design a lot better."

> (Charles)

Another student gave example of how tutors teach design:

"You show them what you've done and discuss it. They give you ideas and direction, and push you even more, and ask you for another thing for next week."

(Rachael)

Schon's studies of the design process (1983, 1984, 1988, 1992) explained that this 'Reflection in Action' is central to the development of the student's ability to design thoughtfully. This iterative nature of design, in which problems are revisited repeatedly with the help of the design tutor in a generative process, have been discussed in several works (e.g. Schon (1985) and Mitchell & McCullough (1991)). The following quotes show how students valued the one-to-one tutorial as a way to guide them in their learning process:

"I talked again with my tutor and she gave me feedback and it helped. She said 'Yes, go with the first idea' so it was encouraging to have that green light."

(Diana)

"She would tell me what I did wrong, what I did good, what to improve, what to do with the next week."

(Su Lee)

The one-to-one feedback and the frequency of tutorials is what greatly distinguishes architecture from other disciplines. However, the quotes above show students' dependency on tutors through their need to seek approval of work and clarification of what to do next during tutorials. Moreover, this frequency, as one student explained, places pressure on them to be productive before each tutorial. One student stated:

"It depends on the tutor. Some of the tutors are asking for too much work so they put too much pressure on you."

(Lea)

Another important point was raised by students, which is, despite its frequency, one-to-one feedback sessions are not always sufficient. Some of the students stated that they were not told what to do and did not receive sufficient guidance on how to design. For example, one student commented:

> "I felt a bit confused because there's a lot to do for the first time and we hadn't been taught about it yet. I was a bit lost."

> (Zain)

One of the central cognitive demands placed upon architecture students is engagement with the uncertainty inherent in design problems (Cross, 2011; Nelson and Stolterman, 2012; Lawson, 2006.) Design problems are ill-defined and ill-structured, and accordingly it is common that students may experience a status of being lost and uncertain. This uniqueness of the design problems in addition to lack of architectural knowledge may confuse students over the nature of the actions they must take and therefore they feel unsupported. This can be seen as an opportunity for them to move towards greater understanding of the self as a learner of design. However, previous quotes show how the student felt a lack of guidance, and more students supported this claim:

> "Everyone tells me to be independent. They expect you to know everything but actually you are left on your own."

> (Zain)

Students, when asked about how they work with their design tutors, expressed the belief that the quality of the dialogue with the tutor and therefore of the comments/feedback students received on their work is dependent on the tutors' preferences and personality:

> "I think it depends on the tutor as well. My tutor for the first project loved my idea straightaway and told me: 'OK this is what you can do…' and my tutor for the second project was more relaxed, he was not very forceful. I'd like the tutor to

be a mixture of strict and pushy and when giving students advice he wouldn't say it in a harsh tone."

(Amalia)

Some students also talked about how some tutorials were unproductive and accused the tutors variously for, "not understanding what I was doing", "being strict" and "criticising the whole work":

"My tutor didn't understand what I was doing and kept telling me to think about something else and to change it but didn't give me ideas or a reason why to change it."

(Zain)

"My tutor is strict. It is hard to make him smile and make him positive about your work; he always criticises you. We were stressed and he was criticising the whole work and he didn't say good things, only bad things about your work."

(Lea)

The notion of a 'good tutor' and a 'bad tutor' is evident in students' narratives; however, students varied in defining the characteristics inherent in both characters. To some students, a good tutor is someone who gives direct instructions and devotes his time for his students in giving them all kinds of support and guidance even after tutorial hours:

"The second tutor was better as he gave more time for his students, and he didn't care how long he had to spend at the studio with us… So, he'd just take time out of his day just to teach us things that would develop and help us with the project."

(Zain)

In contrast, one student perceived a tutor who gave direct instructions as someone who does not allow you to discover your own interests and potentials:

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"My tutor was more of a teacher than a person who's giving advice, more of a person who wanted his ideas to be created than accepting what you had in mind."

*(*Sally*)*

These different point of views on defining a good tutor are related to what students experienced during their secondary education or high school. It is clear that some of the students are still attached to the idea of being closely supervised rather than finding their own way and being independent. According to the first two quotes, good tuition is linked to the tutor's dedication to his students, spending extra hours with them and giving instructions on how to design. To these students, good tuition is more about teaching rather than learning; students just sit there and wait for the tutor to teach them what will be helpful for them. This conception of the role of tutor is similar to McLaren's (1988) concept of 'the entertainer teacher'; in this case the tutor has sufficient knowledge but his way of teaching promotes dependency (refer to chapter 2). Even though students felt supported in this way, they will remain dependent on the tutor as the main source of knowledge which may prevent them from taking deeper approaches to learning. Students in this case will adopt a passive approach to learning and will limit their understanding of the problem to imitating what the tutor did instead of producing a new understanding of the problem and accordingly a unique design proposal. On the contrary, the latter quote explained that good tuition is more about letting students express their ideas while receiving support and advice from the tutor. The tutor in this case matches the characteristics of McLaren's concept of 'the liminal servant'. In this way, good tuition is student-centred and accordingly promotes students' confidence in their ability to express their ideas and therefore independence.

Students also talked about the feedback they received while presenting at crits. The UK's Quality Assurance Agency's standards for architecture (QAA, 2000) refer to crits as an

integral teaching strategy that prepares students for professional practice. It is the principal method of feedback and assessment for design modules in architectural education (Anthony, 1991; Parnell et al., 2007, McClean & Hourigan, 2013). Most of the students quickly recognised this – even during their first project – and recorded valuing the opinion of 'fresh eyes' on their work as well as the alternative design approaches suggested by critics. It could be argued that getting constant feedback and adjusting to different points of view is part of the transition from secondary to higher education, and what distinguish architecture from other disciplines. A student compared the feedback students receive in architecture school with what they used to have during their secondary education or high school, by saying:

> "In school I had similar things like oral exams, but they weren't the same because they didn't give feedback, just asking you a question or two. But here with crits there was definitely a lot of feedback."

> (Sally)

Another student compared the feedback in architecture school with other disciplines:

> "And one of my flat mates couldn't believe that I'm working all the time and I don't mind that. But I told her that for me it is different because my work has immediate results; I can see my product and I get feedback and learn fast, for her she has to study for six years and then hope that she has learnt it."

> (Julia)

The positive attributes of the crit can be easily identified from students' narratives. For example, feedback is sufficient and applicable for their projects and students were able to use it to develop their learning. Students' comments on their crits were:

> "The critics were really nice, no criticism, everything they said was put in the form of suggestions and I took notes. It was less stressful than I expected."

> (Su Lee)

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"It was more like a discussion with feedback; they weren't critical but made suggestions to make it stronger."

(Sally)

Unexpectedly, students perceived the diversity of opinions expressed during the crits in a positive manner; different and sometimes contradictory comments during the crit were seen as a positive aspect that provides richness to the learning process. Blythman et al. (2007) suggest that students seeing tutors having contradictory positions and disagreements in crits is important as it demonstrates that there is more than one solution to a given brief. However, Smith (2011) explains that as the purpose of the crit is to provide feedback that contributes to learning, students should not be left confused by such differences of opinion and should finish the session with clear strategies to progress their work. Students in this study grasped this and commented:

"It's quite interesting to know what other people think about your work because sometimes they can tell you interesting information as they have different perspectives… it's very interesting."

(Lea)

"There were three of them and they all had their own opinions... and I think that was good because they have different kinds of knowledge. For some points they mentioned I couldn't grasp the idea but then they showed me pictures and explained it a bit more so I kind of get what they were saying."

(Amalia)

Students easily picked up these advantages of the crit, and they actually preferred the process to having exams like other disciplines:

"I prefer crits over exams; I don't just learn how to improve my work, but I also learn from other students' projects and I learn when critics give feedback to them."

(Sally)

"I think of the crit as a very positive thing; it teaches you and even when it is negative, it's constructive."

(Julia)

That is not to say that a minority of students had not had negative experiences when it came to their feedback, either from their tutor or the critiques. The following quote shows that while some tutors demonstrate a supportive disposition, others show negative judgements of work:

"My first crit was one of the most horrible ones from the whole group, because my tutor is strict. He was criticising the whole work and he didn't say good things, only bad things about the work."

(Lea)

The way in which tutors behave during the presentations and critique can have an impact on the way in which students feel their work is being valued and how they behave. A critic might act as an attacker and the student then has to act as a defender to his/her work, and this attitude might produce more attacks from the juror, and accordingly the crit might lose some of its purposes (Sara and Parnell, 2013, 2004; Boyer and Mitgang, 1996). A student mentioned an instance supporting this, describing her frustration with the feedback from the tutor and critiques in her first crit because of what she perceived as negative comments:

"The three of them were criticising me the whole time, maybe it was my mistake because I didn't keep silent. I was trying to give reasons and I was trying to explain why I did it this way, not that way, so they were asking me a lot of questions."

(Lea)

However, this student admitted that this way of criticism was helpful when her tutor explained the reason why they had acted like this, and that they played the roles of clients to her design project and in this way, they are preparing her for the real world of architecture:

> "Inside my head I was like 'I hate you' but after the crit I changed my mind because they told me that this is what will happen in real life, with clients and stuff."

> (Lea)

Therefore, the design crit is a context for students to learn to listen, express, and exchange opinions which also relates to the practice and profession of an architect in similar contexts such as meetings with colleagues and clients, or even social events.

As feedback forms an integral part of the design crit, criticism is valid and necessary in the design process. Feedback, whether it was negative or positive, influences students' self-perceptions, such as their perceptions of their self-efficacy as learners. When a tutor criticises a student's work, the intention may be to highlight a weakness of the design or clarify a thought process, but the unintended result may be the undermining of the student's self-confidence or the deterioration of communication between student and tutor. Students explained that when feedback is framed in a negative way it will demotivate them, whereas constructive comments encourage them to develop their work further:

> "They were just telling me what was wrong and then criticising me on that... I would've liked them to appraise me a bit and then tell me what I could've improved."

> (Zain)

Ramsden (2003) suggests that tutors should be aware of balancing negative comments by positive ones, as the aim of the feedback is to help students' learning instead of

making them feel defensive or disheartened. This suggests that the way students' experience assessment is of a high importance to the students' learning experience. Thus, in order to enhance feedback tutors should attract students' attention not just to their learning needs but also to their own progress (Crooks, 1988); in this way feedback can enhance self-efficacy and encourage self-motivation.

Prosser and Trigwell maintain that "within the same class there is substantial variation in the way students perceive … the nature of assessment" (1999, p.81). The following comments reveal how some students perceive the crit as an assessment point in which the focus is on the mark and not the feedback. This misunderstanding of the purpose of the crit might result in reducing students' learning and undervalue the knowledge they gained during the year:

> "I enjoyed the project although I'm bit disappointed with my grade, but I tried my best."
>
> (Sara)

> "My tutor said my work has improved but the mark is still the same, which means that I can't improve things or maybe I'm not capable, maybe I'm not good."
>
> (Zain)

> "Our year chair told us 'you shouldn't care about the grade, don't expect to get great grades', and we were like 'OH REALLY!' ...You know we were trying so hard and we put in so many efforts."
>
> (Lea)

This might be related to the fact that students, at their first year in architecture school, are likely to maintain previous learning habits and beliefs accumulated at school. While the previous quotes illustrate how many students still put more emphasis on exam results, or in this case on the crit marks, just as they would in secondary school, some

other students were able to realise the importance of self-improvement, and not marks, as a real reflection of their learning:

"I don't think grades are very important. The important thing is self-improvement and motivation; it's also important to work externally from the university and not just depend on it."

(Sally)

"I'm proud of myself but the grades aren't the same as I used to get in high school. In high school I was used to getting high grades; here I got a whole range of grades...But it's fine, I don't mind it, I always try to do my best and that's it."

(Julia)

Another negative aspect of students' experiences of the crit was the lack of clarity in feedback. Although the sufficiency of feedback was cited, some students spoke of how hard it was to understand some comments and feedback during the crit and accordingly they were unable to learn from the verbal feedback:

"Some of the feedback was vague, and I felt I should pretend I did understand what the critics said."

(Sara)

Another student commented:

"There were couple of points I missed but I understood most of what they said."

(Charles)

Nicol & Macfarlane-Dick (2006) noted that feedback, often assumed by the academic to be clear, frequently requires to be interpreted or 'decoded' by the student in order for meaning to be understood at a level where it may be acted upon. However, this lack of clarity in feedback might be caused by the student's nervousness and stress, or simply

because of the student's lack of architectural knowledge to actually understand what was said. A student suggested that lack of sleep was the reason behind her bad crit:

> "During the crit I was so tired, and I wasn't able to present as good as my drawings were. I was so tired because I kept working all night and half of my brain was dead; I will never do this again."

> (Su Lee)

Additionally, some of the students referred to their negative feelings about public speaking and defending their work in front of others as the main reason for not understanding everything said during the crit:

> "I just find it hard for your ideas to flow when you're under so much pressure. The crit is casual, but I still stress about it."

> (Sara)

> "I still feel a little bit uncomfortable in presenting my project, not just in front of students but also teachers and judges."

> (Lea)

Students did not feel supported when their learning expectations were not fulfilled. Some practical reasons such as students' lack of basic skills in drawing and model making for example, and the absence of required knowledge about what architectural design is all about, can also contribute to students' feeling of being unsupported and accordingly disengaged which makes their transition into independence more difficult.

As students came from different backgrounds with different skill levels, those who had limited skills in comparison with their peers felt the need for more support from the tutor in order to develop their skills. Moreover, critique behaviour and unclear comments provided in feedback were associated with creating an unsupportive climate during the

crit, which in turn prevented the students from asking for clarification and preventing them from becoming involved in the discussion.

However, students felt supported by receiving constant feedback in different forms throughout the year. And due to the nature of the design process, the tutor cannot help the student unless the student tries to take the first step and produces a solution which initiates a shift from teaching to learning and accordingly promotes independence. To some students at the beginning of the year, this resulted in a feeling of being unsupported because of the lack of clear instructions on how to design. Students took some time to realise that this is due to the nature of design itself, which has no direct and obvious instructions, and not due to a lack of guidance from tutors. Tutors' support also promoted independence as they encourage students to critically reflect on their work all the time. Crits also offered advice and suggestions on how to develop the work even further. In both cases, tutors' feedback and guidance functions as Vygotsky's "Zone of Proximal Development" in which students progressively internalise the design process they can first carry out only with the help of their tutors. Students were able to learn skills and achieve tasks that they could not accomplish on their own at the beginning of the year, but with feedback and guidance they learnt how to achieve these tasks, and accordingly would be able to achieve them on their own in the upcoming projects and would share this knowledge with other students as well. This resulted in gradually shifting the students from being completely dependent on the tutor to learners who are ready to work independently which, in return, makes the transition into independence less difficult.

VI.III. Sharing Learning Responsibility

First year students were tasked with researching a project site at the beginning of the year as part of their design project. They would then have to determine which resources to draw upon, critically evaluate what information they deemed relevant, and accordingly

each student defines a particular design problem for themselves. The same process took place for the second project as well. Individual students were free to choose additional functions for the building they should design and to focus on developing different design skills. In the first project, students were asked to create a new spatial proposition focusing on the sustainable production and/or consumption of food while generating new collective experiences for communities in Cardiff.

Some, like the following student, worked on developing an understanding of how her project will help the community and facilitate people's interaction:

> "The first project was about designing a building for the global gardens without a specific function; you can choose the function yourself. The first thing I wanted to do was to design something for people. When we went to the site it was raining and muddy without any shelter for the people; I had one idea in mind, so I started sketching and doing a model to visualise it more effectively."

> (Sally)

Another student, through her readings on the importance of social gatherings in the community, decided to design a community centre in which people could congregate and cook food:

> "I read a book about round tables and the significance of bringing people together. So my project came as a place where people can come together and share the food and cook in a kitchen."

> (Sara)

Another student explored issues of exterior and interior forms:

> "At the beginning we were supposed to pick a purpose for the building. It's not a greenhouse; it could be a building that processes food, or it could be something with the water or whatever. It was really good to choose anything. I

worked on the functionality of the building, then I started to have tutorials with

my tutor and we worked from the interior to exterior."

(Su Lee)

The open broad brief, and the fact that there is no singular correct answer for the design problem, encourages students to express themselves and their interests in the form of a proposed solution. This encouragement has a vital role in stimulating learning independence by promoting students' confidence in their choices and learning abilities. Similarly, in the second project, students were asked to conceive an observatory in Lanzarote for a relatively simple spatial programme. Students interpreted the brief in different ways reflecting how they experienced the site and their different interests:

"They wanted us to do spatial expressions that represent architecture. It was

challenging and very abstract; the brief was vague and accordingly everyone

has a different thing to do. Basically, I was very interested in the rocks of

Lanzarote and I wanted to mirror their colour and texture in my models, so my

project became a kind of a museum of rocks."

(Rachael)

"I liked how houses in Lanzarote combine water and trees in the inside. So, I

thought of using that for my space. To create a space where you can sit to watch

the solar eclipse which I've been studying, and to be surrounded by water and

trees; this way people can feel connected more to the Earth."

(Su Lee)

Students referred to the broad brief as the main source that encourages them to respond in an individual and diverse way. As the quotations below suggest, the broad and open nature of the design process was positively understood by students:

"It was great, to be honest. Because I'm not limited by any restrictions or specific

design proposition, I think of whatever I wanted to do."

"They don't tell you what to do; they just direct you, and I like how they give us the freedom to do what we want to do and give us constructive comments."

(Rachael)

Students' narratives also showed how students realised that they were expected to be responsible for their own work and to determine what they needed to learn to succeed in the design studio. One aspect of defining independent learning is 'shift of responsibility from the teacher to the learner' and the following quotes from the students supported this dimension as they saw themselves as an integral part of the learning process and responsible for choosing what and how to learn:

> "You have to depend on yourself, and you have to push yourself to succeed in this course. For example, if you are not good with time management you can work on that…You have to work on your weakest point because that's how you succeed in this course."

(Sally)

"So even though we have lectures and tutorials it's about how much time you spend on your own in investing in learning something new. I think I've learnt a lot and I've grown."

(Diana)

This ability and responsibility in determining learning objectives and how to carry them out was made possible by freedom from a fixed and strict deign brief. Accordingly, it can be said that the open nature of the project brief is a positive factor which places students as co-producers in the learning process. Students' comments also suggest that engagement and active participation in creating knowledge are recognised as essential parts of their learning in the design studio.

Students also expressed how they identified their learning needs and developed their knowledge, expressing an additional indication of learning independence by taking responsibility for their learning:

> "I became less stressed about the crit; we've done some lessons in AutoCAD so we're a little bit more sure about what we're doing, but still we have a lot of questions and quite a lot of gaps to cover that hopefully we'll do next year."

> (Lea)

Another quotation provides an example of a student taking responsibility for her learning needs when she recognised that she would have to teach herself how to draw perspective. Her realisation of the need led to her action to correct the situation:

> "Throughout the year I've realised that it's a lot about independent learning. I learnt how to draw perspective by myself and it is necessary to learn perspective, but no one taught us that. So even though we have lectures and tutorials it's about how much time you spend on your own in investing in learning something new."

> (Diana)

Students in the design studio are expected to decide what information and skills they need to learn in order to make a design response. And learning to draw, especially during the first year, is essential so that students can have a visual dialogue, first with themselves and then with others. However, unlike the previous student who took responsibility for her own learning, the following one took a passive position and did not exhibit any learning responsibility towards her individual needs:

> "I really struggled with drawings; I didn't take art, and this is a quite new to me and often it's forgotten that we don't all have the same artistic background."

> (Sara)

However, this student and some others mentioned that the open brief was a struggle at the beginning of the year:

> "The first project was so vague, it was just like 'to design a global garden'. We could have designed absolutely anything and that's why I find it hard because you don't know what the tutor expects from you and every week it seems your design changes."
>
> (Sara)

> "It took me a while to understand the first project; it was quite broad and I wasn't sure about it... I thought it had to be a greenhouse. My initial thought was to design a greenhouse but from other students I realised that it could be anything you wanted it to be, like a cookery school or whatever."
>
> (Zain)

This struggle of understanding the brief changed over time. Students' narratives also show how students developed their learning knowledge and became more independent at the end of year. This happened because of various reasons; students became more familiar with the nature of the learning-by-doing process after the first project; they knew what is expected from them, and they also continued to recognise their learning needs and worked on developing them. According to the students, all these factors contributed to make them perform better in the second project. For example, one student, driven by his belief that he did not perform well in his first crit, tried to plan his time more efficiently and planned his speech for the crit in advance:

> "I did well with it in the crit; way better than the first one mainly because I just planned a bit more. I literally just sat there and looked at my work and sort of wrote down what I would speak about which I hadn't previously done. So, I think that helped quite a lot."
>
> (Charles)

Similarly, another student talked about her belief of how her work developed at the end of the year and how her time management improved:

> "If I can personally judge my work, I see that there is big improvement. I've maybe created or developed my own style. I think that my time management has improved over all."

> (Diana)

Other students compared their learning experiences of the two projects by saying:

> "To be honest, I didn't know what I was doing most of the time because I was new, but with the second project I learnt what to do."

> (Sally)

> "I think that the first project was more difficult but not because of anything in particular but because it was the first project. It was like a lot of information together and then in the second semester you have like the second try."

> (Su Lee)

Taken together, it can be seen from students' comments that the uniqueness of the design problems and the nature of the design process itself required them to be active learners who are aware of their learning needs. Students' responsibility started at an early stage when they began searching and learning from precedents, and as time progressed students' engagement in discussions, in addition to the constant reflection on their work, made them aware of what their proposal might look like. And as they became able to criticise their own initial proposals and reproduce new ones, they accepted the responsibility for their learning and the decisions they make. Accordingly, this whole idea of discovery and reflection, and students' responsibility for their learning, reflect the nature of the design studio as a learner-centred setting that promotes independence.

VI.IV. Learning from Others

The majority of the students succeeded in perceiving what benefits would be derived from doing their work in the studio; they reported that the informal teaching they gained from one another was personally and educationally valuable to them. The following comments from the students explained this clearly; they talk to each other for mutual benefit, to pick up ideas and to compare themselves with their peers. One student commented on this:

> "We always bounce ideas off each other, and we talk all the time about our projects. It's basically like another little family."
>
> (Charles)

A student also noted the differences between student work and how they learn from their differences:

> "Everyone has different experience from you, some people are more advanced, which is quite good because you see people from different levels from yours and you can improve your work or get inspiration from them."
>
> (Rachael)

This positive social interaction with peers was also sought for additional purposes; students talk to each other for reassurance, to promote or confirm the feeling that they are "in exactly the same boat" and as a potential source of moral support:

> "I also talked to my course mates about our ideas and they asked me for advice and vice versa. I talk to them mainly because we are in exactly the same boat."
>
> (Amalia)

Additionally, some students noted that working in the studio and being surrounded by course mates would support and promote their learning. A student at the end of the academic year noted her changing attitude towards working in the studio:

> "I used to prefer working from home, but lately I spent a lot of time in the studio and I feel like my design is getting better because I'm getting other students' opinions."

> (Sara)

As the year progressed, students developed an increasing sense of belonging to the School and to architecture.

The previous comments show how the studio setting offered a more informal mechanism of support and feedback in a less structured capacity by accessing peers' support while working, with the potential to follow up anytime. This was also obvious in students' responses on the Autonomous Learning Scale (refer to chapter 4, pages 89,90 and 92). Students, through time, become to prefer working together and not in isolation.

Remarkably, this positive feature of the studio might foster self-doubt on students' behalf especially when they benchmark themselves against one another. Students are exposed to see their peers' work and naturally generate comparisons between their work, which can stimulate an additional challenge, especially during the early stages of study. One student told a story that reflects her concerns and insecurity while seeing the work of other students, and how working in the studio made her feel less confident about her work compared with others:

> "Before the crit I was really worried and nervous, I started comparing myself to other students; I had a low self-esteem and I just wasn't confident in what I was doing. Your course mates can be a positive impact, but it can lead you to the wrong direction; I think comparison is your biggest enemy."

> (Diana)

Another student did not like to collaborate as much with others for a different reason. She believes that the studio setting exposes her work to students and creates an environment in which she cannot protect her own ideas:

"I used to work a lot more in the studio but I'm more sceptical now. I don't like it when people can see you working, and I don't want to live with the paranoia that people might be stealing my ideas."

(Su Lee)

Students also talked about another way of learning from others. They confirmed seeking guidance and support from those students who are in their second year. Students talked about this informal learning from others through what they called "architectural family":

"We have architectural families as well; we go out together and they help me with my Photoshop skills…we have a close relationship, socially and educationally."

(Julia)

Students explained that lack of direction and knowledge was a factor that provoked them to seek out needed information, from peers and their academic family. The "architectural family" promotes wellbeing, engagement and support for first year students, by creating an academic relationship with an upper year student (architectural mother or father). This academic service is run by the 'Student Association at the Welsh School of Architecture' (SAWSA) which aims to be a means of familiarising students to both the academic and creative elements of the course, as well as providing a community of friends to work and spend time with.

"My architectural mom gave me her sketch book and I got inspiration from it. I asked her about the crit. She told me to sleep the night before, and she was right, I was so nervous and tired during my first crit because I didn't have any sleep… it's nice to have older students, they have already been on the same journey, and they are different from the tutors and are more understanding."

(Rachael)

As noted from the quotes, the design studio rapidly develops a sense of community that is highly valued by the students. The fact that students work in the same space most of the time has a significant effect on easing many of the difficulties of the learning transition, as it reduces any sense of isolation and provides support, something that many other courses probably struggle to provide through their typical learning approaches. This was linked to the absence of a power asymmetry; the situation of students spending most of their time in the same space offers a great chance to see and reflect on how other students approach design as well as the opportunity to exchange ideas and feedback in a more supportive and less judgemental way. Learning and working with others also prepares students for real life, as collaboration is a vital graduate attribute which is essential to their future professional career.

Peers and students from upper years were seen as additional learning resources, guides and motivators of learning in the design studio. Seeking advice from them exposes students to a diversity of points of view, and as students' quotes suggest, it enhances their self-critique and increases their understanding of the design problem and accordingly stimulates their independence. It also shows students' ability to identify their own needs and their recognition of when and what type of help is needed.

VI.V. Engagement

Throughout the interviews, students recognised and praised several features of project-based learning which helps them to easily engage in their learning and to express themselves and enjoy their learning experience. The feeling of ownership and experiencing new ways of learning contributed positively to their learning engagement in their first year.

It can be recognised from the narratives that students seemed to enjoy their learning experience and are open to new ways of making discoveries; the following comments from students supported this claim:

"I really enjoyed making models... It's a new discovery for me to think how the people would feel within the space and try to visualise it."

(Diana)

"It was a nice experience to have… we didn't have borders or rules; we could do whatever we want and that's interesting. We didn't have limitations. The project was interesting because the task was uncommon; it was a different experience."

(Lea)

Students also praised the fact that project-based learning helped them to express themselves and promotes their ownership of the projects:

"And what I like the most is how you can express yourself in a project."

(Sally)

"It made me feel quite happy, and that I have my own stamp."

(Charles)

Students' interest in learning was of central importance to their engagement. They were interested and open to learn differently than they used to in secondary/high school. And this interest and openness to learning motivated them to learn and actively participate in the design studio. Enjoyment of learning was also apparent in students' responses on the Autonomous Learning Scale (refer to chapter 4, pages 89,90 and 92) as their 'openness to new ways of doing familiar things', and 'enjoyment of different learning experiences' increased at the end of the year.

Other than learning new skills such as drawing and model making, students were also glad to have the chance to visit the sites of their projects in order to develop deeper understanding of the nature of the project and its context.

"The first thing I wanted to do was to design something for people. When we went to the site it was raining and muddy without any shelter for the people; I had one idea in mind, so I started sketching and doing a model to visualise it more effectively."

(Sally)

"I remember experiencing different visual landscapes because of different colours. I focused on the sense of touch, because that was what I was interested in the most, the different textures, especially the contrast between rough and smooth textures in the volcano and then because I was so interested in contrast, I'd thought it has to do with light and dark."

(Zain)

In addition to understanding the context of the site, students also realised that visiting a site abroad was a great opportunity to develop their architectural knowledge and to do research on the actual site of their project. Students benefited from visiting the site in different ways as they explained:

"It was beautiful; black land contrasting with the white houses, and sometimes at sunset it was red, and a lot of us were inspired especially

when we went to Cezar Manrique's house which was designed within a series of volcanic bubbles and that was quite cool. It wouldn't be the same if we just looked at pictures of the island instead of going there."

(Amalia)

"But I think it helped quite a lot of people in terms of seeing a different architectural style and how buildings worked really well with the landscape."

(Charles)

"We met a lot of natives. And our tour guide was a native woman. It was very interesting to get to know a person like her and just from communicating with the people of the island you learn a lot. It helped with my second project because you create something that you can relate to, and the feeling and remembering what it actually was to be there kept me motivated to work on this project."

(Sally)

Students also drew upon different interests while being at the location of the site which were reflected on their design projects:

"I liked how houses in Lanzarote combine water and trees in the inside. So, I thought of using that for my space. To create a space where you can sit to watch the solar eclipse which I've been studying, and to be surrounded by water and trees; this way people can feel connected more to the Earth."

(Su Lee)

Students' different interests and the feeling that the project is related to their prior experience made the students motivated to work on their design project which in return promoted their ownership of their learning and therefore their learning independence.

Another central feature of first year studio, which was highly appreciated by students and made them feel like a community within the School, is the vertical studio project. The Vertical Studio is a two-week project for first and second year students which takes place during the summer term. This idea of students from different years working together on one project offers new learning opportunities on different interesting projects:

"It was quite good to talk to them and find out how the second year works."

(Charles)

"We had to build a pavilion at 1:1 scale which is interesting because you can actually see the design proposal being executed from drawings and see it as a

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> physical intervention. Learning how to use different tools and the practical side
> of designing was a very helpful experience."

(Diana)

It also exposed the students to multiple perspectives and experiences that help in developing more elaborated thinking, which results in students teaching and learning from each other:

> "It was a very nice opportunity to work with them because they have more
> experience. They taught me how to work on Rhino and other things that tutors
> missed."

(Lea)

This idea of students from different years working together on one project helped in fostering collaborative learning both within and across years. It also provided an opportunity for the students to work within the community and to engage with the local people:

> "We spoke to people of the community about what they want to improve in their
> town… it was nice to work with students from second year and to work with the
> residents of Grangetown as well."

(Sara)

In the vertical studio students explored open-ended projects with upper year students and with local people from the community, which made them more engaged in their learning and afforded learning from other students. Developing different skills and engaging with local residents and upper year students resulted in making the students more active, interested and responsible about their learning. Many students expressed this voyage towards self-directed learning by saying:

> "I can look at my project and be proud of myself, because at the beginning of
> the year I couldn't even imagine that I could do this."

(Diana)

"I can look at my project and be proud of myself."

(Lea)

What was interesting was that students were able to reason through the complexity of design problems; the open-ended nature of the design projects and the active nature of the design studio resulted in engaging the students in different learning activities and accordingly, developing various skills. It also led the students to reflect on their own interests and preferences which made them motivated and in control of their own learning.

VI.VI. Challenges of Independence

Despite all these positive aspects of the design studio, students had some challenges and barriers they have to face during their transition into learning independence.

One of the challenges associated with the previous aspects is students not being sure of how to start their design or how to translate their ideas into drawings; students attributed this issue to their lack of knowledge in architecture history or due to not being taught certain computer programs such as SketchUp and Photoshop or even technical drawing. This was supported by the following comments.

One of the students talked about how it was difficult for her to start designing as she had no knowledge in technical drawing:

> "I guess the beginning was quite challenging because we're just given the brief and you suddenly have to come up with a design proposal and it was quite hard to start... I spoke to my tutor because I was struggling to figure out what I wanted to do. I had a shape in mind, but then I thought it would be really hard to build and draw, so I started doing a completely different design."

(Diana)

Another student explained how she started the project by doing research on architectural movements and precedents as a starting point for her design:

> "My tutor obviously knew that I don't really have an architectural background and he gave me the architectural movements to research, like modernism and gave me buildings for inspiration like Alhambra."

(Sara)

The same student also complained about her lack of knowledge in art and drawing techniques and that no one was teaching them:

> "I really struggled with drawings; I didn't take art, and this is quite new to me and often it's forgotten that we don't all have the same artistic background."

(Sara)

In the previous examples, an active thought process is exhibited when the student recognised that she needs to develop her graphic skills to the same level as other students. We saw that she researched into modernism architecture as she had no previous background in architecture. Her realisation of her needs and working on developing them is seen as an active participation to create knowledge; however, she relied on her tutor to teach her everything necessary and provide her with precedents.

In the process of proposing a design solution, students had to conduct different types of research on precedents, site, cultural context, etc. This complexity of the design problem required them to devote most of their time to the design project and organise their time wisely. And although students did not complain about the workload, they did complain about tackling different tasks of design at the same time, and not being able to manage their time very well:

> "The first week was difficult for me, because it was an overlap with a previous project… I was behind."

(Amalia)

Moreover, students also talked about the idea that an architecture student was never done with his or her work, which presents considerable difficulties for them, as there is no way of deciding when a design problem has been solved. In an investigation into the design process Lawson (2006) found that it is not easy to decide how much time should be allowed for a design solution simply because of its open-ended nature, and that designers stop designing either when they run out of time or when, in their judgement, it is not worth pursuing the matter further. As one student remarked:

> "There are always things to do and you don't have enough time to finish; you work until the deadline."

> (Lea)

Students' quotes did not just revolve around their first approaches to the design problem, but also reflected on the design iteration. Most students set a general direction for their work early on, but some student projects changed dramatically in the last days of the project. Lawson (2006) also talked about modifications and how it is useful as it makes us look from a new angle. Lawson stressed the fact that the design process can only begin once and to modify design does not mean to start from the beginning. Students learn from their mistakes and acquire more knowledge by shifting attention from one aspect of the problem to another. In other words, design modification is central to the design process as it serves to strengthen and develop the work. One student picked up on this and explained how the design process is not rigid, and how students changed their designs over time, which, in turn allowed them to learn from their own work and the feedback of their tutors:

> "It was a little frustrating at first to keep changing my work because I spent a lot of time on it but after that I realised changes make the project a lot better and it made me feel quite happy, and that I have my own stamp…I think you simply learn from failure."

> (Charles)

However, this fact that there was always something to do and refine was not positively perceived by all students as shown in the following quote:

> "I was really irritated because he wanted us to redo everything and start from beginning and the time is passing, and you get nervous because you do have to do everything."

(Lea)

Another comment, shows how this student did not grasp the importance of design iteration and that she felt she was lucky for not having to change her work:

> "I know some people had to change their model and their design every single week but it hasn't happened with me luckily; I had to make minor changes only."

(Diana)

While the previous quotes revolved around the nature of the design process itself, the following ones reflect on the matter of time planning. Time management was cited as a main concern among students. Consistently throughout the interviews the issue of time was raised. Time management was the biggest challenge facing students during their project work:

> "I spent four weeks on the project. It was good at first but then worse at the end because of time. I think the worse night was when I came back home from School at four in the morning."

(Julia)

The studio hours are rather like rough guidelines than a fixed schedule as in lectures or other classroom settings. Students usually come to the studio in the morning and stay there at night as well when the project deadlines approach. In their responses to the Autonomous Learning Scale (refer to chapter 4, pages 89,90 and 92), it was apparent that students' time management skills did not improve over the year but on the contrary, decreased.

Students also suggest that this problem has a bad effect on their presentation during the crit in the following quotes:

> "I was so tired because I kept working all night and half of my brain was dead; I will never do this again."

(Amalia)

Students believed this happened because the design project offered little time to achieve a design in accordance with their ambitions, with limited opportunity for reflection.

> "I don't think I had enough time for the project."

(Zain)

> "There are always things to do and you don't have enough time to finish"

(Lea)

The quotes above, together with the Autonomous Learning Scale results, indicate that students have a serious problem with their time management skills, therefore, it is essential to examine this critical aspect in further studies. However, students during the last interview talked about improvement in terms of managing their times.

> "I think that my time management has improved over all."

(Diana)

> "With the second project I learnt what to do. I was so much better in terms of time management as well."

(Rachael)

During the narrative some students suggested having workshops to overcome some of these challenges:

> "It would be really helpful if they could, rather than having normal tutorials all the time, create workshops for students to have some practical knowledge on how to do practical stuff."

(Lea)

 "…and you could see that some students were struggling; some people had come from artsy backgrounds and had no clue on the technical side, so I was kind of thinking maybe they could do like a module alongside just to kind of teach them more on the practical side."

(Charles)

All the themes identified in this chapter can be related to two main categories: facilitators of independence in the design studio and barriers of independence. Students were actively engaged in their learning, and were able to learn from different sources including their peers and upper year students. The open brief and the design process itself were the main factors requiring students to be in control of and responsible for their design decisions. However, other factors, such as lack of support and maintaining previous learning habits from school, were perceived to be challenging and were seen as barriers to independence. A more detailed discussion of these findings, as well as their relation to the reviewed literature will be presented in the following chapter.

CHAPTER SEVEN
Towards a students' Theory of Learning Independence
In the Design Studio Context

CHAPTER SEVEN
Towards A Students' Theory of Learning Independence in The Design Studio Context

VII.I. Introduction

The first year experience of an architecture student can be confusing. The student must take on a new mode of learning, in which the main way to learn is by doing, and in which there is no one correct way to approach the design problem. This places the students at the centre of the learning experience, requiring them to be active and independent learners at early stage of their learning experience (Pressman, 1993). This study is intended to gain an understanding of the evolving conception of learning in the design studio, specifically the transition toward independent learning for first-year students.

The previous chapters have sought to answer three questions, with each serving a specific purpose in pursuit of the overall aim of the thesis. These questions are as follows:

1. What are the key elements in design that support the development of independent learning?

2. What are the barriers and challenges facing students during their transitions?

3. To what extent does their propensity for independent learning change over time?

4. And lastly, does learning independence have an effect on students' academic performance?

This chapter will present an overall discussion of the responses to these questions, illustrating students' theories of their learning independences during their first year at architecture school. This theory will be examined in two parts: 1) the design studio as a positive environment for independence, and 2) the barriers and challenges facing students during their transitions.

VII.II. The design studio as a positive environment of independence

As noted in the literature, successful independent learning does not require forcing students to learn; rather, it depends on motivating them to learn and to prepare the best learning environment for their independence (Thornbury, 2000; Krause & Coates, 2008). During their first year, students are able to identify a number of positive attributes of the design studio which positively contribute to their learning independence. These aspects are discussed in two sub-sections, as described here.

VII.II.I. Active learning in design-based subjects

One key finding of this study is that most of the students are actively engaged with and responsible for their learning during their first year. As stated in the literature, student engagement and the shifting of learning responsibility from the tutor to the student are central aspects of developing learning independence. The students' narratives supported this, as they saw themselves as integral to the learning process and responsible for choosing what and how to learn. The thematic analysis chapter illustrates that students realise they are responsible for their own work and thus seek to determine what they need to learn in order to succeed in the design studio.

One student commented on this: "You have to depend on yourself, and you have to push yourself to succeed in this course. For example, if you are not good with time management you can work on that... You have to work on your weakest point because that's how you succeed in this course".

In the design studio, learning responsibility is the result of the freedom of choice offered by the broad brief, enabling the students to formulate their learning objectives and needs at a very early stage. This was confirmed by the thematic analysis of students' narratives, in which they indicated that the open brief was the main motivator for their choice of what to design and learn, leading to a personal and meaningful learning experience. The analysis of the students' narratives supports the Orr et al (2014) analysis of the UK

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National Student Survey, where the researchers conclude that students in studio-based subjects, unlike lecture classes, are aware of their responsibility for their own education.

The UK Quality Assurance Agency's Standards for Architecture (2010) underline the role of students' intuition and interpretation of the design problems in producing unique and individualistic responses. This is based on the belief that both the open brief and the design process itself require students to be in control of their design decisions. The open brief, therefore, is an opportunity for the students to begin taking responsibility for their learning by engaging in a complex process of research of different variables, such as precedents, site and context, and so on, to reach a design solution. One student explained that each individual has their own interpretation of the design problem and accordingly different aspects on which to draw: "They wanted us to do spatial expressions that represent architecture, it was challenging and very abstract, and accordingly everyone has a different thing to do."

As discussed in the literature review chapter, learning engagement can take many forms: behavioural, emotional, and cognitive (Fredricks et al 2004). As we saw in the narrative chapter, student engagement in the studio takes many forms and varies from one student to another. Students are engaged on a behavioural level (Fredricks et al., 2004) as they are actively involved in the design process as decision-makers and invest their time and effort to participate in learning in different ways and using different resources, such as books, learning videos, and peers – rather than relying on their tutor, as passive learners.

The open brief also invites students to choose what interests them in the design problem, thus their design outcomes tend to be more meaningful to them and to reflect their own interests and experiences. In this way, the open brief ensures that each student can express their individuality, thus staying motivated and engaged with their learning. One student reflected on this by giving an example on how she approached the design

problem: "I liked how houses in Lanzarote combine water and trees in the inside. So, I thought of using that for my space. To create a space where you can sit to watch the solar eclipse which I've been studying, and to be surrounded by water and trees, this way people can feel connected more to earth."

This leads us to note that students also manifest emotional engagement (Fredricks et al. 2004), as a result of their personal interest in the problem, which results in learning enjoyment. Another student more explicitly associated their personal interest with learning independence: "To be honest I haven't learned a lot from the lectures it's more on your own, if you're interested you will learn a lot. And what I like the most is how you can express yourself in a project."

Enjoyment of learning in the design studio was clear in students' responses on the Autonomous Learning Scale (ALS). Although students' scores on the scale decreased at the end of the year (see Chapter 4, pages 89-92), of the 12 items of the scale, the two linked to learning enjoyment and interest increased over time. There were positive changes for items (7) and (12), revealing that students became more open to new ways of doing familiar things and began to enjoy different learning experiences.

Table 38: Students' Autonomous Learning Scale (ALS) responses for items (7) and (12)

Item	Item description	ALS_1 (%)	ALS_2 (%)
7	I am open to new ways of doing familiar things	66.3%	75.8%
12	I enjoy learning experiences	91%	94.7%

This was also apparent in students' narratives when they talked about their reasons for entering architecture school. The students' interest in design and architecture was the first indication of their independence and one of the factors keeping them engaged across the year. Moreover, learning enjoyment was also apparent in students' reflections on their learning experience at the end of each narrative. We saw in the narrative chapter that all the students were able to reflect on their own learning experiences and express

enjoyment and satisfaction, which is an additional indication of their emotional engagement in learning design.

Another important finding was that students were able to identify additional attributes of the design studio which positively contributed to their learning engagement. For example, presenting in crits was an unpractised skill for most of the students before entering architecture school. Their feelings of discomfort around crits at the beginning of the year were replaced by an appreciation for the discussion and the feedback received during the crit in most cases: "I think crits were helpful especially with my public speaking. I mean I used to be quite shy and I don't like presenting, but you get used to it… and instead of seeing it as a negative criticism you just see it as a way of improving."

Students also cited that feedback was sufficient for and applicable to their projects and they were able to use it to develop their learning. Most said they valued the opinions of others on their work, as well as the alternative design approaches suggested by critics. The students also appreciated the many chances they had to develop their work, especially at the end of the year when they were able to develop a personal view of their learning strengths and weaknesses and develop their work for the portfolio review. Several students said that the constant feedback they received during tutorials and crits enabled them to develop critical thinking skills and abilities and built their confidence in their work. Some began to self-assess the depth of their knowledge during this year, and some were also able to identify areas requiring further development: "I became less stressful about crit, we've done some lessons in AutoCAD so we're a little bit more sure about what we're doing but still we have a lot of questions and quit a lot of gaps to cover hopefully we'll do next year."

It could be argued, then, that engagement in discussions about their work – whether in tutorials or crits – and their adjustment to different points of view are central to students'

development of learning responsibility, enabling them to become independent learners in the design studio.

However, cognitive engagement was less evident in the students' narratives. Some relied on the tutor for architectural knowledge and some utilised the feedback to develop their work for the sake of improving their grades, rather than enhancing their learning or expanding their architectural knowledge. In addition, the ALS revealed that, by the end of the year, students were less interested in additional learning material, devoting less effort to working, and that their appreciation of learning challenges had declined as well. As explained the literature review, cognitive engagement occurs when students invest time in their learning, going beyond the brief requirements and being open to new challenges (Fredricks et al., 2004). Accordingly, unlike emotional and behavioural engagement, cognitive engagement was less evident among first-year students in the design studio.

Table 39: Students' Autonomous Learning Scale (ALS) responses for items (1), (2), and (8)

Item	Item description	ALS_1 (%)	ALS_2 (%)
2	I frequently find excuses for not getting down to work	10%	37%
6	Even when tasks are difficult, I try to stick with them	94%	83.1%
8	I enjoy being set a challenge	80%	77.1%

Engagement in learning, as a vital aspect of independence, is not limited to the time and energy that students invest in educationally purposeful activities, but also reflects the efforts made by institutions to employ effective educational practices (Kuh et al., 2008). While the previous points illustrate how learning engagement in the design studio affects students' independence, examples of engagement outside the studio and how they contribute to learning independences were also cited.

The first example was a field trip that students had undertaken between the two projects. This was an important feature that promoted engagement and motivated the students to work on their designs. They appreciated this educational strategy for gaining more

architectural knowledge through exposure to different architectural styles and being given the chance to explore and experience the island from various points of view, something which could not be experienced through books or lectures and tutorials. The UK Quality Assurance Agency's Standards for Architecture (2010) recommend study visits in the UK and Europe as an invaluable opportunity to experience a wide range of architecture and diverse cultural contexts. The study trip was an opportunity for the students to see the site of their upcoming project, to comprehend its natural and cultural context, to reflect on it, and to be critical. This unique strategy allowed the students to develop their drawing and observation skills and to see and record what could be of interest in their design proposals, without being told directly what to do, thus increasing their sense of independence. In this way, site visits and field trips enrich individual references, with consequences for future design projects in a non-formal or traditional way. A student commented on this: "It was very beautiful. I learned a lot about the island, and al lot of students were inspired especially when we went to Cezar Manrique's house which was designed within a series of volcanic bubbles and that was quite cool. It wouldn't be the same if we just looked at pictures of the island instead of going there."

In addition to their educational importance, site visits have a positive role in engaging students in their learning. Field trips in many disciplines (landscape architecture, art, geography, sociology, tourism and hospitality, etc.) are fundamental to the acquisition of visual, cultural, and theoretical knowledge outside the traditional classroom (Freire, 2011; Do, 2006; Krakowka, 2012; Scarce, 1997). Moreover, students in the previous studies reflected on the field trip experience as bringing them closer to their tutors and thus creating a more supportive learning environment. Accordingly, the study trip can be seen as a useful educational tool for enhancing learning experience and engagement outside the design studio. In our research, the field trip benefited social interaction, as

the students spent several days together, researching the site and socialising with locals and each other. They were engaged and entertained by the field trip, which made the educational experience more enjoyable, effective, and meaningful and resulted in an increased motivation to learn. Although their reflection on the field trip was positive, the students made no comment on its importance for their relationships with their tutors; and for some of the students, the trip was considered merely leisure time.

Another example of an engaging learning strategy organised by the school was the vertical studio. This promoted learning responsibility and independence and was deemed beneficial from a number of perspectives, both as a motivating tool and as a means of applying students' knowledge in a real project. It also provided significant benefits in terms of engagement with the local community and the acquisition of knowledge regarding what people need to improve in their built environment. One student commented on this: "We spoke to people of the community about they want to improve in their town and also we hosted an event called [I Love Grangetown] and that was really lovely because all the kids came from the area and we had a live music and we asked the children about what their dream Grangetown is like." After the vertical studio, students were much more confident about their design ability and the various aspects of the design execution that were more complex than what they were used to dealing with. One student said: "We had to build a pavilion at 1:1 scale which is interesting because you can actually see the design proposal being executed from drawings and seeing it as a physical intervention. And also learning how to use different tools, and the practical side of designing was a very helpful experience"

Finally, students reported that it had been very important for bonding with other students in their school whom they had not had an opportunity to meet during the year. This development in their relationships with upper-year students made the first-year students

more confident approaching them for help and guidance. The vertical studio thus acted as an empowering tool and enabled students to develop confidence in their learning and their ability to gain from future learning experiences.

It can be argued, then, that engagement in learning – both inside and outside the design studio – leads to better learning experiences; and accordingly, the more engaged student is, the more independence and success can be expected. This confirms the previous research in this area that links engagement with effective learning. It is widely acknowledged in the literature that when students are fully engaged in their learning, they not only acquire skills and knowledge, but also experience personal development which, in turns, facilitates more independence and progression opportunities after leaving higher education (Kahu, 2013; Carini et al., 2006; Thomas, 2012). Knowles (1975) confirms that when students actively engage with their own learning, this increases learning effectiveness. Similarly, Dickinson (1995) explains that an active role in learning is linked to learning independence, as it leads to more effective learning. Finally, one recent study highlighted the importance of interest in promoting students' motivation to learn and its positive impact on active engagement in the learning process (Kahu et al., 2017).

One example of student engagement in learning was the sense of community developed during the first year. The design studio supported a sense of belonging among students, who spent most of their time interacting with one another in different ways, enjoying discussions and exploring solutions together. This human need for belonging and positive interpersonal attachments to others is widely cited in the study and will be discussed in the next section.

VII.II.II. Others as facilitators of learning independence

The informal learning that occurs between students in the same studio was clearly identified as an important facilitator of students' transition to independence. Consistent with the literature on independent learning, independence does not mean working in isolation; rather, communication is an essential aspect. Students reported in the narratives how much they enjoyed the design studio environment and appreciated the value of peers' learning.

The students talked about becoming 'like a family' and 'being on a journey' over the year, supporting each other as independent learners and social beings and acknowledging their diverse approaches and skill levels. One student said: "My architectural mom gave me her sketch book and I got inspiration from it. I also asked her about the crit, she told me to sleep the night before, and she was right, I was so nervous and tired during my first crit because I didn't have any sleep".

Advice from peers and upper-year students can be seen as a form of learning support offered by the design studio environment. Students perceived the benefits of working in the studio together, and they reported that the informal teaching from one another was personally and academically valuable and made them more active: "We help each other. My relationship with my course mates is important for the course and for my wellbeing".

As explained in the previous section, each student in the design studio deals with open-ended problems in their own way. Through analysis of students' narratives, it is clear that students learned various skills such as drawing, model-making, and digital drawing from one another, realising and appreciating their different skill levels and the power of background diversity: "Everyone has different experience from you, some people are more advance, which is quite good because you see people from different levels and you can improve your work or get inspiration from them"

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The Subject Benchmark Statement for Architecture (2000) reports that there is a strong correlation between consistent participation in the life of the studio and the acquisition of design skills. Other studies on the studio culture and the social interaction between students support this correlation (Leuth, 2008; McClean, 2009; Vowles et al., 2013). During the year, the students confirmed this association between working around others in the studio and learning development. One student talked about how working with – and around – others motivated her to work more, which positively affected her learning: "I prefer working from home, but now I spent a lot of my time in the studio and I feel like my design is getting better because I'm getting other students' opinion, I ask them for advice a lot, especially when it comes to drawing techniques."

Students' narratives corroborate the findings of a great deal of the previous work in this area. Chickering and Gamson (1987) suggest that collaboration with other students is a major contributor to success in education. They explain that good learning is collaborative and social, not competitive and isolated, and that working with others often increases learning engagement. Peer relationships are not limited on providing social support, with students talking about gaining further insights into their own work by reflecting on how their peers approached similar problems, which clearly identifies peer dialogue as a form of feedback. One student commented on this: "You just go through others doing their work, and you go to your friend and tell them "I need to sort this issue, do you have any suggestions" or do you like my model, or you just share your ideas."

Accordingly, the studio culture – and some of the habits associated with it (Koch, 2002), such as working in the studio around other students and learning from them – had a positive influence on students' learning and engagement. Giving and receiving peer advice are additional forms of learning support that facilitate independence, as well as important features of the professional norms expected of architecture graduates. This

feature of the design studio was also positively reported in one progress report of the studio culture in the UK (Vowels et al., 2012).

However, analysis of students' responses to the ALS at the end of the year contradicts the student interviews in this area. One aspect of learning independence is the willingness of learners to work on their own, seeking out resources without direct supervision (Macaskill & Taylor, 2010). At the end of the year, students' ratings on items (1) and (5) had decreased, resulting in a decrease in the overall level of independence.

Table 40: Students' Autonomous Learning Scale (ALS) responses for items (1) and (5)

Item	Item description	ALS_1 (%)	ALS_2 (%)
1	I enjoy finding information about new topics on my own	79.3%	69.3%
5	I am happy working on my own	79%	74.6%

Nevertheless, it is important to bear in mind that this questionnaire is generic and does not take into consideration the unique nature of the design studio environment. Accordingly, this decrease could be positively interpreted: students became more engaged in the studio and preferred to work together, as they benefited from the informal learning that occurs in the studio. Their different skill levels and perspectives on the design problem led them to become happier working around others, and less so in isolation.

Although differences of opinion between our participants were cited in the thematic analysis, there appears to be agreement that peer interaction plays an integral role in shaping students' learning experiences. Terms such as 'friendly environment' and 'family' convey high levels of social engagement and support; and with this engagement with other students – course mates and upper-year students – the students were able to work, as Vygotsky (1978) suggests, beyond their individual reach. McClean and Hourigan (2013), in a study aimed at understanding peer interaction and feedback in the design studio, reinforce what Vygotsky suggests and explain that working in the studio

around other students develops self-confidence and design skills, with or without the presence of the design tutor.

It can be argued that student collaborations, whether for social or academic support, foster learning independence as they expose the students to a diversity of viewpoints, which enhances their self-awareness and self-critique. This confirms the conclusions of Thompson (2017), who suggests that the design studio supports a sense of belonging among students and that this feeling has a significant impact on the shaping of students' architectural identities.

Moreover, peers are not the only facilitators of independence in the design studio, with students also citing some of their tutors as motivators. Many considered their tutors' comments on their work as invitations and encouragement to take responsibility for their own learning: "We had tutorials each week in which me and the tutor talk and exchange ideas. So, I spent time thinking about his suggestions and how to do them my own way."

Students' discussions with their tutors, whether during a tutorial or a crit, were an important element of learning as they helped the students to grasp that design is a process of reflection-in-action, thus enabling them to reflect on their work without the presence of the tutors.

Students said that the tutors' support and feedback positively affected their confidence and made them more motivated to work. One student referred to this, saying, "I talked to my tutor, she gave me feedback and it helped, and she said yes go with the first idea … it was encouraging to have that green light".

However, they considered their peers and upper-year students more important facilitators of learning than their tutors, as 'they are more understanding' and find themselves 'in the exact same boat'.

Dineen and Collins (2005) suggest that, in some learning contexts, such as art and design, the gap between the tutor and learner is minimised, which casts the tutor in the role of a facilitator who provides the opportunity for active engagement by learners. The students' narratives suggested that they began as passive learners and moved gradually to become active; and while the tutor's role was to help them bring life to their ideas, the design belonged to them. One student gave an example of such an experience with her tutor: "I kind of tried to connect my idea and my tutor's idea into something that is functional; because my tutor was more of a teacher than a person who's giving advice, more of a person who wanted his ideas to be created than accepting what you had in mind"

Tutors should ensure they are providing the correct amount of guidance to their students, without giving direct and detailed instructions. As we discussed in the narratives, guidance is required to help students to identify areas of weakness in their designs and to make improvements, but direct instructions may reduce their feelings of ownership of their learning and promote dependency on the tutor.

These findings have important implications for understanding how the design studio positively contributes to independent learning. Freedom from strict guidance by tutors and having opportunities to make choices creates a learning environment that proposes the design tutor, as discussed in the narrative chapter, as 'the liminal servant' rather than ''hegemonic overlord'. In this way, learning in the design studio is student-centred, with both tutors and students sharing power. This promotes students' confidence in their ability to express their ideas, thus supporting their transition to independence.

It can be argued that one-to-one interaction with tutors, learning from peers and upper-year students, engagement with the community, and site visits all play important roles in fostering learning independence. The previous aspects associated with the studio –

together with the open-ended, exploratory, and iterative nature of the design process –
suggest that the design studio is a learning environment that promotes independence.

Accordingly, we can identify four key factors that promote independent learning in the
design studio: the complexity of the design process itself, engagement in the design
studio, engagement outside of the studio, and the development of positive study habits
(see Table 41).

Table 41: Factors that influence students' learning independence

Factors of independence	Examples cited in the narratives
Complexity of the design process	Dealing with real-world problems (site condition, users' needs, scale, etc.) The open brief, which offers freedom of choice. The open brief, which enables expression of individuality. The iterative nature, which offers space for constant improvement and development.
Engagement in the studio	Engaging in discussion with tutors, critics, and peers Social interaction with other students. Learning skills from others. Offering social support to one another.
Engagement outside the design studio	Engaging in learning communities (e.g., the architectural family). Working with the local community (e.g., the vertical studio). Talking to professionals. Field trips/site visits where students can talk to locals to gain understanding of the site, the cultural context, and users' needs.
Development of positive study attitudes/habits	Openness to new ways of learning. Development of different skills (e.g., presentation, software modelling, Photoshop, etc.) Setting own learning goals. Self-assessment. Building self-confidence, motivation, and sense of belonging.

VII.III. Barriers and challenges facing students during their transitions

Alongside the aspects that promote learning independence in the design studio, there
were areas of disquiet indicated by the students in their narratives. These will be

discussed in the following section, under the headings of 'students' resistance' to learning independence and 'lack of support'.

VII.III.I. Students' resistance to learning independence

Given that students are the centre of the learning process, it is unsurprising that some of the challenges and barriers to independence were associated with the students themselves. These were diverse, ranging from the lacking of certain skills (including time management) to their rejection of responsibility in their new roles as independent learners.

As emphasised in the literature review, accepting responsibility and taking control of learning are essential components of learning independence. Students in this study showed positive attitudes to their responsibility for learning, with only few unable to take control and instead expecting their tutors to give clear and direct instructions in how to design. These students offered reasons as to why they were taking less responsibility for their learning and were accordingly in need of more support. The main reason cited was an inability to properly manage their time. The students gave various explanations for their poor time management skills, such as the constant changes required in their design work, their lack of architectural knowledge, their weaker skills in areas such as drawing and rendering, and simply insufficient time to develop a good design proposal: "I spent 4 weeks on the project. It was good at first but then worse at the end. I think the worse night was when I came back home from school at 4 in the morning. I think four weeks are not enough for the project."

Moreover, studio hours are more rough guidelines than fixed schedules, unlike lectures or other classroom settings, which promotes unhealthy study habits. One student talked about the 'all-nighter culture' as an accepted habit in the School of Architecture: "I spend all my time at school, really late sometime, but I don't think the fact that we end up here until 3:00 in the morning is a problem since you do it for your own sake."

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At the Welsh School of Architecture, students have 24-hour access to their studios, which makes it possible for them to work in school all night before their crit, thus promoting this 'all-night culture'. Koch et al. (2002) question whether such access in fact devalues scheduled time and promotes unhealthy work habits which negatively affect the development of the good time management skills required for the profession after graduation.

The ALS analysis supports the previous findings, with students' time management skills decreasing throughout the year. Items (3), (4), and (9) (i.e., 'I'm good at meeting deadlines', 'My time management is good', and 'I plan my time for study effectively') significantly decreased, from 71% to 66% (3), 58% to 40% (4), and 44% to 37% (9), causing the overall score for independence to decrease.

Table 42: Students' Autonomous Learning Scale (ALS) responses for items (3), (4), and (9)

Item	Item description	ALS_1 (%)	ALS_2 (%)
3	I am good at meeting deadlines	71%	66.3%
4	My time management is good	58.7%	40.9%
9	I plan my time for study effectively	44%	37.9%

As we read in the narratives, this problem negatively affected students' performances during the crit: "...I was so tired, and I wasn't able to present as good as my drawings were. I was so tired and kept working all night and half of my brain was dead, I will never do this again."

Although some students talked in the last interview about improving their time management skills, these improvements involved sleeping for a few hours before the crit, rather than developing healthy study habits.

The findings of this study are consistent with those of Lueth (2008), Datta (2007), and Rozendaal, et al. (2001), who suggest that working in the design studio may negatively affect student time and lead to the development of a particular set of values and skills that are detrimental to their overall learning experience.

The quotes from the students, together with the questionnaire results, indicate that the students generally have serious problems with time management, thus institutions should be promoting healthy study habits and discouraging the notion of the all-nighter culture as the only way to succeed in design.

Furthermore, it is clear that working in the studio leads to the development of a sense of community that is highly valued by the students and the value of this extends beyond informal learning, to social networking and personal support. However, while most of the students compared their work with their peers, from which they acquired a sense of belonging and confidence, for others, it generated a sense of insecurity and doubt, which undermined their confidence: "I started comparing myself to other students, I had a low self-esteem and I just wasn't confident in what I was doing. Your course mates can be a positive impact, but it can lead you to the wrong direction, I think comparison is your biggest enemy."

One student talked about the negative effects of working around others who could steal her design ideas: "I used to work a lot more in the studio but I'm more skeptical now. I don't like it when people can see you working, and I don't want to live with the paranoia that people might be stealing my ideas."

Dutton (1991) also highlights this issue. This fear is identified as a second barrier to independence and negatively affecting students' learning, as peers can provide valuable opportunities to learn and working in isolation limits access to this additional learning resource.

A third reason put forward by the students was that they were maintaining the study habits they had developed in secondary education. Some expressed a need for reassurance from their tutors that they were 'doing it right'. Becoming an independent learner requires students to take control of their learning and work without direct

supervision by their tutors. It is clear that some of the students remain attached to the idea of direct supervision, rather than finding their own way and embracing independence: "She's really friendly [talking about a high school teacher], and she's more like a mother figure. If we were given homework our teacher would kind of direct us … Here, they didn't tell us anything, we had to do it ourselves. That's why we're all so stressed out, because we didn't even know if we're doing it right."

Although it was not discussed as a barrier or a challenge to independence, first-year students tend to measure their learning through their grades. Various explanations for this can be offered, the most obvious being the learning approaches acquired in secondary school, where an emphasis on outcomes and exam results can create a climate in which learners are taught to the test (Kohn, 1999). One student, in assessing her learning experience, said, "I'm proud of myself but the grades aren't the same as I used to get in high school. In high school I was used to getting high grades here I got all range of grades."

In a design education context, Lawson (2006) highlights one negative aspect of the design studio as students paying too much attention to the end product of their work and failing to reflect sufficiently on the process. The students' narratives here supported these claims. One student reflected on her learning experience and used her grade as the only evidence of her learning ability: "the tutor said my work has improved but the mark is still the same. Bare pass, which means I cannot improve things… maybe I'm not capable, maybe I'm not good."

Rather than motivating students to learn, grading often appears to have the opposite effect. The previous example, as well as other students' narratives, show how grades can enhance the fear of failure, reduce interest, decrease enjoyment in learning, and increase anxiety and self-doubt, which ultimately reduces independence.

VII.III.II. Lack of support

The previous issues suggest that some students are resistant to change and less likely to accept their new role at the centre of the learning process. As the students pointed out, there are multiple factors that could cause them to adopt a less independent attitude towards their learning. While the previous issues were associated with the students themselves, some barriers may have their roots elsewhere.

A lack of support was considered a second critical challenge faced by most of the students in this study. For example, when the tutor wants their own ideas to be executed and shows no interest in those of the student, or when student feels that the tutor's feedback and guidance is insufficient. These behaviours may reinforce the disengagement and passivity of the learner, which clearly discourages learner independence. As we saw in a previous chapter (see chapter 5, Su Lee's, Zain's, and Sara's stories), tutors affected students' learning independence; and when a power imbalance between they and the student was exhibited during the learning/teaching process, the tutor was perceived as a barrier to independence. Students talked about a lack of support in different ways: "My tutor didn't understand what I was doing and keep telling me to think about something else and to change it but didn't give me ideas or a reason why to change it."

Another student commented, "My tutor was more of a teacher than a person who's giving advice, more of a person who wanted his ideas to be created than accepting what you had in mind."

Another cause of this sense of a lack of support was related to feedback. It was previously stated (see Chapter 2) that students from different disciplines struggled with their feedback, as reported in a study by the National Union of Students (Student Experience Research, 2012). This research linked effective feedback with the ongoing dialogue between students and their tutors that strongly supports students' learning. In

the same research, some students highlighted that their opportunity for feedback came only at the end of their course, when any subsequent improvements would not benefit their learning. However, the current research indicates that students were satisfied with the frequency of feedback and one-to-one tutorials. One student noted a difference between architecture and other disciplines by comparing her learning with that of her flatmate: "My work has immediate results; I can see my product and I get feedback and learn fast, for her she has to study for six years and then hope that she learnt."

Nevertheless, a problem with the lack of clarity of the feedback given in crits was cited, with one student commenting, 'I think what tutor says in general doesn't always make you understand more, maybe for them it's obvious but for us it's not'.

Nicol and Macfarlane-Dick (2006) state that feedback, often assumed by the academic to be clear, frequently requires interpretation or decoding by the student in order for meaning to be understood at a level where it may be acted upon. However, the students themselves can also be a cause of this lack of clarity, with their lack of architectural knowledge making it difficult for them to understand what is being said.

Another reason suggested in the narratives is students' feelings of fear, stress, and embarrassment during the crit, which can affect their understanding of the feedback: "Some of the feedback was vague, I felt I should pretend I did understand what the critics said."

In support of this, previous studies have associated the feedback in crits with a climate of fear, anxiety, and stress (Dannels & Martin, 2008). Similarly, Blair (2006) explains that students often do not remember what is said to them in a crit, as they are 'literally frozen with fear'. With the nature of oral feedback being more evaluative than informative, and more corrective than constructive (Salama 2015), nervousness and stress may result in students failing to understand feedback and thus describing it as unclear.

This disengagement has been discussed in numerous studies, with references to factors including critics' behaviour and space arrangements which reinforce power asymmetry (Volakos, 2016; Sara & Parnell, 2013; McClean, 2009). This suggests that students who are tired, under stress, and academically disengaged are not able to benefit from feedback as they should be, and thus miss out on the crits as an additional learning resource.

In addition, the students made no comments on the benefits of attending other students' crits, with the exception of one student, who stated that she had learned from doing this: "I prefer crits over exams; I don't just learn how to improve my your work but I also learn from other student's projects and I learn when critiques give feedback to them."

VII.IV. Commentary on the discussion and ways of improving independence

It is evident from the analysis of the narratives that the students' different backgrounds and past learning experiences have led them to cope with learning independence in a range of ways and to varying degrees. In other words, the students' past learning experiences and perceptions of learning affect their approaches to the design problem. Each student has different learning needs which must be sufficiently met for them to become independent learners. In Chapter 5 (refer to pages 148 & 149), we classified the students into three groups. The first group were those who are independent, actively engaged in their learning, responsible for their learning needs, and able to define their weaknesses and overcome them. They also perceive crits as an opportunity to discuss and gain knowledge, actively search for and find sources of inspiration, go to tutorials to develop their own ideas, and welcome critique and design modifications for the sake of developing their design abilities. The second category includes those whose perceptions of learning are influenced by the traditional classroom mode, including direct guidance by teachers. They expect instructions and look at crits as oral tests in which they must

defend their work to obtain good grades. The third group emerged as some of the students showed traits of both dependency and independence during the year.

It is clear that certain factors were perceived to be challenging and seen as barriers to independence for the second and third group. These included misunderstanding of feedback for some students, and of the tutor's role for others, the focus on outcomes and marks, and the inability to manage time effectively.

In the Higher Education Academy Report on independent learning (2015), patterns in attitudes and behaviour with regard to independence were noted in terms of gender, age, and nationality. Female students reported spending more time each week on independent study than male students did; mature students (aged over 21) spent more time than non-mature students; and international students reported spending fewer hours per week than UK or EU students on independent learning activities.

However, the findings of the current study do not support those of previous research. This study found no significant differences between students on the basis of gender (see Chapter 4, pages 83 & 84). Neither did we find any relationship between student age/maturity and level of learning independence, with those aged over 20 at the start of their programme not perceiving themselves as any more independent than other students. Both UK and international students showed similar levels of independence, though less than EU students.

We also investigated whether there was a significant correlation between students' overall marks in their first year and their scores on the ALS. Previous studies have connected independent learning to successful learning (Hamad, 2018; Derrick et al., 2005). In this research, the results of the questionnaires indicated that those with higher scores on the ALS also gained higher marks at the end of the year (see Chapter

4). These results are consistent with those of previous studies and suggest that higher learning independence levels promotes higher academic performance.

At the beginning of the year, students' scores on the ALS were very positive and relatively high. However, there had been a significant decrease in students' confidence in their learning by the end of the year. One explanation is proposed by Goldfinch and Hughes (2007), who suggest that first-year students may be over-confident in their skills, giving themselves high scores at the beginning of the year. However, the experience of a degree-level challenge leads the students to change their responses and develop more realistic attitudes to their learning and what is expected of them.

Table 43: Differences in students' responses after one academic year

	N	Mean	Median	Min. – Max.	SD
ALS_1	34	45.65	45	38-54	4.19
ALS_2	34	44.20	44	33-52	4.86

Another explanation considers the ALS responses at the end of the year. The major factor in the decreasing scores were the time management-related items. Students' abilities to plan their time effectively and meet deadlines significantly decreased, thus decreasing their overall scores.

These problems with time management were also evident in the analysis of the students' narratives. As we saw in the previous section, students elaborated on their reasons for the change in level of independence by the end of the year, with many still appearing to assess their work and learning through grades. Students in their first year in architecture school are likely to maintain the learning habits and beliefs they accumulated at school, taking time to familiarise themselves with this mode of project-based learning and its methods of assessment.

Although the students understood that studio-based learning involves learning-by-doing, most had high expectations of support. Tutor support is thought to be a key influence on the students' experiences during the overall learning process. However, as they continued their journey through architecture school, the students underwent changes and became more aware of their learning situations, which enabled them to question their former habits. One student reflected on her learning during the two projects: "To be honest, I didn't know what I was doing most of the time because I was new, but with the second project I learned what to do. And I was so much better in terms of time management as well."

Another student, driven by her belief that improvement and development is the true reflection of learning, was able to appreciate how her learning had improved and pay less attention to her grades than she had in secondary school: "I'm proud of myself but the grades aren't the same as I used to get in high school… But it's fine, I don't mind it, I always try to do my best it."

Most students, particularly towards the end of their first project, were showing clear evidence of moving towards independent learning. Several referred to tasks they had completed by themselves, such as learning how to draw perspective, developing software skills, and searching for additional material from the library and the internet. Moreover, as we saw in the narratives, all the students had, by the end of the year, begun thinking about learning objectives and reflecting on their experiences, thus taking responsibility for them.

Although the students' ALS scores had fallen by the end of the year, their narratives indicated the reverse. Taking into consideration that the ALS results are based on self-perception rather than objective assessment, this suggests that although learning

independence itself increased, the students had become more critical of their abilities. It was evident from students' narratives that they felt comfortable with the transition into higher education and showed more evidence of independence, having become more familiar with learning-by-doing and being able to identify their learning strengths and weaknesses.

The students also showed evidence of positive change in their behaviour during crits as the year progressed, with growing confidence in their ability to express a more personal view. This indicates that their understanding of learning had developed over time, and it may also be attributable to various growing skills in practical knowledge (e.g., new digital drawing software). Despite their growth through learning directly from their communities and peers, students still expected these skills to be taught primarily by their tutors. Thus, while students must identify their own learning needs, it is also the responsibility of the university to recognise their needs and make provisions to meet them (Hodgkinson,1994).

In summary, most of the students appreciated the learning environment in the school and expressed a feeling of belonging to the learning community, indicating that this had helped them to become more independent. The design studio context gave them the chance to engage with others, created opportunities, and allowed them to make use of their learning skills and abilities, as they learned about different skills from their peers and benefited from personal support. Moreover, the 'architectural family' created an appropriate and stimulating out-of-studio supportive environment which helped many students (refer to chapter 5; Charles, Julia's, Rachael's & Sally's stories) to seek knowledge in different forms from sources other than their tutors. They also had the opportunity to work on additional projects while engaging with the local community and upper-year students in a form of a vertical studio. However, the students indicated that

they still required support, proposing additional workshops covering various topics for those students who wanted to develop their skills outside of the studio time.

CHAPTER EIGHT
Conclusions

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Conclusions

VIII.I. Introduction

In analysing the nature of the first-year learning experience as expressed through students' narratives, this work provides a detailed and authentic tool for understanding the factors and challenges of – and barriers to – learning independence. In addition, as well as adding students' voices, this research enhances our understanding of our own teaching practices by illustrating the ways these are experienced by the students and how they shape students' perceptions and adaptation to the new mode of learning-by-doing.

While the previous chapter discussed and interpreted the research findings, this chapter presents conclusions on the basis of these findings. It also discusses the limitations of the study and makes suggestions for further research.

VIII.II. Contribution to the field

The rationale for this research was to understand how transition into learning independence occurs during the first year at architecture school and to explore the student experience during this period. The first-year experience is of particular interest due to the challenges of adapting to a new learning environment (Kahu et al., 2017), which play a significant role in shaping students' attitudes and performance in subsequent years (Tinto, 1993). Moreover, there has been a growing concern about learning independence in the context of higher education in the UK in general (Thomas et al., 2015; Knowels, 1988; McNair, 1997), and in architecture specifically (Andrew, 2017; Vowles et al., 2012; McClean, 2009). Despite the body of research addressing learning independence across disciplines, including languages and nursing, there are many studio-based subjects, including architecture, in which there is little research in this area. Accordingly, this study of first-year independence experiences and students' reflections on them was beneficial for developing understanding of how learning

independence occurs within the design studio context, and consequently, how students learn design independently. The analysis of both quantitative and qualitative data extended the knowledge of how students experience the transition into learning independence in their first year and made several noteworthy contributions to the current literature in terms of findings and methods.

Although narrative inquiries are widely used in social studies, this study employs a narrative model borrowed from literary studies to explore and represent educational experiences within the discipline of architecture to preserve the authentic voices of the student participants. Moreover, the application of a thematic analysis to analyse and interpret the learning experiences provides a significant opportunity to explore the subsurface of students' narratives; and in combination with the narrative approach, it allowed for a richer exploration of these experiences and the meanings that the students derived from them. Using both narrative and thematic approaches to understand students' independent learning experiences within the design studio context could be seen as a promising way of exploring additional learning issues in design education.

This study enhances our understanding of how the design studio positively contributes to students' independent learning. One-to-one interaction with tutors, support from peers and upper-year students, engagement with the community, field trips and site visits – together with the open-ended, exploratory, and iterative nature of the design process – come together to make the design studio a powerful learning environment that promotes learning independence. The use of the ALS also enhanced this study by providing a validated and reliable mechanism for tracking changes in the transition into independence for a large sample, thus providing considerable breadth to the study.

Accordingly, learning independence within the discipline of architecture can be understood as a process undergone by students in collaboration with others, for the purpose of developing and shaping their own learning outside tutorial time, but which

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contributes to their learning outcomes without direct and constant supervision from the design tutor. This highlights three points: (1) students are responsible for their own learning, (2) working and learning from one another is crucial to independence, and (3) this responsibility and informality of learning requires the minimisation of direct supervision from tutors.

The findings also suggest that students, to some extent, are aware of their responsibility for their own education. The broad design brief engages the students in complex processes of research into different variables, such as precedents, site, context, and so on, which helps them to interpret the design problem in various ways. In this way, students are able to go beyond the brief requirements and formulate their learning needs and objectives at a very early stage. As they develop their initial proposals and produce new ones, they come to accept responsibility for their learning and the decisions that they make. Thus, the broad nature of the brief is a positive factor which makes the students co-producers in the learning process. Furthermore, the study demonstrates that students are able to learn from different sources, including their peers and 'upper years', recalling the notion of 'relevant others' in Kesten's definition of the independent learner. The development of skills such as drawing techniques and digital drawing and modelling was a key outcome of informal learning in the design studio. Another outcome of students work side-by side was the identification of peer dialogue as a form of informal feedback that positively contributes to learning. This evidence of peer learning contradicts previous research findings that suggests students do not utilise each other as resources in the design studio (Argyris, 1981; Dutton, 1987).

Expanding on the previous point, the study also highlights the role of others – peers and tutors – in facilitating students' transition into independence, recalling the concept of 'zones of proximal development' in Vygotsky's theory of learning. Students were able to develop skills to complete tasks by themselves, which they could not have accomplished

at the beginning of the year. With the help of others, students not only learned how to complete these tasks, they also achieved them on their own and were able to share this knowledge with other students. This collaboration and willingness to share and transfer knowledge and skills is essential for promoting independence and shifting the focus away from the tutor as the only source of knowledge, moving towards a student-centred environment. From a constructivist perspective, students in this case would be seen as the active constructors of knowledge within the design studio setting (that includes both the physical context and the social interactions within it), and not just passive absorbers of knowledge.

There were also many additional factors that affected students' transitions into learning independence during their first year at architecture school. Students reported enjoying the different learning experiences and the creation of spaces and models. They also discovered facts about learning design that fostered independence within very short periods of time. Charles found that learning design is about experimenting and learning from ones failures. Julia was able to perceive the iterative nature of design as an inherent component of the learning process. Lea appreciated the open brief and the feedback they received and how it offered opportunities to develop their work. Sally explained how personal interest and motivations are crucial in learning design and developing work. Diana explained how the absence of direct guidance helps them to grow and better understand their learning needs. Racheal found that learning design is about doing and developing, rather than following instructions.

Even those students who showed little evidence of improvement had developed their understanding. Amalia appreciated a learning environment in which students can share their knowledge and skills without restriction or fear of judgment. Sara found value in the informal learning experiences and support from her peers and upper years, noting the benefits of their different experiences throughout the year. Zain talked about becoming

better in public speaking and how crits had helped her to overcome her shyness, with the feedback seen as an additional learning source. Finally, Su Lee explained that she (and other students from different learning backgrounds) benefitted from their experiences and embedded them in their learning in the design studio.

This suggests that the design studio is positive environment for facilitating learning independence in higher education. Students praised the different methods of learning in the design studio and the different experiences they had throughout the year, such as the field trip, which was seen as both academically and personally beneficial. They also enjoyed different aspects of the design process. In their approach to design, students did not limit themselves to hand drawings; rather, they used a combination of model making and computer modelling, which they learned informally from peers and the upper years. Students described how much they enjoyed their first year at architecture school, noting that they had acquired a variety of skills by the end of the year – despite not being entirely satisfied with their learning in some cases, or finding some of the learning aspects challenging. Both motivation and enjoyment promoted learning engagement and ownership, which led to independence. The students also positively compared learning in the studio context to the traditional method in high school and other higher education disciplines.

The students' conception of design iteration evolved over time. Design modifications were a source of frustration at the beginning of the year, with the students coming to understand their role as an educational technique that enables learning from one's own work and that of others. Feedback was frequent, both formal and informal, and was not limited to tutors, but also provided by peers, upper years, visiting critics, and experts. Accordingly, other disciplines could take educational lessons from the architectural field; the studio setting itself, which fosters social and academic collaboration between students, the culture of feedback and constant reflection on work, and the sharing of

responsibility in the student-tutor relationship are all means of enhancing learning independence in higher education.

Nevertheless, there is no simple answer to the question of whether the students were aware of independence and its importance for their learning. Most reported relatively positive indications of independence. They responded well to the open brief, were aware of their responsibilities, and could identify their learning needs and how to develop them. More importantly, analysis of the narratives reveals that they perceive themselves as becoming more independent as they progress through the year, indicating that they value learning independence. These findings are similar to those from other disciplines (e.g., Chan, 2001; HEA, 2004; Broad, 2006; Cukurova, 2014), which report participants showing positive attitudes to independence. However, among the diverse range of skills learned in the design studio, there are challenges in the transition into the independent mode of learning.

The findings of this study highlight that many of the participants felt uncertain about aspects of independent learning and wanted more guidance and support. Encouragement and direct guidance were still required during the first year. Moreover, their struggle to accept criticism, lack of time-management and workload-management abilities, reliance on grades to evaluate learning (in place of self-assessment skills), and the need for their tutors to provide the teaching all indicate that they were not fully aware of how to be independent and were still attached to the concept of the tutor-centred learning.

Thus, design tutors should work to expand students' understanding by explaining at the beginning of the year what is meant by independence in a student-centred learning environment and how they will be assessed and providing examples of previous students' work to indicate the work and responsibility expected from them. Tutors should encourage their students to attend other students' crits throughout the year and arrange

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collaborative activities, such as peer critiques and skill-sharing workshops, to ensure effective high-level communication and quality learning. The tutors should also be aware of their students' respective learning backgrounds, interests, learning goals, and expectations of learning in the design studio. A final point concerns the development of self-assessment skills. Students must come to understand that assessment is not a control mechanism, but rather a natural feature of learning, and required for their transition from dependent tutor-centred learning to an independent model (Nicol & Macfarlane-Dick, 2006).

VIII.III. Limitations of the research & opportunities for future work

This study has examined important aspects of learning independence within the design studio context and could serve as a basis for future studies. However, the study has its limitations that must be considered. Three major types are identified as methodological and contextual limitations, as follows:

1. This study employs a mixed methods approach, which has the advantage of enabling deeper insights of the topic, but the sample is limited. Specifically, it comprises students at one specific school of architecture, who achieved high grades in their A-levels, with an imbalanced gender ratio. As a result, the findings of this study are less generalisable to other institutions and student groups.

2. Due to time limitations, this study gathers data from participants in their first year only and does not follow-up on their second and third years.

3. The quantitative tool (ALS) was not specifically designed to evaluate factors related to learning independence in studio-based subjects, thus the unique nature of the learning context meant interpreting the data in different ways for some items.

Notwithstanding the limitations, the study suggests that further work needs to be done on this important and under-researched issue. For example, studies in various schools,

with students achieving a broader range of A-level grades and from different backgrounds, could enable a richer and more extensive comparison. Although there have been many studies of gender issues within the design studio context, a study focusing on conceptions of learning independence and how they differ between genders would expand our knowledge of the topic, especially as this study had an imbalanced gender ratio.

As was clear from the literature review and a review of the different tools for assessing learning independence in higher education, a tool that could take into consideration more variables is necessary for more effectively and accurately measuring learning independence in a studio-based environment.

Moreover, time management was a crucial challenge for students in their first year, thus there is a need for further studies in this area.

Finally, follow-up research with the same students, conducted towards the end of their third year, would provide further insights into long-term experiences of learning independence in the design studio, including how this develops and at what rates.

VIII.IV. Concluding remarks

Facilitating learning independence, whether in the design studio or in any other learning setting, requires the formulation of more inclusive pedagogic strategies that explicitly accommodate students' diversity and individuality. It is also vital to address and identify shortcomings in our teaching practices and value the views of the student body. Therefore, this research suggests that we should be conscious of how our tutorial practices can make transition easier for first-year students. We should seek to provide broad knowledge to their students to create a learning environment in which students are encouraged to think critically and take on difficulties in their learning (Ramdsen, 1992). We must also understand their new role as facilitators of independence, rather than knowledge experts. We should adopt student-centred practices to foster learning

responsibility by avoiding vertical relationships with our students, thus changing our traditional role of full supervision into one in which we share guidance and responsibility. Clifford (1999) indicates that if autonomous learning is to be encouraged in universities, staff must develop new concepts of teaching and learning and new skills – moving from the role of a knowledge expert to that of a 'resource person' and facilitator. However, this should not be understood as an invitation to withdraw or neglect our role in the learning process; rather, we should gradually minimise the provision of guidance, to the point at which students have equal power over – and full responsibility for – their own learning. It is also suggested that students' interest can be maintained by helping them to achieve their own learning goals. In this way, we can become more effective and efficient in fostering learning independence among our students, and students more motivated and better able to discover and accomplish their own learning needs and objectives.

This will produce graduates who are prepared for the world of work, can think clearly and independently, and can manage their own lives effectively. Returning to the aims and rationale of this study noted at the beginning of the research, it is now credible to state that we – as educators of architecture, stakeholders, and even citizens of society – would all benefit from more independent, confident, and resourceful graduates.

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APPENDICES

Thank you for taking the time and effort to respond to this questionnaire. The questionnaire should take approximately 10 minutes to complete. Rest assured that the information you share here is confidential.

Thank you in advance for your help with this important project!

GENERAL INFORMATION

Please answer the following questions in the spaces provided, circle or tick the most appropriate option.

Gender	o Male	o Female		
Age	o 17-20	o 21-24	o 25-27	o 27-30	o Above30
Nationality	o UK	o EU	o International		
What did you do before you came to higher education?	o High school	o Year out	o Previous higher education	o Employment	o other

INDEPENDENCE OF LEARNING & STUDY HABITS

Thinking about your first year in WSA, please rate how you find the following statements:

I enjoy finding information about new topics on my own	o Very unlike me	o Unlike me	o Neutral	o Like me	o Very like me
I frequently find excuses for not getting down to work	o Very unlike me	o Unlike me	o Neutral	o Like me	o Very like me
I am good at meeting deadlines	o Very unlike me	o Unlike me	o Neutral	o Like me	o Very like me
My time management is good	o Very unlike me	o Unlike me	o Neutral	o Like me	o Very like me

I am happy working on my own   o Very unlike me   o Unlike me   o Neutral   o Like me   o Very like me

Even when tasks are difficult I try to stick with them   o Very unlike me   o Unlike me   o Neutral   o Like me   o Very like me

I am open to new ways of doing familiar things   o Very unlike me   o Unlike me   o Neutral   o Like me   o Very like me

I enjoy being set a challenge   o Very unlike me   o Unlike me   o Neutral   o Like me   o Very like me

I plan my time for study effectively   o Very unlike me   o Unlike me   o Neutral   o Like me   o Very like me

I tend to be motivated to work by assessment deadlines   o Very unlike me   o Unlike me   o Neutral   o Like me   o Very like me

I take responsibility for my learning experiences   o Very unlike me   o Unlike me   o Neutral   o Like me   o Very like me

I enjoy learning experiences   o Very unlike me   o Unlike me   o Neutral   o Like me   o Very like me

THANK YOU!

Thank you for completing the questionnaire. If you would like to take part in the interview study, please let us know by providing us with your student number. If you confirm your participation, you will be included into a lottery for a £25 prize to be awarded at the end of year.

Student number:

WELSH SCHOOL OF ARCHITECTURE
ETHICS APPROVAL FORM FOR STAFF AND PHD/MPHIL PROJECTS

WS

Tick one box:	☐ STAFF	☐ PHD/MPHIL

Title of project:	Transition toward Independent learning during first year in architecture
Name of researcher(s):	Duaa Osama Al Maani
Name of principal investigator	Duaa Osama Al Maani
Contact e-mail address:	maaniD@cardiff.ac.uk
Date:	

Participants		YES	NO	N/A
Does the research involve participants from any of the following groups?	• Children (under 16 years of age)		x	
	• People with learning difficulties		x	
	• Patients (NHS approval is required)		x	
	• People in custody		x	
	• People engaged in illegal activities		x	
	• Vulnerable elderly people		x	
	• Any other vulnerable group not listed here		x	
• When working with children: I have read the Interim Guidance for Researchers Working with Children and Young People (http://www.cardiff.ac.uk/archi/ethics_committee.php)				x

Consent Procedure	YES	NO	N/A
• Will you describe the research process to participants in advance, so that they are informed about what to expect?	x		
• Will you tell participants that their participation is voluntary?	x		
• Will you tell participants that they may withdraw from the research at any time and for any reason?	x		
• Will you obtain valid consent from participants? (specify how consent will be obtained in Box A)[1]	x		
• Will you give participants the option of omitting questions they do not want to answer?	x		
• If the research is observational, will you ask participants for their consent to being observed?			x
• If the research involves photography or other audio-visual recording, will you ask participants for their consent to being photographed / recorded and for its use/publication?	x		

Possible Harm to Participants	YES	NO	N/A
• Is there any realistic risk of any participants experiencing either physical or psychological distress or discomfort?		x	
• Is there any realistic risk of any participants experience a detriment to their interests as a result of participation?		x	

Data Protection		YES	NO	N/A
• Will any non-anonymous and/or personalised data be generated or stored?		x		
• If the research involves non-anonymous and/or personalised data, will you:	• gain written consent from the participants	x		
	• allow the participants the option of anonymity for all or part of the information they provide	x		

Health and Safety	YES
Does the research meet the requirements of the University's Health & Safety policies? (http://www.cf.ac.uk/osheu/index.html)	x

Research Governance	YES	NO	N/A
Does your study include the use of a drug? You need to contact Research Governance before submission (resgov@cf.ac.uk)		x	
Does the study involve the collection or use of human tissue? You need to contact the Human Tissue Act team before submission (hta@cf.ac.uk)		x	

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[1] If any non-anonymous and/or personalised data be generated or stored, *written consent* is required.

uty		YES	
egard be given to the 'Prevent duty', in particular to prevent anyone being drawn rism? www.gov.uk/government/uploads/system/uploads/attachment_data/file/445916/P Duty_Guidance_For_Higher_Education__England__Wales_.pdf //www.cardiff.ac.uk/publicinformation/policies-and-procedures/freedom-of-speech		x	

f any of the shaded boxes have been ticked, you must explain in Box A how the ethical issues are addressed. If none of the boxes have been ticked, you must still provide the following information. The list of ethical issues on this form is not exhaustive; if you are aware of any other ethical issues you need to make the SREC aware of them.

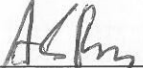**Box A   The Project** (provide all the information listed below in a separate attachment)

1. Title of Project
2. Purpose of the project and its academic rationale
3. Brief description of methods and measurements
4. Participants: recruitment methods, number, age, gender, exclusion/inclusion criteria
5. Consent and participation information arrangements - please attached consent forms if they are to be used
6. A clear and concise statement of the ethical considerations raised by the project and how is dealt with them
7. Estimated start date and duration of project

All information must be submitted along with this form to the School Research Ethics Committee for consideration

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Researcher's declaration (tick as appropriate)

• I consider this project to have **negligible ethical implications** (*can only be used if none of the grey areas of the checklist have been ticked*).	
• I consider this project research to have **some ethical implications**.	✓
• I consider this project to have **significant ethical implications**	

Signature _(signature)_   Name   Duaa AL Maani   Date 3.4. 2017
Researcher or MPhil/PhD student

Signature _(signature)_   Name   Andrew Roberts   Date 5/4/2017
Lead investigator or supervisor

Advice from the School Research Ethics Committee

STATEMENT OF ETHICAL APPROVAL

This project had been considered using agreed Departmental procedures and is now approved

Signature Juliet Davis   Name Juliet Davis   Date 26.04 .17
Chair, School Research Ethics Committee