# A Framework for the Design of Informal Learning Spaces (ILS) to Facilitate Informal Learning in Jordan Universities.

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A Thesis submitted to the Faculty of Environment and Technology, University of the West of England, Bristol in partial fulfilment of requirements for the award of Degree of Doctor of Philosophy (PhD).

January, 2021

# Declaration

This work has not been submitted in substance for any other degree or award at this or any other university or place of learning, nor is being submitted concurrently in candidature for any other degree or other award.

# Dedication

This work is dedicated to the two persons who taught me the desire for learning, encouraged my creativity to push through roads, and always encouraged my nonstop asking of “why?”

My parents

Eng. Mohammad Qazza

Sabah Hamdan

# Acknowledgments

To my first director of studies, Professor Rachel Sara – thank you for nurturing my mind and spirit through this educational experience. Your incredible intellect has stretched me so many times to want to know more and think differently. Beyond taking good care of my brain over these past several years, you also were a caretaker of my soul, always reminding me that my life was more than a PhD. I am so grateful to have had you as my DOS. To my supervision team, Dr Louis Rice, Dr Jonathan Mosley, and Dr Jennifer Hill - what a dream team! And, truly, there are not enough words to do justice to all that you have been in my life since that life-changing moment. I have learned so much from you as a teacher, and a friend. Thank you from the bottom of my heart for your support and guidance in so many, many ways. You have also been an incredible model of an invested and passionate teacher – I hope I can carry that torch forward.

I am grateful to so many who have been a part of this dissertation journey with me. First of all, I have to thank my incredible participants. You shared your experience. I am humbled to have had the opportunity to bear witness to your experiences. I want to thank the Universities which have been very supportive during my field work- University of the West of England UK, University of Brighton UK, Jordan University of Science and Technology, and The Hashemite University, I also want to thank Professor. Shaher Rababeh Vice President of Hashemite university, I am so very grateful for your help during my field work at the Hashemite University, it was a valuable experience to work with you and I had the privilege to get your support. I am grateful for Dr Rasem Badran, Arch. Tha'er Qub'a, Arch.Bashar Bitar, Arch. Bilal Hammad, and Arch. Ayman Zuaiter- thank you for your time while doing my initial validation for my framework in Jordan.
I also want to thank the team leader in the graduate school Marisa Downham – you have been phenomenal mentor to me during my doctoral experience, you are the most student-centered person I know, always going to unbelievable lengths to make sure the people around you are supported and cared for. Thank you for your support!

Finally, my deepest thanks goes to my family and friends. You are my inspiration every single day. Your unwavering support is an unbelievable gift that I treasure. Thank you for walking this beautiful life path with me!

# Abstract

Variations in education to facilitate individual study and collaborative work have increased the need for Informal Learning Spaces (ILS) in universities, this research aims to develop a framework for the design of Informal Learning Spaces to facilitate Informal Learning within Jordanian universities based on recent developments in UK universities. In the Arabic world, a greater emphasis is on formal learning spaces, such as classrooms and lecture theatres, and there are fewer opportunities for Informal Learning, and possibly less acknowledgment of the role of Informal Learning. In the UK context ILS are increasingly being introduced into university campuses.

However, there were still unanswered questions related to many aspects of ILS. The literature review identified that the subjects of ILS and IL had not been widely researched, with only recent studies. In particular, it is unclear what the role is for the design of ILS in facilitating informal learning and whether it is relevant for all groups, or particularly important for certain groups of students. The research has not previously been undertaken by researchers in Jordan. Therefore, this research makes a significant contribution to the understanding of the importance and use of informal learning space, particularly in Jordan.

The research explored best practice in design and use of Informal Learning Spaces in UK universities. The research also identified the current nature of non-designed informal learning spaces in Jordan universities, and how these spaces are currently used for informal learning. Using empirical observations and interviews and a grounding in literature, an ILS design framework was developed to guide the design of Informal Learning Spaces. The ILS framework has several elements which have been identified issues which support spaces that are harmonious with learning theories (focussing on Constructivist theory) and the needs of current students. Using the thematic analysis and grounded theory as the theoretical framework to achieve the research aim.

The research revealed that there is a need in Jordanian universities for a framework to enable architects to design ILS in a clear and effective way. Jordanian architects supported the development of the new framework for designing ILS.

The research indicates that ownership and comfort are preferred for students when they choose and stay in a location for study, and if universities create spaces identifiable with comfort, flexibility, sensory stimulation and technology, then students will be more

productive in these locations. The significance of this study is that it informs our theoretical understanding of learning theories, and more broadly the findings of this research are also useful for campus planners and campus facility managers worldwide to plan and provide conducive Informal Learning Spaces on campus. Informal learning spaces play an important role for students, who have preferred places to study, where they regularly work along with friends and find inspiration to work in the company of others.

Keywords: Informal learning. Learning spaces. Informal learning Spaces. learning theories. Framework. Universities. Campus. Constructivist. Comfort. Flexibility. Sensory stimulation. Technology.

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# Chapter 1

## INTRODUCTION

This chapter introduces the research to the reader; it starts by describing the field of the study; Informal Learning (IL) and Informal Learning Spaces (ILS), followed by an introduction to the background of the main concepts underpinning this research: design aspects and best practise for the design of ILS. Then the gaps in knowledge are identified followed by the aim and the objectives of the study. This chapter consists of 6 sections; section 1: an introduction to the background, the aim and the objectives, section 2: a summary of the existing literature in the area of the research, section 3: methodology, section 4: a summary of the findings and analysis, section 5: a summary framework development and discussion, section 6: a summary of the conclusion chapter

Higher education institutions have been building or remodelling existing campus buildings to provide creative learning spaces with technology, informal furniture, and group study spaces that students prefer (Higher Education Funding Council for England, 2006; Oblinger, 2006). As students occupy spaces off campus if on-campus space does not meet their needs, this is seen as a potential problem as a "sticky" campus supports chance encounters of educational value and social exchange, as well as improving overall wellbeing (Acker et al., 2005; Antell, 2004; Riddle & Souter, 2012). There is a "need to explore more deeply differing needs and expectations" (Cox, 2011, p. 205) that students have of architectural space that are not being met on campus.

The value of Informal Learning Spaces is captured in a recently published UK HE Learning Space Toolkit (UCISA, 2016), it summaries the present situation: teaching, learning and the entire context in which universities operate, has changed significantly during the course of the 21 st century, universities have recognised the need for investment in both formal and informal learning spaces to support the student experience and this includes the requirement to balance innovative and collaborative spaces with traditional lecture theaters, which are increasingly being adapted to new learning practices and continue to play a useful role in the teaching of large cohorts. We are moving away from desk and chair workplaces to providing a range of types of furnishing and deploying a

variety of technologies. We are also seeing a shift in where these facilities are located with the development of more learning hubs and satellites.

## 1.1 Brief Introduction to the field of study

This subsection introduces the main fields in which this study is positioned, and the link that brings these fields together; learning theories and design.

One of the key objectives of all universities is to facilitate learning for those who study there, and this will have an impact on individual, institutional and national metrics of success. Educational institutions in Europe are looking to support different types of learning such as: structured, formal, peer to peer, informal or self-directed learning (Wilson, 2009). To accommodate these diverse and evolving pedagogies, environments can be designed to promote learning as an activity, support collaborative and formal inquiry, offer personalized and inclusive environments, and be adaptable to meet changing needs (Joint Information Systems Committee, 2006).

Learning does not just happen in classrooms (Brown, 2006). As a result, the learning environment does not only take the form of formal learning environments, such as classrooms and lecture theatres, but also includes informal learning environments such as public spaces (Fisher, 2003), and consequently Informal Learning Spaces (ILS) are important because they are likely to have a significant impact on learning. Informal learning is likely to have even more of an impact on learning than time spent in lectures or more staff-led teaching. Conner has indicated that Informal learning interpretations for over 75% of the learning taking place in instituations today." (2005) It is therefore important to investigate the spaces that support informal learning, because the types of space in which we study can affect the way in which we learn (Cabe, 2005).

The purpose of the research undertaken within this thesis is to develop a framework for the design of ILS to facilitate informal learning in Arabic universities based on recent developments in UK universities. The UK is leading the field in informal learning (Harrop, 2013) and, as such, developments have led to significant changes in learning. In Arabic universities, by contrast, there has not been much investigation into ILS (as

observed by the author and evidenced by a lack of published research in this area).[1] This study will for the first time examine best practice in the UK, develop a conceptual framework for the design of effective ILS based on empirical data collection, and test this framework to see whether it will transfer in a workable manner to the Arabic context. This intent has two separate avenues of enquiry – first, how the environment affects the way in which students learn and therefore the design of the learning environment impacts on the learning experience of the students. Second, how informal learning through self-directed, incidental learning and socialization enhances and extends the formal learning experienced in the classroom, lecture hall or laboratory. This is important, as providing the right learning environment is the fundamental basis for learning (Bone, 2000).

Despite the work that the UK, Australia and US have undertaken to lead the field in Informal Learning research (Harrop, 2013), there still appears to be a lack of research carried out on informal learning spaces compared with research on formal learning spaces. Only a small percentage of the research is focused around university settings, (there has been more focusing on school settings). The available research indicates that the way people feel and behave while studying or working within buildings is linked to their overall satisfaction rates and level of happiness (Cabe, 2005), but there have only been limited studies of informal learning spaces carried out in higher educational buildings. In particular, there is a paucity of research in ILS in Jordanain University context. These gaps in knowledge are identified as a valuable area for research.

### 1.2.1. Personal observation

This research is inspired by the writer's experiences; this is an accepted method of initiating research, as described by Loland (1995) who mentioned that many research journals emerge out of the researcher's personal biographyautobiography. From the writer's experience, university settings at all scales in the UK are well designed and encourage students to work both informally and formally. Having studied in both UK and Jordanian universities, the writer observed that in the UK there are ILS between classrooms, and in these spaces students drop in and use them to discuss ideas, practice presentations, and carry out group work. In Jordan, the writer observed that there are

[1] The researcher undertook a survey on (March 2019) using Arabic google and google scholar search tool and Arabic universities research tool at different libraries of Arabic universities in order to identify any published literature looking at ILS in HE in the Arabic literature. None was found.

limited ILS between classrooms and they are not as well designed as in the UK. If students want to use the spaces between classrooms they have to sit on the corridor floor between classrooms or in stairwells. This lack of ILS is likely to limit the opportunities for Informal Learning.

### 1.2.2. Why choose the UK?

Choosing the UK as a case study is useful across the higher education sector worldwide because it is one of the countries, as mentioned above, which is leading the field in the area of ILS. In the UK, for example, a governmental hearing (Education and Skills Committee, 2005), an Ofsted (2008) evaluation report, and the Learning Outside the Classroom manifesto (Department for Education and Skills (DfES) (2006) have raised the profile of learning outside the classroom. Ofsted's report suggests that "when planned and implemented well, learning outside the classroom contributed significantly to raising standards and improving pupils' personal, social, and emotional development" (Ofsted, 2008, p. 5). In addition, some informal education providers in the UK have sought to improve their effectiveness through an evaluation of their programs taught outside the school context (Peacock & Booker, 2001). ILS at the UK universities have been through a series of stepped adapted developments, there are opportunities for the UK examples to develop and improve too.

### 1.2.3. Informal learning spaces in Arabic contexts and why Jordan has been chosen

The intention of the research is to develop a framework based on case studies in the UK and Jordan for the design of informal learning spaces to facilitate informal learning within Arabic universities. The Arab world is home to one of the oldest universities in the world, Al-Azhar University, which was established in the tenth century in Cairo (Olivier, 2004). Although significant differences exist between higher education sectors in each country in the Arab world, it seems likely from the literature and personal experience that there is a greater emphasis on formal learning spaces. The United Arab Emirates started to adopt learning in informal environments through well-known global 'edutainment' centres such as –KidZania – in Dubai, developed to enhance children's learning of science by providing them with authentic experiences through direct contact with real objects to stimulate

curiosity and interest (Kline, 1993). However, as noted, a recent survey identified no published literature looking at ILS in Higher Education in the Arabic literature.[2]

Jordan has been selected as a country in the Arabic context in which to test the ILS framework developed by this thesis. Jordan is considered appropriate because it is renowned in the Arab World for its educational standards and its efforts to develop its human resources for a knowledge economy. However, there are few, if any, ILS in Jordanain Unviersities. Today, Jordan ranks number one in the Arab World in education, having made great strides and significant reforms since the mid-1990s (Al-Shalabi, 2012). Despite limited resources, the Ministry of Education developed an advanced national course and many other nearby countries have developed their education system using Jordan as a model (QPerspective , 2009). As a result, Jordan could be a key location for introducing Informal Learning into university education in the Arabic world.

As Jordan is marching towards becoming the knowledge-based society, the role of learning is growing rapidly as an important component of life. Every student in daily life learns both formally or informally.

### 1.2.4 The Context and previous studies

There is a lack of literature on the impacts of student behavior and preferences on where, what, and how they use informal learning spaces (Harrop & Turpin, 2013). This study considered space's impact on student learning to fill the research gap in this area. This area could be important for students, researchers, and administrators. The information generated through this research can assist universities in creating desired spaces for future students, which would potentially increase the use of campus space. Maximizing the use of space on college campuses also benefits administrators, as they will be able to justify space needs and possibly pay less in maintenance and space costs resulting from less construction (Blanchette, 2010).

Most research in this area has used observation as the research method to study

[2] The researcher undertook a survey on (March 2019) using Arabic google and google scholar search tool and Arabic universities research tool at different libraries of Arabic universities in order to identify any published literature looking at ILS in HE in the Arabic literature_ none was found.

how students use space (Bedwell & Banks, 2013; Brown-Sica, 2012; Crook & Mitchell, 2012; May, 2011; Oblinger, 2006; Thoring, Luippold, & Mueller, 2012; Webb, Schaller, & Hunley, 2008). These studies identified characteristics of spaces that students use but did not provide any insight into why students use those spaces. Other research has used photography to question students on their perceptions and desires in space (Meo, 2010; Peterson, 2013; Pierard & Lee, 2011; Voela, 2014). This study brings together both the knowledge gained from observing how students use ILS, with an explanation of the reasons why students use ILS in those ways gathered through interviews.Informal learning spaces have become equally important to formal learning spaces; Brown and Lippincott (2003) claim that "more learning is taking place outside of class time than ever before". So, it is imperative to find out the use of new emerging concept i.e. informal learning space at broad level.

Various facilities and infrastructure are provided by universities to implement the provision of learning materials, namely in the form of lecture halls, classrooms and laboratories. Lecture halls, classrooms and laboratory spaces are places where students typically get their knowledge formally from their lecturers. In general, formal learning is a closed space within the buildings on campus. The concept of building a university by providing a formal activity space to provide teaching materials in the form of a closed lecture hall has been studied for its success by educators and spatial designers (Barr and Tagg 1995, Wolff, 2003; Fisher, 2005b; Pearlman, 2010; Limppaibon, 2013; Ibrahim et al, 2013). According to them, the new design approaches of place for learning and teaching have changed. Barr and Tagg (1995) and Ibrahim (2013) states that the study space has changed from conventional form to contemporary form; the concept of educational training in the future will shift the emphasis of place to give instruction to a place to produce learning.

The current lecture halls and classrooms are not the only place for students to learn to gain knowledge on campus. Currently, students can learn to acquire and deepen their knowledge outside the classroom. They have a preference for learning informally or independently or in groups with colleagues in the public spaces that are on campus. Libraries, cafeterias, atriums, corridors, terraces, parks and other open spaces are some of the informal learning places in public spaces provided and can be selected by students to study informally on the campus's public realm (Anggiani and Heryanto, 2017).

Various criteria are taken into consideration by students in the decision-making process of choosing a place to study outside the classroom (ibid). At the place of choice, students can conduct discussions, complete college assignments, read textbooks, search for additional materials and other learning activities via theinternet with their portable computer. A student's preference for a place is determined by the circumstances and characteristics of the place. Different forms and types of places to study outside the lecture room provide an option for students to make their choices. Criteria for students to determine where he will learn based on learning materials, among others, location, availability of supporting facilities, characteristics of space and place, atmosphere and comfort and other factors related to learning objectives. These attributes are often provided in the public spaces of the campus by various UK universities. A good campus environment will encourage students' interest to learn, both formally and informally. Higher education institutions in general, provides both formal and informal learning places. Students can conduct informal learning activities in the existing campus public space. In general, a variety of types and forms of facilities for informal learning are provided by public spaces on various UK campuses.

## 1.6 Key Definitions

### 1.6.1 Informal Learning

There are a variety of different uses and definitions of formal, informal and non-formal learning used across the literature. This section sets out some of the key issues and terminology, before defining how the term is used and deployed in this research study.

Jamieson (2009, p. 9) defines Informal Learning as a "course-related activity undertaken individually and collaboratively on campus that occurs outside the classroom". Informal Learning (informal learning is generally assumed not to happen in the classroom, lab or lecture theatre) is independent from teacher- (faculty-) led instruction, and generally can be understood as any supplementary learning activities that occur outside of the formal instructional setting, that might include (but is not limited to) course reading, assignments, individual and group projects.

The terms 'formal' and 'informal' learning are not just related to the formality of the learning itself, but are more an expression of who controls the learning objectives and aims. In a formal learning environment the training or learning department sets the goals

and objectives, whereas Informal Learning means the learners establish the aims and objectives themselves (Cofer, 2000).

Informal Learning is frequently defined in contrast with formal and non-formal learning. Schugurensky (2000) suggests that formal learning refers to educational hierarchy from kindergarten to graduate studies. Whereas, Informal Learning is neither institutional nor includes an arranged program. Furthermore, Informal Learning does not require a tutor, structured background, or an award of requirement. Conversely, non-formal learning has an arranged program, a selected teacher, and award of requirement, but does not involve required courses (Schugurensky, 2000).

Before discussing Informal learning spaces we need to understand learning and informal learning first, learning is the process whereby knowledge is acquired and informal learning is often treated as a residual category to describe any kind of learning which does not take place within, or follow from, a formally organized learning programme or event (Eraut, 2000). In other words, it can be defined as the result of learning from our routine work or leisure time. Richardson (2004) defines informal learning as "which happens outside the formal education system or structured training and does not lead to a qualification." Conlon (2003,p.p14) believes that "informal learning tends to be the outcome of incidental learning through everyday experience. And as far as informal learning space is concerned, it is the space used in leisure time includes gardens, cafeteria, and outside of class or library."

For the purpose of this study Informal Learning is defined in a way that most clearly relates learning to the spaces in which it happens. Informal learning activities involve course studying, classwork, assignments, project activities, and activities students do to learn between formal classes (Jamieson, 2009). So, in summary, Informal Learning is any learning activity that occurs outside of the formal instructional setting, in which learners direct their own study.

### 1.6.2 Informal Learning Spaces

Brown (2003) states that informal learning spaces are any spaces outside the classroom that can be used for learning. According to Brown (2003), faculty offices, hallways, plazas, courtyards, dormitories, and food service areas become important informal learning spaces.

The importance of informal learning space is discussed by Brown (2003); more learning is taking place outside of class time than ever before. This informal learning is defined by Matthews (2011) as student learning outer of certain lecture time or by Jamieson (2009,p.p57) as "course-related action undertaken independently and collaboratively on campus that occurs outside the classroom and does not directly involve the classroom teacher." Informal learning spaces included in this research covers hallways and pathways; courtyards, squares and amphitheaters; open spaces; foyers and cafeterias.

Formal learning space strategies create a passive learning environment because the setting does not foster student interaction. An environment such as this does not encourage students to process information actively. At the same time, real-world learning situated in real-world contexts has been shown to have positive impacts on learning and learner motivation (Duffy, 1996). We understand that learning is not simply a passive response to the teacher's delivery. Rather, learning is an active, constructive, cognitive, and social process by which the learner strategically manages available cognitive, physical, and social resources to create new knowledge by interacting with information in the environment and integrating it with information stored in memory (Shull, 1998).

## 1.7 Changing Educational Context and Research Gap

This section identifies a gap in knowledge in the Arabic world as there is a greater emphasis on formal learning spaces, such as classrooms and lecture theatres, and there are fewer opportunities for informal learning, and possibly less acknowledgment of the role of informal learning. In the UK context ILS are increasingly being introduced into university campuses. However, there are still unanswered questions related to many aspects of ILS. The literature review identifies that the subjects of ILS and IL have a relatively short history. In particular, it is unclear what the role is for the design of ILS in facilitating informal learning and whether it is relevant for all groups, or particularly important for certain groups of students.

Rickes detailed, "The generational characteristics and traits of Millennials, combined with their awareness of space (whether overt or subliminal), are driving physical change on college and university campuses" (2009 p. 11). This style continued with the next

generation of students who Levine and Dean identified as the “first generation of digital natives” (2012 p. 7). Levine found that digital natives grew up with technology and “live in an anytime/anyplace world operating 24 hours a day, seven days a week, unbound by physical location” (2010 p.7). However, this new generation of student continues to be taught in buildings that “were constructed in the 1960s and 1970s when the Baby Boom generation reached college” (APPA, 2012, p. 10). There is a growing necessity for colleges to stay abreast of significant changes in student demographics, technological innovations, and their forecasted effect on campus facilities (APPA, 2011). Jamieson (2003) asserted that traditional campus learning spaces may actually impede the development of more appropriate student centred facilities that students prefer.

Many universities need to update their campus spaces, but funding, historical status, and anticipating future space needs make this a difficult process (APPA, 2012; Blanchette, 2010). Bennett reported that,“Most colleges and universities are not very intentional about the design of anything but classrooms, studios, and laboratories as learning spaces” (2011p. 784). Acker et al. stated that, “New learning space design paradigms must adapt to student learning styles while still being mindful of the institution’s need for fiscal efficiencies” (2011 p. 2). Harrop and Turpin found “that because learners select a space based on their own list of requirements and preferences, the space may not be used in the way anticipated by the institution” (2013 p. 66). Campuses need to use their limited budgets on spaces that will improve the campus without costing too much or being obsolete in 5 to 10 years (Blanchette, 2010). Institutions cannot afford to build spaces that do not support student learning. Built space supports or hampers learning (Harrop & Turpin, 2013); therefore, it is important to find out what is being used and how it is being used so the spaces being built can more accurately support the primary mission of the university. Milne (2007) also supported further study by suggesting that the dearth of relevant research makes it challenging for planners to design appropriate campus learning spaces. Therefore, this study was designed explicitly to explore students’ perceptions of informal learning spaces and how those spaces are conducive to the varieties of different study subjects. Recently the researcher found two jordainan refrences, both show the research gap and the need of Informal learning spaces in Jordanian universities is still exist, as an example Fahed (2019) in his findings stated that (IT) college needs some designing solutions of common spaces that rise the college to high level of social and learning life in addition to the decent conditions that exists in college (Wi-Fi, water coolers and air conditioners), he also mentioned that students have a preference for learning

informally or independently or in groups with colleagues in the public spaces that are on campus. Libraries, cafeterias, atriums, corridors, terraces, parks and other open spaces. side by side the good adjusted conditions all of that can give psychological designers wide range to think about their spatial spaces designing in universities by emphasizing an informal common space contemporary. There is a strong relationship between the availability of services at the college facilities, the density of students in it and the students sense of belonging, educational achievement and social interactions. Rsearcher Fahed added that appropriate facilities affect student's mental health which have the impact on many areas of students' lives and its quality, increasing academic achievement, physical health, and satisfaction with the college experience, positively impacting relationships with friends and family (2019).

Sandy (2018) in her findings found that participants realized how much they had learned via informal learning since their appointment to more demanding leadership roles despite the fact that they had not been provided any formal training. Pre-service and new teachers should keep this in mind and take advantage of the informal learning opportunities that present themselves when they shadow their mentors and work collaboratively with their grade level and department teams.

### 1.3.2. The relationship between Campus spaces and factors for learning

University spaces are being created without a clear understanding of what students want and how they use informal learning spaces (Harrop & Turpin, 2013; Temple, 2008). A lack of suitable learning spaces that meet student needs could lead to low persistence (Kuh, Kinzie, Schuh, & Whitt, 2005; Zhou, 2010), engagement (Brooks, 2011; Matthews, Andrews, & Adams, 2011; Okoli, 2013), and achievement (Moore & Lackney, 1995; Stevenson, 2001; Zhou, 2010), which could influence retention (Acker et al., 2005; Okoli, 2013; Temple & Fillippakou, 2007; Whiteside, Brooks, & Walker, 2010) and enrollment (Gilbreath, Kim, & Nichols, 2010; Kramer, 2007; Strange & Banning, 2001).

The research presented in this thesis is timely in that attention to the design of educational buildings has been noticeably increasing in the past few years, especially in the higher education sector in Europe (Radcliffe, 2009). In addition, ILS are increasingly being introduced into UK campuses. However, there are still unanswered questions related to

many aspects of ILS. The literature review identifies that the subjects of ILS and IL have not been widely researched, with only recent studies. In particular, it is unclear what the role is for the design of ILS in facilitating informal learning.

The research has not previously been undertaken by researchers in Jordan. Therefore, this research makes a significant contribution to the understanding of the importance and use of informal learning space, particularly in Jordan. Since Jordan is a key location for Higher education in the Arabic World the findings are also of relevance to the wider Arabic field of Higher Education. More broadly the findings of this research are also useful for campus planners and campus facility managers worldwide to plan and provide conducive informal learning space on campus. A number of researchers have mentioned that regardless of the huge investment made by universities in higher education buildings, there was a failure to study and theories space and place in Higher Education (Temple, 2008; Ellis, 2016). As there have been changing practices which stress individual and group learning, one could consider the whole campus as a learning landscape (Dugdale, 2009). Across the campus, a wide range of activities from discussion, individual reading, social work, exam studying to intense revision take place.

## 1.4. Aim of the study

This research aims to develop a framework for the design of Informal Learning Spaces to facilitate Informal Learning within Jordan universities based on recent developments in UK universities. To address the aim, there are six objectives.

## 1.5. Research objectives

The research objectives established for this study are:

1. To define and describe informal learning under the key fields of self-directed learning, incidental learning, and socialization.

2. To define and describe Informal Learning Spaces and determine the relationship between them and Informal Learning.

3. To identify good practice in the design and use of Informal Learning Spaces in UK universities.

4. To identify the current nature and use of non-designed Informal learning spaces in Jordan universities.

5- To develop an understanding of the way in which existing spaces in the UK and in Jordan are currently used for informal learning based on observations and interviews.

6. To develop a framework to guide the design of good practice Informal Learning Spaces grounded in the literature, empirical observations and interviews, and initially test the framework to see whether it will transfer in a workable manner to the Jordanian context .

### 1.7.1 Research Overview

A literature review was carried out to identify what is known about IL and ILS (research objective 1), and to identify the types of IL and ILS identified in Jordan and UK (research objective 2). This was followed by case studies undertaken at comparable universities in the UK. A desktop architectural analysis method was employed to identify and compare the quantity and quality of ILS between classrooms. Subsequently, the selected case studies were studied first-hand using participant observation and guided interviews, in order to understand the role that Informal Learning Spaces play in facilitating informal learning (IL) for students and to assess the impact of different ILS designs (research objective 3). The same data collection methods were then applied in Jordanian universities for the current non-designed ILS (research objective 4). Subsequently, all data were analysed using Nvivo software in order to get clear coded findings for all observations, interviews and architectural analysis. The findings were compared in both countries using a comparative method (research objective 5). Finally, the empirical data were evaluated holistically using grounded theory, applying an analytical approach (thematic analysis) as described by Braun & Clarke (2006) to identify key emerging themes. A further targeted literature review was crossed-check against the empirical data to develop a framework for the design of ILS to facilitate informal learning for Arabic universities based on recent developments in UK universities. Additional development was applied to the framework using the model of Chism (2006) to guide the design of good practice ILS (research objective 6) (For further information see the literature chapter section 2.3.1).

The following section provides and overview of the chapters in this thesis. The thesis consists of six chapters, which are:

Chapter 1: Introduction

This introductory chapter presents an overview of the study through description of the background, purpose, approach, significance, limitations, assumptions, and

some definitions that have been used in the research.

Chapter 2: Literature review

This chapter contains the theoretical framework of the study and a review of literature related to the research questions, and it is been divided into two sections; learning theories, and ILS theories about spaces. Research objectives 1 and 2 have been achieved in this chapter.

Chapter 3: Methodology and methods

The purpose of this section is to provide an explanation of the research design dimensions adopted by this study. It examines the theoretical perspective that lies behind the methodology selected for this study. It also discusses the implications of the adopted methodology on the appropriate research methods, as this research is a qualitative visual ethnography, using participants' photographs and videos with semi structured interviews. This chapter examines in detail the approach, methodology and the process in which this research has been designed and conducted, and the reasoning behind them, it also looks into the validation methodology for the framework and tool and the rationale behind it. As this research is driven by the exploration to improve the design, furnishing and organization of new types of learning spaces, and an interest to discover how students really use them, have encouraged the researcher to innovate in the range of data collection methods that been used. Methods such as interviews and observation are still employed, but it is has pushed the researcher to employ more novel, creative and participatory methods: especially observation, architectural analysis and ethnographic methods, also visual and mapping methods. This reflects the research methods from measuring student satisfaction, to a more flexible need to explore the experience of learning that calls for richer qualitative data. Research objective 3 and 4 have been achieved in this chapter.

Chapter 4: Findings and analysis

In this chapter the initial framework is confirmed with key aspects that been produced from the empirical data, including all the essential information needed to generate the framework. Objective 5 has been achieved in this chapter and Chapter 5.

Chapter 5: Discussion and framework development

This chapter discusses the development of the framework, examining the basic components and high-level needs of the framework. Objective 5 has been achieved in this chapter and Chapter 4.

Chapter 6: Conclusions and Recommendations

The final chapter of this thesis is aimed at examines the work done in this study and if it has achieved the objectives set. It also discusses the limitations of the study faced. It ends by providing recommendations for the industries or designers in Jordan to apply the developed ILS framework. Objective 6 has been achieved in this chapter.

## 1.8 Contribution to knowledge

- There has not been much investigation into ILS and there has been lack of published research in in ILS in Arabic universities. This study will for the first time examine best practice in the UK, develop a conceptual framework for the design of effective ILS based on empirical data collection, and test this framework to see whether it will transfer in a workable manner to the Arabic context.
- This research considered spaces's impact on student learning to fill the research gap in this area.
- This research brings together both the knowledge gained from observing how students use ILS with an explination of the reason why students use ILS in those ways.
- The research found out the use of new emerging ILS at broad level.

# Chapter 2

# Literature Review

## 2.1 Introduction

This chapter explores the definition of the key terms of the study; Informal Learning, Informal Learning Spaces, and users' (students') needs. It discusses in detail the background and existing literature on ILS in universities. It also explores different learning theories.

This chapter gives an overview of the literature around Informal Learning and discusses how the student learns informally, and then explores the different types of Informal Learning. The chapter then examines the literature on Informal Learning Spaces, focusing on the definition for the purpose of this research. Finally, the chapter summaries the main ideas emerging from the literature on the design of Informal Learning Spaces to support students' Informal Learning needs. The researcher used Narrative Reviews as a comprehensive background for understanding current knowledge and highlighting the significance of new research for the keywords that were mentioned in the abstract.

### 2.1.1 Introduction to the main terms of the study

This section will briefly introduce the main terms in this study before explicitly discussing each term in detail in the following sections.

### 2.1.2 Informal Learning Definition

Jamieson (2009, p. 9) defines Informal Learning as a "course-related activity undertaken individually and collaboratively on campus that occurs outside the classroom". Informal Learning is generally assumed to happen outside the classroom, lab or lecture theatre, is independent from teacher- (faculty-) led instruction, and generally can be understood as any supplementary learning activities that occur outside of the formal instructional setting, that might include (but is not limited to) course reading, assignments, individual and group projects.

The expressions Formal and Informal Learning are not just related to the formality of the learning itself, but are more an expression of who controls the learning objectives and

aims. In a formal learning environment, the training or learning department sets the goals and objectives, whereas Informal Learning means the learners establish the aims and objectives themselves (Cofer, 2000).

Additionally, the student population continues to grow in number and variety. Universities and colleges are responsible for supporting students who have different skills, needs and learning preferences. Researchers also note student's preferences for a variety of learning activities and settings, alongside preferring the support of group work and direct interaction with faculty and a group of faculty members, and a range of formal and informal learning experiences(Cofer, 2000).

Informal Learning is frequently defined in contrast with formal and non-formal learning. Schugurensky (2000) agreed that formal learning refers to educational hierarchy from kindergarten to graduate studies. Whereas, Informal Learning is neither institutional nor includes an arranged program. Furthermore, Informal Learning does not require a tutor, structured background, or an award of requirement.

For the purpose of this study Informal Learning is defined in a way that most clearly relates learning to the spaces in which it happens. Because this study is focused on the design aspects of Informal Learning Spaces (ILS), it uses the definition of Informal Learning developed by Jamieson, in which Informal Learning is defined as course-related activity undertaken individually and collaboratively on campus that occurs outside the classroom and does not directly involve the classroom teacher (Jamieson, 2009). Informal learning activities involve course studying, classwork, assignments, project activities, and activities students do to learn between formal classes (Jamieson, 2009). Peter Jamieson is an academic whose role is to lead the design of new-generation learning environments at The University of Melbourne. He has extensive experience developing formal and informal learning environments in higher education. He has conducted professional development workshops and contributed to projects at numerous Australian and international universities.

So, in summary, Informal Learning is any learning activity that occurs outside of the formal instructional setting, in which learners direct their own study.

### 2.1.3 Informal leaning spaces: a general definition

Due to technology, any space outside the teaching space could be appropriated as an Informal Learning Space (Brown, 2005). However, Informal Learning in a campus could take place in many places such as the library, the student lunch hall, cafes, and other communal spaces (Jamieson, 2009).

As shown in figure (1) there are many types of learning spaces in the UK which can be understood under two main types (formal and informal). Through an understanding of the importance of less structured informal spaces for students to explore learning outside of the classroom and engage in peer to peer activities, further emphasis is being directed at strategies to incorporate these informal learning spaces in to campus environments. Due to the social nature of Informal Learning activities, this type of learning has typically occurred in locations such as the library, student cafeterias, and other socially-oriented spaces. To address the increasing demand for more informal learning spaces, campuses are creating social hubs, internal student streets, and other designated spaces that "promote both social and learning- related activity" outside the classroom (O'Neill, 2013). The UK is leading the field in developing ILS in its campuses (Lomas, 2005).

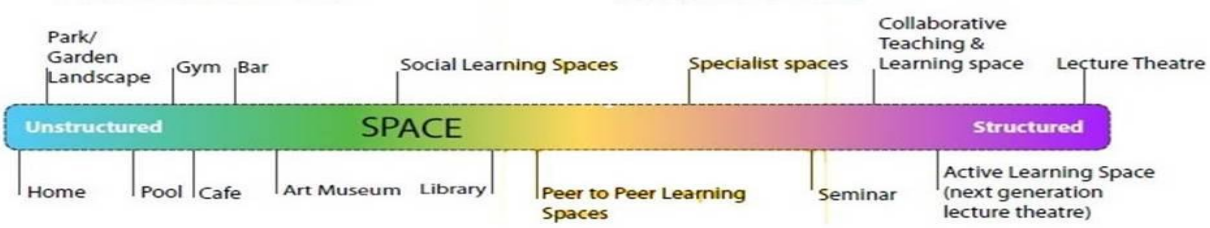



Figure 2:1: Formal and Informal Learning Spaces in the UK by the researcher

Learning spaces on campus can be understood on a continuum between Formal Learning Spaces and Informal Learning Spaces. Formal Learning Spaces include classrooms and laboratories, lecture halls, auditoriums, computer labs and studios (Lomas, 2005). Informal Learning Spaces include hallways, plazas, courtyards, dormitories and food service areas (Brown, 2003). Keppell defines ILS as spaces "that have been explicitly designed to encourage students to engage in independent learning that is often unscripted" (2002, p.243).

Tibbetts (2008) observes that students' perception of a sense of ownership over their space contributes to the success of ILS. Students typically spend more time in these spaces when they have the ability to change the layout of space to accommodate a variety of needs. Lounges, courts, study rooms and other supplementary spaces are often successful and well-used when located near primary and particular classrooms. These spaces should offer

technology connecting areas, and group work space with presentation equipment to create a useful learning area allowing students to quickly engage in learning activities (Tibbetts, 2008). It is likely that the design of ILS has the potential to affect the ways in which they are used.

According to Brown (2006), learning does not just happen in classrooms. Learning also occurs outside the lecture hall. Therefore, the learning environment is not only in the form of formal learning environments, such as classrooms and lecture halls, but also informal learning environment such as public spaces (Fisher, 2003). With an increased emphasis on teamwork and group projects, students are learning in small groups outside the classroom as they accomplish work related to their courses. The current teaching and learning methodologies require informal learning spaces.

Johnson and Lomas (2005) maintain that learning that is social requires feedback and interaction among participants. So, a learning space should enable learners to get know each other and engage in dialogue, work on group projects and interact in a variety of ways. In relation to this, Wilson and Randall (2011) maintain that universities must be more innovative and creative in the way that they utilize, reconfigure or build new learning spaces in order to meet the expectations of tomorrow's students.

Learning spaces should be student-centered and providing the necessary technology to meet student and "subject" needs (JISC, 2006). The informal learning space must be flexible in terms of the time that it can be used by students. The use must also be flexible, that is the space must provide conducive seating facilities with food and beverages served in the area and equipped with pervasive information technology facilities (Acker & Miller, 2005).

Bodnar (2009) argues that although information and learning commons are designed primarily to benefit college and university students, these spaces can, with little modification, benefit faculty as well. Matthews, Andrews and Adams (2011) discuss the role of social learning spaces on the student experience using the student engagement framework within a qualitative research design and also reveal in their findings that social learning spaces can contribute to enhanced student engagement by fostering active learning, social interaction and belonging amongst tertiary students. And further, also suggest that design is a contributing factor to students' perceptions of social learning spaces.

We can see from the literature that there is some disagreement about whether ILS includes only purpose designed spaces or whether they also include non-designed spaces. However for the purpose of this thesis, the definition includes both types of spaces, in order to investigate the spaces that have been explicitly designed for informal learning, then develop and test the framework in Arabic contexts against spaces that have not been designed for that purpose.

But may nonetheless be used for Informal Learning purposes

### 2.1.4 Informal learning spaces: a working definition

This section identifies a working definition of ILS for the purpose of this particular research.

**For the research purpose informal learning spaces are defined here as:** the internal spaces that are located in between spaces either prescribed for formal learning (such as classrooms, lecture theaters) or for servicing (such as staff offices, bathrooms and storerooms). ILS therefore includes spaces such as lounge areas, informal meeting and working spaces for students, corridors and stairwells.

This study will investigate what role the design of ILS play in facilitating IL for students in university settings and develop a framework to facilitate Informal Learning within Arabic universities based on recent developments in UK universities.

### 2.1.5 Informal learning types

Informal learning happens in a variety of different forms which include:

2.1.5.1 Self-directed learning: the learning process where learners take the ability to assess, with or without the help of others, and that would be available by identify the nature of their learning needs and goals, and evaluating learning outcomes "(Knowles, 1972).

There are some specific features of self-directed learning such as the fact that learners can be allowed to take more duties for several choices related to their learning aims, as well as self-direction is best viewed as a feature that exists mainly in every person and learning situation (Chickering, 1987).

2.1.5.2 Incidental learning: this relates to "unplanned learning that happens at any time and in any place, in everyday at formal and informal learning spaces "(UNESCO, 2005,p.4).

2.1.5.3 Social learning*:* this refers to processes of interaction where individual learns the habits, skills, beliefs which are necessary for participation in social groups and communities (John, 1968). Social learning presumes that social interaction plays an important role in learning (Miller, 1941). Bandura (1977) further developed social learning theory which suppose that learning takes place in a social context and can occur purely through observation or direct instruction. These three categories of informal learning are used to structure the literature review. Similarly, Conner (2010) discuss that the new perception of social learning heavily weighs the role of social media. They wrote that "to learn is to optimize the quality of one's networks. Learning is social. Most learning is collaborative. Other people are providing the context and the need, even if they're not in the room" (p.21). New social learning centers on information distribution, communion, and cocreation (Bingham & Conner, 2010).

Recent expansion of social learning has considered the impacts of the Internet and technology (Brown & Adler, 2008). The Internet has provided a sophisticated participatory medium to support sharing and multiple modes of learning whether it is formal or informal learning; people tend to offer access to other by providing access to information. The description of social learning, therefore, has changed from learning as received knowledge to learning as knowledge created through interaction with others (Brown & Adler, 2008). However, the new definition of learning emphases on the "how" instead of the "what" in learning.

Even though, in terms of learning together in informal learning spaces, there is not much information available to determine whether students are influencing each other's knowledge as they study together in informal setting. A study has pointed out that not much learning actually takes place in social facilities (Arum, 2011), however, it is unknown whether this conclusion is applicable across all social facilities and all types of learning. Given that current college students' interest in social facility is increasing (Alexander, 2003), more research is required to understand how learning, especially social learning take place in informal learning spaces, and how current college students find value in studying in these spaces.

In summary, recent movements in education such as active learning, collaborative learning, informal learning, and social learning influence the interest in informal learning spaces of current university students. In response, Institutes of higher education have established

Informal Learning Spaces (ILS), which can be found alongside the traditional classroom, within the intention of raising student participation in the learning process (McDonald, 2013). Additional research is required to understand how and why students choose informal learning spaces, and how these spaces could be employed for the benefit of learning outside the classroom.

### 2.1.6 Informal Learning Spaces in History

The initial history of Informal Learning education probably pre-dates any form of formal education. Philosophers, teachers and religious leaders went to places where people gathered in order to involve them in discussions and conservation (Richardson, 2001).

After that the first modern examples of centers instituted to support informal education had appeared. Coffee-houses were settled and over 2000 existed in London and provinces. Also, there were strict rules which guaranteed organized and democratic behavior. As well as coffee houses quickly were known for specializing in topics such as politics, religion, Science or literature (Kelly, 1970).

While historically the university campus has been shaped by the emphasis on traditional instructional methods and the classrooms this has required, the future campus will be determined to a large extent by the university's response to informal learning. The balance of formal and informal settings will need to change as students are required to be more self-directed. This research examines a particular direction that many universities have followed to create a more effective informal learning environment on campus: the development of campus learning centers. The research also proposes the need for a campus development strategy informed by a subtle understanding of informal learning (Jamieson, 2009).

Although universities have developed only a relatively small percentage of their formal classrooms to accommodate the shift toward a student-centered pedagogy (Jamieson, 2007), there is considerable evidence that universities are now treating the issue of informal learning much more seriously. Social hubs are appearing as key features of campus life, along with internal "student streets" within buildings that feature a mix of functions expected to promote both social and learning-related activity (Chism, 2006). Another response has been the creation of a comprehensive "student center" to provide key administrative and course support along with information technology (IT) access and other services (Johnson, 2006).

## 2.2. Learning theories

Learning theory states an understanding of how people learn, considering the differences in learning choices for learners. Learning theory identifies that learning could happen anywhere (Dugdale, 2009). The following paragraph discusses the way that the location and atmosphere of the learning environment shape the students, and that students impact their environment.

Learning and knowledge are two main concepts in education psychology.

Ormord (2003, p.5) has defined learning as "the permanent changes in behaviours or in mental association due to experience". However, he has defined Knowledge as "the various ways in which people think about what they see, hear, study, and learn". Cognitive processes are the specific things that people do to acquire knowledge and these processes have a significant influence on what is being learnt and how well this new knowledge is stored in the memory (Ormrod, 2003).

### 2.2.1 Literature Review

Before we can understand how learning theory is applied to ILS design principles, it is important to understand learning theory. Three theories that explain how learning occurs are behaviorism, cognitivism, and constructivism. Learning means quite different things to different people. For instance, some educators regard learning as the memorization of information. There is a huge disconnect between knowing something in the abstract and being able to make that knowledge actionable. In fact, emerging ideas about learning are beginning to suggest that learning is the act of making knowledge tangible through action.

Before addressing how ILS should be designed, the researcher will examine the theoretical assumptions of how people learn. Learning theories are lenses through which we view and think about the learner and learning environment. Learning theories help designers determine what instructional methods, strategies, and tactics are appropriate and how we situate them within the overall learning environment. The challenge of creating a complete definition of learning lies in the different explanation of both the intent and method of learning. The following describes some of the commonly accepted learning theories that describe how we learn.

### 2.2.2 Behaviourist Learning Theory

Skinner was the major forefather of behaviourism (Akinsanmi, 2010). Behaviourists of the late 19th and early 20th century believed that learning occurred after birth. Exposure to external stimuli provided an opportunity for exploration, often resulting in a change of actions. Knowledge was directly transferred from teacher to student and was viewed as objective, factual, and fixed (Akinsanmi, 2010). Learning activities that correlate with this learning theory are lecture-based, structured, and teacher focused. Classrooms during this time period were arranged in rows and columns like assembly lines. New learners progressed through this linear arrangement until they emerged as masters of new knowledge. The teacher's desk was the main point of focus (Akinsanmi, 2010).

Behaviourism was an approach driven by an attempt to treat psychology as an objective science. To do this, behaviourists focused only on directly observable, measurable events and behaviours, and how the environments that people live in influence their behaviour. Consequently, they rejected theorizing about 'mental events' to explain why we do the things we do. The behaviourist was not concerned with how and why knowledge is obtained, but rather if the correct response is given. Behaviourists conceptualized learning as a process of forming connections between incentives and responses. Motivation to learn was assumed to be created primarily by drivers, such as hunger, and the availability of external forces, such as rewards and punishments (Thorndike, 1913).

Learning viewed as situated activity has as its central defining characteristic a process. Learners inevitably participate in communities of practitioners and that the mastery of knowledge and skill requires newcomers to move toward full participation in the socio-cultural practices of a community. Behaviourist learning tends to be passive, knowledge is objective, and evaluation is based on observable behaviour. This is consistent with the traditional view of learning that was based on the mastery of isolated facts and skills learned through memorization and rote practice (Knuth, 1991). It views the mind as a "black box" in the sense that response to stimulus can be observed quantitatively, methodologically having decided to ignore the thought processes occurring in the mind. The missing factor in behaviorist explanations is the importance of the learner's thoughts, beliefs, and interpretation of a situation. The development of appropriate social behavior is more likely if the learners understand why they are being treated in a particular way (Huesmann, 2003). It is an oversimplification to propose that learners can only learn through direct experience and contingent rewards.

### 2.2.3 Social Learning Theory

Social learning theory focuses on the learning that occurs within a social context. Whilst accepting the behaviourist's view that we learn to do what we do because of the direct reinforcement of our responses to motivations, Albert Bandura recognized that we learn also by observing the consequences of other people's actions. He acknowledged the role of observing others experiencing reinforcement and punishment, but argues that its role was in influencing which behaviours learners attend to in the first place, and also in affecting learners' motivation to reproduce a behaviour. Bandura said, "Most human behaviour is learned observationally through modelling from observing others, one forms an idea of how new behaviours are performed, and on later occasions this coded information serves as a guide for action" (Bandura, 2001). Social learning theory explains human behaviour in terms of continuous reciprocal interaction between cognitive, behavioural, and environmental influences.

Here, environment refers to the factors that can affect a person's behavior. There are social and physical environments. Social environment includes family members, friends and colleagues. Physical environment includes the size of a room, the ambient temperature or the availability of certain items. Environment and situation provide the framework for understanding behavior. The situation refers to the cognitive or mental representations of the environment that may affect a person's behavior. The situation is a person's perceptions of the space, time, physical features and activity (Glanz, 2002).

In considering the dynamics between the individual and behavior, behavior depends on elements such as the individual's expectations or goals. Similarly, behavior can be conditioned, thus influencing the individual. Individual achievement can be hindered by environmental inputs such as socioeconomic factors; these effectively limit the individual's access to certain developmental opportunities. However, just as the environment effects individuals, so individuals can also affect their environment; a strict boss, for example, can alter the environment of a room with their only action being their entry into the room. Our behaviors also determine our environment. In our daily lives, our environment may be quite limited, consisting only of our work or home settings. Similarly, since our environment is not static one, it can have an effect on our behavior. Bandura's work shows that learning can occur without the sorts of reinforcement that behaviorists see as essential, and that learners are active participants in their learning. The sort of learning that Bandura

highlighted goes further than simple mimicry. It implies that learners extract general principles from what they observe.

However, it does not tell us about the nature of the learners' thinking or give us an insight into the process of cognitive change occurring within the learner. Moreover, it still places the emphasis on factors that are external to the learner as key influences on their developing behavior; in this case the behavior and experiences of people around them. To understand cognitive development, a different theoretical perspective is needed, namely constructivism.

### 2.2.4 Symbolic Interaction (Cognitivism) Learning Theory

Cognitivism came to be popular in the second half of the 20th century. It explained learning through the analysis of mental processes. Knowledge was viewed as mental constructs that were processed in the mind. The learner was an active participant in the learning process. A change in a person's thinking resulted in learning (Akinsanmi, 2010). Similar to behaviourists, proponents of cognitivism viewed learning as objective and fixed. However, curiosity, inquiry-based activities, and critical thinking were encouraged in these learning environments. Buildings constructed using this theory were customarily organized like campuses, allowing for outdoor exploration and multiple opportunities for students to interact with one another. Furthermore, the buildings were typically one or two stories and were sequentially arranged according to grade levels. The layout of the classroom based on this theory is also teacher-focused, with students sitting in rows facing the teacher (Akinsanmi, 2010).

Symbolic interaction theory posits that human actions are based on the meanings we attribute to things and these meanings emerge through social interaction (Blumer, 1969). People learn identities and values through the socialization process as they learn the social meanings that different behaviors imply. Symbolic interaction theory emphasizes that human beings make conscious and meaningful adaptations to their social environment.

Two theorists have greatly influenced the development of symbolic interaction theory: Cooley (1929) and George (1931). They saw the self-developing in response to the expectations and judgments of others in their social environment. The self is our concept of who we are and is formed in relationship to others. Cooley (1902) suggested that we learn to view ourselves as we think others view us and he called this the looking-glass self. The development of the looking-glass self emerges from (1) how we think we appear to others; (2) how we think others judge us; and (3) the feelings that result from these thoughts.

Cooley explained that our self-concept is not merely a mechanical reflection of those around us; rather it rests on our interpretations of and reaction to those judgments. We are actively engaged in defining our self-concept, choosing whose looking-glass we want to pay attention to and using past experiences to aid us in interpreting others' responses. This means that the formation of the self is fundamentally a social process that is based in the interaction people have with each other. Also, subjective interpretations are important determinants of the self-concept. People interact through the medium of symbols that must be interpreted subjectively and these interpretations have real consequences.

The concept of Role taking was proposed by George Mead (1934). Mead explained roles are the expectations associated with a given status in society and the basis of all social interaction, and we learn social norms through the process of role taking. This means imagining ourselves in the role of others in order to determine the criteria others will use to judge our behavior.

### 2.2.5 Constructivist Learning Theory

Similar to progressivism, constructivism asserted that the student was actively involved in the learning process, constructing knowledge through experience (Akinsanmi, 2010). First articulated by psychologist Piaget (1896–1980), this theory considered the learner's level of cognitive development. The responsibility for learning was placed with the learner, and social interaction and reflection were integral to the learning process (Akinsanmi, 2010). The goal of constructivist environments was to provide rich experiences that encouraged students, contexts, psychological processes, learning, motivation, and self-knowledge (Schunk, 2008 p. 328). Teachers served as facilitators for active student engagement, learning occurred in many places, and the instructional voice was shared among many actors (Van Note Chism, 2002, p. 10). Learning environments designed based on this theory were student-centered, collaborative, and experiential and allowed for project-based and cooperative learning (Akinsanmi, 2010).

Constructivist learning is viewed as constructed by the learner through a learning process. The knowledge is not transmitted from one person to another but has to be constructed by the individual. Constructivist knowledge is relative rather than absolute and can vary according to time and space. The evaluation of constructivist learning is different from traditional evaluation since the focus is on the individual progress that takes place during the learning process. The constructivist view of reading, for example, suggests that readers

construct meaning by making inferences and interpretations and learn by linking new information to prior knowledge (Knuth, 1991). Experiential constructivist theory emphasizes learning through experience.

### 2.2.6 Summary of Learning Theories

Four prominent learning theories seek to provide insight into the act of learning:

- Behaviorism – learning through discipline
- Social Learning – learning through social context
- Symbolic Interactionism – learning through socialization process
- Constructivism – learning through experience

When all these different schools of thought are analysed closely, many overlapping ideas and principles become apparent. Environment is shared as a common and significant influence to learning:

'environment' in the sense of other people and their behaviors (Social Learning); environment as the context, shaper, and object of action and interaction (Symbolic Interactionism); environment as the world of experience (Experiential Constructivism); environment as affording opportunities for exploration and therefore cognitive development (Cognitive Constructivism); environment as cultural and social interaction (Socio-Cultural Constructivism); and environment as contextual source of social and physical information (Situated Constructivism).

Learning takes place when a learner (person) interacts with, or is stimulated by an environment (Lewin, 1951). Moreover, all the theories also value the social interaction as the main method of obtaining the knowledge, although they differ in the extent to which they see how interaction occurs, in terms of 1) where it happens, 2) who is involved, and 3) what form of interaction. All the theories agree that social interaction with peers is a must for learning. Based on the learning theories that I have discussed, I believe that the best approach to designing learning environments is to support the learners in the creation and transfer of context-dependent, flexible and adaptive learning in a socio-cultural environment. The following guiding principles are the attempts to describe what should be the ideal learning environment.

This research seeks to identify ways that the ILS environment facilitates informal learning. Although it is less traditional for users faculty and students to play significant roles in planning learning spaces (Chism, 2002), this research represented the philosophy and practice of progressive informal learning, with constructivism guiding its the architectural theory and construction.

## 2.3 Architecture of ILS

Broad perceptions within the literature about main three aspects of the physical settings may include crowding, personal space, territoriality, and privacy (Gifford, 1987). The following is a review of the literature regarding these spatial factors.

### 2.3.1 Crowding

Density is the percentage of users to area (Gifford, 1987). Crowding, in contrast, is the apparent spatial limitation caused by density (Stokols, 1972). The amount of density affects the physical movement of activities in the ILS, nevertheless, crowding affects performance depending on users and settings (Gifford, 1987). Weldon (1981) showed three tests on the effects of crowding on classroom learnings. The result showed that: observations of crowding varied by professional perspectives; the relationship between crowding motivation and achievement was reasonable level of crowding was more useful to learning; and moderate level of density was more beneficial than low or high levels of density. Therefore, the awareness of crowding and density may affect student's choices for informal learning spaces.

A new study found that the impacts of crowding on users were reliant on the nature of tasks; simple crowding affected only reading achievement, but not math achievement (McMullen, 2012). Crowding was also found to affect moods as users in a restaurant were reported to be more confident when seating was less crowded (Yildirim, 2007).

### 2.3.2 Personal space

The definition of crowding is related to the definition of personal space, or unseen limitations nearby the user where intruders are not wanted (Sommer, 1969). Personal space is moveable, self-justifying, and related to culture, condition, and sometimes difficult to identify (Sommer, 1969). An early research found that male students enjoyed larger seating

distance than female students (22 inches, 13 inches) and that users preferred semicircle and U shape seating (Heston, 1972). However, recent studies have accounted for the roles of information technologies in the life of participants, and revealed that perception of personal space has changed (Lamberg & Muratori, 2012; Sommer, 2002).

Sommer (2002) wrote in his informal observations at public locations that sitting near people who were talking on the phone made them more uncomfortable, reduced their conversations, and rushed their departures. Lamberg (2012) also observed the use of phones in public spaces. He found that the use of phones between walkers increased reasoning interruption, reduced situational consciousness, and resulted in a rise in dangerous behaviors (Lamberg, 2012). The use of other forms of technology in public spaces and their impacts was also examined. Positive emotional states encouraged by music from headsets or speakers were found to reduce the picture of personal space, or allow people to come closer to each other (Tajadura, 2011).

Some literature suggests that when interrelating with technological devices, individual's awareness of space and accuracy of activities are different from when there are no technological devices. Consequently, when discovering students' choices of informal learning spaces, consideration of the ways technologies affect their observation of personal space is needed.

### 2.3.3 Territoriality

Territoriality concerns the action of using space and keeping the social order of users using the space (Sommer, 1969). Altman (1970) recommended that human territoriality contains perceptions, use and protection of places, people, and objects, ideas through verbal self-makers and environmental behaviors. A recent study about territoriality in collaborative workspace reported the size and shape of personal territories were influenced by various factors including number of collaborators, seating arrangements, size of the table, task activities, and visible barriers (Scott, Carpendale, & Inkpen, 2004).

Studies about territoriality in coffee shops have gained more attention as more people use "third places" to do work related activities (Forlano, 2008). Griffiths and Gilly (2012) discovered that in order to maintain undistracted privacy, customers in a coffee shop engaged in territorial behaviors by purchasing or using an item with the café logo and discouraging other customers to share their area where they are seated. Another study

reported that seeing many customers rejecting the opportunity to share tables in the coffee shop affected other customers' emotion and perception of fairness (Mattila, 2014).
As users of coffee shops experience particular ways of perceiving territoriality, it is possible that students who enjoy studying in informal learning spaces have both similar and more context-specific perceptions about territoriality that affect their choices of informal learning spaces.

### 2.3.4 Privacy

People prefer to prevent others from entering their individual space. Privacy is the person's choice of what time, way, and to what level personal information is shared with others (Westin, 1967). Westin (1967) has identified four situations of privacy, on behalf of the way in which one employs to create privacy:

1) Isolation (independence from observation of others)
2) Closeness (isolation so that group members achieve a close relationship).
3) Secrecy (choice from identification in public places and for community acts)
4) Fallback (wish to limit revelations with others).

Altman (1975) advised that privacy is a social procedure that includes collaboration between people, physical settings, and cultural background. With recent technological progress, privacy appears in different ways. A reflection led by Christie (2009) on activities in a cafe exposed five different findings about privacy and territoriality in the digital age:

1. Individuals operated individualistically, silently, and surround themselves with their belongings to get their territory.
2. Individuals created their own space with technical devices (they did not remove their headphones while communicating).
3. Individuals do not mind taking up social space for personal activities.
4. Individuals acted similarly in private space as in public space.
5. It was informally suitable to regularly use public space for personal activities
(speak, snooze, spend time, and use the toilets without buying any item in the cafe).
This can be generalized also of students at informal learning spaces on campus in that they may take a "public space" and turn it into a private space for study.

Sommer (1969) defined personal space as unseen limitations surrounding the individual where strangers are not welcome. Territoriality is the act of inhabiting space and keeping the social order of individuals using the space to avoid personal space overrun (Sommer, 1969). Relating to Brehm (1966), people accept actions to reach their freedom because keeping the freedom of choice is an important inspiring aspect. He reported, "given the user has a set of free activities, he will experience different behavior whenever any of those behaviors is removed or threatened with removal" (p.380). Brehm (1966) highlighted that the way in which a user responds to reactions be subject to both reasoning and legality. In summary, reactions to limitations depend on the level of control given to users at a given time and place.

In informal learning spaces, students are not restricted by limitations. Though, given that any structures on campus have their own organizations and administrators, it is necessary to understand how staff factors influence the behavior of students, thus affecting their decision to select places to study outside the schoolroom.

## 2.4 Where does ILS fit?

This section will focus on different meanings associated with ILS in literature. It looks at different perspectives from which ILS can be addressed from the wide perspective to the very specific territory as this project working definition. The section will then look at the make-up of ILS, exploring the elements that differentiate a ILS from any other learning space.

### 2.4.1 Destination

Students use many places to study. Where they choose to study depends on a number of factors. This section reviews literature on the locations students use to study including the library, other campus spaces, and off campus spaces.

#### 2.4.1.1 Library

In researching locations of study, there were more articles on libraries than other spaces. This could be because “libraries are symbolic of the importance a campus puts on their dedication to learning and the lack of adequate facilities was seen as highly detrimental to these campuses” (Vredevoogd & Grummon, 2009, p. 9). Temple (2008) referred to the library’s traditional designation as the “heart of the university” (p. 233). However, the traditional library has changed; it is no longer a warehouse of books (Acker et al., 2005; Feather, 2013). Users are “finding something else of value in

academic libraries" (Gayton, 2008, p. 62) such as "a 'third place'—a place away from both the workplace and the home to study in peace, work collaboratively, or socialize" (Latimer, 2011, p. 126). Because of this shift in purpose, libraries have been studied to identify use, preference, and perceptions.

Few research articles included multiple sites for comparison. Of the articles that were available, the library was found to be a positive influence on students. Bennett (2011) used an online questionnaire to survey undergraduates and faculty of six different institutions about the effect they think the library has on learning. Bennett found that students and faculty both thought that libraries promote "learning behaviors important to them" (p. 776) and that students valued "library space almost twice as frequently as...faculty" (p. 776). Jackson and Hahn's (2011) quantitative study of 54 students' impressions of physical libraries supported this with their research, which indicated that positive mental benefits "extend beyond attitudes... into the realm of behavior" (p. 436) and that students prefer libraries that are more traditional in appearance both internally and externally. When quantitatively studying the data of 90 sites with completed library renovations, Shill and Tonner (2004) found that libraries experience an increase in use, some with "gains exceeding 100 percent" with continued use of "an improved facility even after the novelty of a new library has worn o ff" (p. 149).

Voela (2014) verified the importance of libraries, "The regular return to the library might be understood as organising and supporting the student identity when learning is not pursued in relation to assignments....Regular visits to the library...afford the pleasure of pursuing one's dream beyond mere accreditation" (p. 70). Nixon, Tompkins, and Lackie (2008), in their yearlong mixed-methods study, found that personal rooms and the library were the most popular locations for studying. Nixon et al.'s study was supported by Rozaklis' (2012) mixed-methods research that found the library was the second most reported study space. In studying undergraduate use of the library, Bridges (2008) analysed 949 survey responses and found "agricultural science students visited the library less than health and human sciences, sciences, and liberal arts students" (p. 193). Teoh and Tan (2011) found that second-year students used the library more than students did in their later years "while first-year students are not statistically significant in their library use patterns" (p. 28).

Research conducted on campus also identifies why students chose where they

studied. Vondracek (2007) and Thoring et al. (2012) identified the quiet atmosphere as a main reason for studying in the library. Vondracek also found the comfortable furniture and availability of lockers as reasons to use the library. The availability of group space and an atmosphere of studying people were mentioned as positive influences of libraries on study (Harrop & Turpin, 2013; Thoring et al., 2012). Thoring et al. (2012) found no negative comments from the students they interviewed; however, other researchers did. The most common complaint dealt with the busyness of the library (Cox, 2011; Matthews et al., 2006; Matthews et al., 2011). Other reasons cited were that the location of the library was "inconvenient" (Rozaklis, 2012, p. 104; Vondracek, 2007, p. 291) and the library was "less comfortable than home or the dormitory" (Vondracek, 2007, p. 291). Matthews et al. (2006) and Vondracek (2007) also found that students did not believe they needed the library to complete their work.

Kuh and Gonyea (2003) found that "student use of the library has changed over time" (p. 266). Antell and Engle (2006) concluded that "more space for library users and less space for library materials is exactly on target" (p. 553) for library design. Bailin (2011) found that flexible and adaptable spaces are essential for design of spaces.

Along with the permanent change of library use, Applegate (2009) confirmed the "seasonality of the library" (p. 343) along with a preference for study rooms and groups. The library was often seen as a space for study and reflection. Kuh and Gonyea (2003) stated that, "Students who more frequently use the library reflect a studious work ethic and engage in academically challenging tasks that require higher-order thinking" (p. 270). Kuh and Gonyea also found that humanities and social science students were "the most frequent users of the library" (p. 265). Libraries were frequently used by groups for meeting, studying, and socializing (Bailin, 2011; Bedwell & Banks, 2013; Hunter & Ward, 2011). Bedwell and Banks (2013) reported, "Several observations were made of individuals selecting a group study table (a large table) to work at, spreading out books, papers, laptops, and supplies" (p. 10). But "despite observations that students come to the library in groups and study in groups, the most common reasons students gave for coming to the library were to escape from noise and distraction" (Hunter & Ward, 2011, p. 266). Webb et al. (2008) found more individuals than groups in their library, but Peterson (2013) found a mix of groups and individuals in their spaces, which is indicative of the differences between universities generlly.

Applegate (2009) confirmed the seasonality of the library with an increase in use "towards the end of each semester" (p. 344) and a drop in usage on Fridays. More, Zwanzig, Ruona, Stomberg, and Borkgren (2009) found students stay longer to study "toward the end of the day" (p. 14) and into the evening, but during the day "last minute preparations for exams or lectures" (p. 14) happen before class. How long students studied varies by school. Peterson (2013) identified "between thirty minutes and two hours" (p. 41), Hunter and Cox (2014) found students come for "under one hour or for over four hours" (p. 42), and Gardner and Eng (2005) found undergraduates spent 3 hours or less and graduate students spent 6 hours or more in the library.

When looking at why students use the library, the primary reason was privacy, quietness, and a distraction free space (More et al., 2009; Peterson, 2013; Webb et al., 2008). Comfort and materials were also mentioned as why students use the library (Peterson, 2013; Webb et al., 2008). Also mentioned were the location of the library, group tables, lighting control, and power outlets (More et al., 2009; Peterson, 2013; Webb et al., 2008). However, the reasons cited as why students chose not to use the library mirror the reasons above. Peterson (2013) found the location and environment of the library are the main reasons given for non-use. Like previous research, Bedwell and Banks (2013) found students wanted a "strong internet connection, but unfortunately these areas lacked a sufficient number of power outlets" (p. 9). Webb et al. (2008) found "poor lighting, too quiet, too noisy, uncomfortable, puts me to sleep, and tendency to watch other people" (p. 413) as reasons not to use the library.

When examining what students were doing in libraries while there, a large majority mentioned study (Antell & Engel, 2006; Applegate, 2009; Brown-Sica, 2012; Gardner & Eng, 2005; Hunter & Ward, 2011; Peterson, 2013; Webb et al., 2008); however, Kuh and Gonyea (2003) cited a "decline in the proportion of students who use the library as a place to read or study" (p. 265). Mentioned second most frequently was the ability to consume food while working (Antell & Engel, 2006; Hunter & Ward, 2011; Peterson, 2013; Webb et al., 2008). Researching and group work were mentioned (Antell & Engel, 2006; Brown-Sica, 2012; Nixon et al., 2008) along with using computers or the Internet (Gardner & Eng, 2005; Peterson, 2013). Other things to do in the library were sleep, socialize, use time between classes, and take a library class (Gardner & Eng, 2005; Hunter & Ward, 2011; Peterson, 2013).

2.4.1.2 Other Campus Spaces

Libraries are no longer the preferred option for many students. Students are requesting informal spaces for groups, food, and social activities (Dugdale, 2009). Twait (2009) requested students to "sketch their favorite study space. They drew dorm rooms, campus lounges, their parents' living rooms—no one drew a space in the library" (p. 22). Dugdale (2009) called for the planning of settings that are more diverse and adaptable and the Higher Education Funding Council for England (2006) noted that "large, underutilized spaces already exist in most colleges and universities" (p. 29) that could be used for this purpose. This section covers who uses campus spaces, what spaces on campus beside the library are used, what students do in these spaces, why they choose those spaces, and the possible effects of using these spaces.

The available information on who used alternative campus spaces was sparse. Matthews et al. (2006) found that students who live on campus are less likely to use the library and study instead in their residence halls. Hunter and Cox (2014) found students schedule time between classes to prepare for later activities. Hotard (1993) identified family income and size of environment in which they were raised as variables that affected how far students travel on campus. Nixon et al. (2008) found the students working in academic lounges were chemistry and geology majors and students working on lab assignments.

Multiple researchers identified informal learning spaces were where students go to study on campus (Harrop & Turpin, 2013; Matthews et al., 2011; Pizzuti-Ashby & Alary, 2008). McLane (2013) found that the visibility of the space was important to get students into the areas, but too much visibility hampered the use of the space. Crook and Mitchell (2012) found "open learning space (was) popular (for) collaborative work...or group technologies" (p. 129). Rozaklis (2012) noted, "50% of respondents used another building on the university's campus to work on coursework" (p. 97). Cafes, dining halls, and locations that served food were frequently identified as locations where students studied (Bennett, 2011; Harrop & Turpin, 2013; Misencik, O'Connor, & Young, 2005; Muslim, 2011; Newbold et al., 2011; Pizzuti-Ashby & Alary, 2008; Seddigh, Hosseini, Abedini, & Lou, 2011; Thoring et al., 2012; Vondracek, 2007;Yang, 2006).

Student support centers and unions (Bennett, 2011; Harrop & Turpin,

2013; Kuh & Gonyea, 2003; Misencik et al., 2005; Newbold et al., 2011; Mehta, & Forbus, 2011; Pizzuti-Ashby & Alary, 2008), residence halls (Bennett, 2011; Kuh & Gonyea, 2003; Seddigh et al., 2011; Vondracek, 2007), and computer labs (Bennett, 2011; Bridges, 2008; Cox, 2011; Kuh & Gonyea, 2003) were identified as popular locations of informal learning. Outdoor campus spaces were also studied as possible locations of study (Bennett, 2011; Speake, Edmondson, & Nawaz, 2013; Yang, 2006), along with spaces like department hallways, campus walkways, parking lots, restrooms, gyms, and locations close to classrooms (Bennett, 2011; Chism, 2006; Cox, 2011; Harrop & Turpin, 2013; Muslim, 2011; Seddigh et al., 2011; Thoring et al., 2012). In identifying what students did in the spaces they chose, Voela (2014) found "communal spaces support an exchange of gazes as a way of getting to see what others do and doing like them" (p. 71).

The main activity happening in on-campus spaces were individual and group study (Acker et al., 2005; Ashby & Alary, 2008; Bennett, 2011; Crook & Mitchell, 2012; Lomas & Oblinger, 2006; Matthews et al., 2006; Misencik et al., 2005; More et al., 2009; Speake et al., 2013; Spooner, 2008). The other common activities were social communication (Acker et al.,2005; Ashby & Alary, 2008; Crook & Mitchell, 2012; Lomas & Oblinger, 2006; Matthews et al., 2011; Speake et al., 2013; Spooner, 2008) and eating (Lomas & Oblinger, 2006; More et al., 2009; Speake et al., 2013; Spooner, 2008). Resting, people watching, non-serious study, and quick tasks (Harrop & Turpin, 2013; Matthews et al., 2011; Speake et al., 2013; Spooner, 2008) were other behaviors identified in research. The main reason students used these spaces was for the flexibility offered in the spaces (McLane, 2013; O'Rourke & Gonzalez-Metcalf, 2011; Yang, 2006).

Some articles found that the "chance encounter" (Acker et al., 2005, p. 6) and the ability to "learn from each other... and apply their own... learning styles" (Jackson & Shenton, 2010, p. 216) were beneficial aspects of on-campus spaces. Hunter and Cox (2014) reported that, "Being around others and taking in the atmosphere seemed to inspire students to work effectively" (p. 45), a finding supported by Crook and Mitchell (2012), who cited the ambiance, and by O'Rourke and Gonzalez-Metcalf (2011), who found room size, lighting, and ventilation as important. Pizzuti-Ashby and Alary (2008) found students preferred "a relaxed atmosphere that allows them to 'escape' from the stress of classes and work" (p. 6), while McFarland, Waliczek, and Zajicek (2008) found the green spaces on campus improved freshman quality of life and "could potentially be a contributing factor in student retention, particularly among students new to the

university" (p. 237).

#### 2.4.1.3 Off-Campus Spaces

Campus was not the only location students used to study. Chism (2006) reported, "Learning arguably happens everywhere, in city sidewalks, in airplanes, in restaurants, in bookstores, and on playgrounds" (p. 2.2). However, there was limited research on what spaces were used beyond campus. Of the articles available, the primary location not on campus mentioned was home (Gardner & Eng, 2005; Harrop & Turpin, 2013; Matthews et al., 2011; McLaughlin & Mills, 2008; Me William, 2011; Newbold et al., 2011; Rozaklis, 2012; Vondracek, 2007).

The second most cited location for off-campus study was a coffee shop (Harrop & Turpin, 2013; McLaughlin & Mills, 2008; McWilliam, 2011; Rozaklis, 2012). Rozaklis (2012) also found the workplace as a location to complete work. A comfortable physical environment was the most cited reason students give for why they study off campus (Antell, 2004; Dugdale, 2009; Harrop & Turpin, 2013; McWilliam, 2011; Thoring et al., 2012). Words used were *cozy*, *relaxed*, and *comfortable* (Harrop & Turpin, 2013; McWilliam, 2011). Dugdale (2009) found the availability of late hours a reason to use off-campus space. Antell (2004) found convenience and familiarity and Thoring et al. (2012) mentioned "personal freedom to do whatever they wanted" (p. 5).

### 2.4.2 Identity

Although students are comfortable with technology and electronic devices, real social interactions continue being significant to a student's knowledge, as well as participatory and peer learning (Weaver, 2005). Studies confirm interaction with faculty, staff and students is one of the most important influences on student learning (Dittoe, 2006). Furthermore, nowadays to be more social, learners tend to prefer active, involving, and observable learning (Weaver, 2005). Students seek to be involved in the structure of knowledge, rather than taking a more passive act of simply receiving knowledge. Additionally, these approaches to learning contribute to better outcomes such as improved assessment results (Long & Helton, 2009). This sort of learning, which allows students to be involved in a richer educational environment, needs to be improved in developed Informal Learning Spaces, which give students a variety of options to participate in their study either by themselves or group work.

Students have preferences for the characteristics of the spaces they choose to use

(Antell, 2004; Thoring et al., 2012). In their 2013 mixed-methods research on what made a successful informal learning space, Harrop and Turpin found that, “Learners selected spaces to learn based on their own personal list of requirements and preferences. These changed according to the learning activity being undertaken, leading them to use different spaces at different times and for different purposes” (p. 65). Dugdale (2009) stated that, “New space models for educational institutions...need to focus on enhancing quality of life as well as supporting the learning experience” (p. 52) because students had the tendency to choose spaces they liked, not just what spaces were available. Applegate (2009) identified the study room as “the most-preferred study space” (p. 345); however, Beard and Bawden (2010) found “the library has become less valid as a physical space due to the fact that many have their own space, be that an office or at home” (p. 444). There has been a plethora of literature on the preferences of students for specific characteristics of space. This section reviews literature on the variety of spaces, the aesthetics or ambiance of spaces, the characteristics of comfort, and the characteristics of convenience.

### 2.4.3 Variety

When examining students’ desire for variety, four factors seemed to be identified in the literature: informal space, multipurpose space, individual space, and collaborative space. McLaughlin and Mills (2008) found students wanted to study “in a relaxed, informal setting” (sect. 3 para. 10), which was supported by other researchers (Acker et al., 2005; Ashby & Alary, 2008; Bailin, 2011; Bedwell & Banks, 2013; Ibrahim & Fadzil, 2013). Another feature identified by students was a space that was flexible so it could be used for multiple purposes (Acker et al., 2005; Bailin, 2011; Ibrahim & Fadzil, 2013; Koski, 2011; McLaughlin & Mills, 2008; Parisio, 2013; Souter, Riddle, Sellers, & Keppell, 2011; Twait, 2009; Uline & Wolsey, 2011). Riddle and Souter (2010) identified flexibility as “‘repurposing’ [which] acknowledges that different activities go on in learning spaces over the course of the day, the week, the semester, or the year and depend on many different factors” (p. 4). Harrop and Turpin (2013) stated that, “Spaces can therefore have multiple identities, with learners having differing and often contrasting views of a space and how it should be used” (p. 66).

Relating to multiplicity, Beard and Dale (2010) also identified that, “There has to be a balance between space for group learning and space for individual study. Students require access to both, depending on the type of learning they are undertaking” (p. 489). Hunley

and Schaller (2009) and Spooner (2008) all identified the need for individual and group study and the idea of collaboration or working together showed up in many studies (Bedwell & Banks, 2013; Ibrahim & Fadzil, 2013; Koski, 2011; McLaughlin & Mills, 2008; Uline & Wolsey, 2011; Webb etal., 2008).

### 2.4.3.Community

Community focus on social interactions, support and sense of common purpose which can be found in shared learning spaces.

#### 2.4.3.1 Active learning

Active learning can be encouraged both inside and outside the classroom (Gamson, 1987). Inside the classroom, teachers may use structured exercises, inspiring discussion, group work, and encouraging students (Chickering, 1987). Outside the classroom, students can learn by taking internships, doing independent study, participating in cooperative job programs or helping design and teach parts of courses (Chickering, 1987).

Most theorists of learning as well as prescriptive guides for learning enhancement suggest the need for active learning to increase effectiveness (Bates, 1995; Smith, 1996). In describing active learning two contexts for interactions have been identified: individual and social (Bates, 1995). Bates states that, "there are two rather different contexts for interaction: the first is an individual isolated activity, which is the interaction of the learner with the learning material, could be text, computer; the second is a social activity, which is the interaction between two or more people about the learning material. Both kinds of interaction are important in learning" (Bates, 1995). Social interaction among peers is important to learning (Bonk & Cummings, 1998. It allows learners to establish a personal connection to other students and to the instructor. Cazden's summary of the cognitive benefits of peer interaction includes four majors points:

- Students are forced to confront each other's ideas
- Students can enact complementary roles, provide mutual guidance and support, and can serve as scaffolding to help each other accomplish learning tasks that might otherwise be too difficult.
- Students can find a direct relationship with a real audience from which they can get meaningful feedback
- Students can experiment and construct new understandings and ideas in peer discourse setting (Ruberg, 1996)

Roblyer and Wiencke (2003) highlight the importance of student engagement and learning structured around collaborative experiences. “Engagement and collaboration are characteristic of constructivist view of learning that engages learners in meaningful, problem-based thinking, and requires negotiation of meaning and reflection on what has been learned” (Jonassen, 1995, p.21). Collaborative learning is aimed at enhancing critical thinking skills. According to Berge (1998) improving critical thinking skills, reasoning, and problem-solving skills is best achieved by highly structured and collaborative activities. As collaborative skills are improved the student has increased self-esteem and higher level of achievement.

#### 2.4.3.2 Collaborative learning

Collaborative learning is commonly used to describe a group of students working together to understand a concept, to develop an artefact, or to find a solution. Collaborative learning as a pedagogy involves the grouping of students to work together in or out of class (Panitz, 1998) and generally shows that learners can do better with help from others (Smagorinsky, 2000). Outside the classroom, students may continue to collaborate as part of the group project assigned by their teachers or voluntarily work together to help each other in completing class projects. However, collaborative learning is not as easy as putting several students together.

The quality of group work depends on the way the group is organized, nature of the tasks, diversity of participants, and the way the group is held accountable (Blumenfeld, Marx, 1996). Students nowadays tend to work more in groups outside the classroom. As they are given the flexibility to choose the location for the out-of-class group activities, they may meet in a range of different Informal Learning spaces.

### 2.4.4. Evacuation

Evacuation focuss surrounding preferences for privacy and quiet study.

#### 2.4.4.1 Noise

The literature on noise is somewhat contentious. Though some research stated that noise weakened learner performance and generated an annoying feeling, others indicated that some types of noise could be useful. In a review of the literature about the effects of noise on learning, Szalma (2011) found diverse findings. Noise was observed to increase divert attention, and raise worries. However, noise was also observed to increase levels of awareness and attentional discrimination, and that improves performance (Szalma, 2011).

Nonstop noise or background noise is a worry in informal learning spaces (Jamieson, 2009). Low frequency noise was found to restrict performance of particular tasks such as reading and increase annoyance compared to mid frequency noise (Waye, 2001). Though, background noise and music (verbal or non-verbal) had no impact on working memory size (Alpert, 2012).

Nevertheless, investigators have noticed that students, seem to enjoy noise (Advokat, 2011; Bennett, 2007; Head, 2011). Bennett (2007) stated that college students wanted study at places that were free of distractions, but with some level of noise and movement. The majority of participating students who were observed preferred quiet and calm, but not silence and solitude, while the rest of them enjoyed some noise and distraction. Numerous students were observed listening to music while reading (Head, 2011). The students also mentioned that headsets and music are useful to block disruption from the atmosphere (Advokat 2011). This shows that noise interruptions from the informal learning spaces may play a role in students' choices for informal learning spaces.

2.4.4.2 Encouragement perspective

The roles of encouragement from an environmental perspective were discussed in many studies that deal with environmental factors such as noise and crowding. Poulton (1976) studied several research studies and showed that temperature, noise, and vibration may improve performance rather than reduce it. Poulton (1976) recommended that the best working settings for certain responsibilities may need some form of stress to improve performance.

In a different study, Green (1984) stated that learning was best when participants were stimulated by the level of noise either they or members of the same personality type chose. Another study by Janssens (2009) recommended a reasonable use of good color design changed the overall mood and wellbeing of people. In specific way; strong colors, such as red, and designs put the brain into a more excited state which may speed up the heart rate. Shy people and those already in a negative mood were more affected than others, which caused simple negative changes in their behavior.

Because under encouraging approach, some levels of environmental distractions may benefit the learning behavior, this study speculates that when choosing informal learning spaces, University students may consider the availability of certain encouragement environmental features to help them improve their learning.

### 2.4.5 Light and colour in ILS

Natural sunshine is significant for students to feel relaxed and ready to learn (Haijing,2011). Excellent indoor settings can affect wellbeing and productivity improvements for all users of the building: students, staff, and community. Creators and projects owners can work together to provide best learning environments that prevent the negative effects of insufficient lighting, absence of daylighting and poor air superiority (Haijing,2011).Light and color has been mentioned in the research on settings for learning, but, the connotation between light, color and learning, performance and wellness are not very strong Connotation (Gifford, 1987).

This gave an idea that variety lighting may be good for different types of learning activities. Furthermore, day lighting or electric lighting did not affect task performance, however, it affected the mood of users (Boyce, 2003). Daylight was most desired by the learners as it shaped better moods (Boyce, 2003). This advises that lighting; especially daylight may be a factor that affects the students' choice of informal learning spaces. Lighting was another feature mentioned by students as important for study. Many researchers found good lighting a necessity (Acker et al., 2005; Hunley & Schaller, 2009; Webb et al., 2008) and control over lighting was mentioned by Twait and Webb et al. (2008). Yang (2006) found “students tend to seek out large windows when studying” (p. 91) and natural light was identified in multiple articles (Hunley & Schaller, 2009;Koski, 2011; Riddle & Souter, 2010; Souter et al., 2011; Twait, 2009; Yang, 2006).

Windows were a good way to see a natural view and the landscaping of the campus. Yang (2006) found that landscaping was seen as organic, non-oppressive, calming, and relaxing. When looking at where students preferred to go outside, Speake et al. (2013) found “students do not use the green periphery of the campus, and that their responses focused on green spaces immediately surrounding university buildings” (p. 27), which spoke to the convenience factor of spaces. Ashby and Alary (2008) found that students identified the “physical beauty of the campus” (p. 11) as important.

### 2.4.6 IT Resources

Access to IT resources. This usually meant PCs, but also printers, large screens, and access to the internet and software, Technology and connectivity).

Technology or the ability to be mobile was the most frequent characteristic identified with convenience. McLaughlin and Mills (2008) and Levine and Dean (2012) all recognized

that students have grown up with technology, which makes them prefer spaces that are technology-abled (Acker et al., 2005; Koski, 2011; McLaughlin & Mills, 2008; Parisio, 2013; Rozaklis, 2012). Also identified was access to computers (Bailin, 2011; Hunley & Schaller, 2009), power outlets (Peterson, 2013; Riddle & Souter, 2010; Spooner, 2008), and Internet and/or wi-fi access (Ibrahim & Fadzil, 2013; Koski, 2011; Nixon et al., 2008; Riddle & Souter, 2010; Souter et al.2011**).**

### 2.4.7 Food

A feature identified within the realm of comfort was the ability to have food and drinks. The ability to eat and drink in the space was mentioned (Acker et al., 2005; Hunley & Schaller, 2009; Webb et al., 2008), along with the ability to make or purchase food (Harrop & Turpin, 2013; Souter et al., 2011; Twait, 2009). Seddigh et al. (2011) found that, "Sixty-three percent of the respondents mentioned snacks or drinks as helping them to focus, either alone or with other focusing aids" (p. 476).

## 2.5 Design of spaces for learning: Specific focus on Informal Learning Spaces

If higher education's pedagogy is about promoting learner responsibility and control, then this needs to extend comprehensively to the student's choice over where, how, and with whom the student learns outside the classroom. It is unlikely that any single facility, regardless of its physical features, location on campus, or quality of its resources, will meet all of a student's needs over time. For instance, a student's needs or preferences could vary throughout a single day, or from week to week, depending on the required approach to learning and a multitude of circumstantial factors.

### 2.5.1 Participatory learning experience

A student's preference, for example, for learning informally on campus during the day may alter dramatically with the transition to night, when the individual's needs relating to comfort and security, as well as the need for artificial light, might change. Similarly, a student's preference for a particular setting may alter according to the shifting natural seasons. A colorful and serene site in spring offering a sheltered location for small-group work may become bleak and unappealing at another time of year.

Learning environments can support integrative inquiry, education methods and learning activities and place the learner at the centre of the teaching involvement (Oblinger, 2005). Besides assisting a diversity of educational activities, these spaces should remain adjustable, convenient and appealing to students (Siddall, 2005). It is possible that by redesigning the environment in which students spend time, learning institutions can respond to changing students' needs by offering formal classroom environments alongside advanced informal learning spaces. These ILS should be designed for informal learning as a primary activity, and are different from spaces that may be used for informal learning but do not have IL as their primary or design (such as lounges and corridors).

Of the many human activities that occur within ILS, the activities can be divided into three categories: necessary activities, optional activities, and social activities. Activities such as walking, staying, meeting, standing, sitting and all the other human activities can be undertaken for necessary, optional, and social activities (Gehl, 1971). When the informal learning spaces are of poor quality, only necessary activities occur; on the other hand, in high quality social spaces, many human activities are possible (Gehl, 1971; Oblinger, 2006). Consequently, informal learning sits in relation to optional and social activities and in well-designed ILS many human activities are possible.

Radcliffe (2008, P.8) has cleared some structures of informal learning spaces as "different informal learning spaces appear like to the shared or "home" rooms in university colleges". They are planned to have flexible design, better tables, some basic kitchen facilities and a relaxed, unplanned environment. It is in these Informal Learning Spaces that students meet each other and work collaboratively. Students classify these spaces as their own and use them for learning and fun activities."

The assets of a teaching association like; university size, general design, condition, and other design features, could impact students' performances (Gifford, 1987). More paths and constructive outdoor spaces are found to relate with student achievement (Tanner, 2000). Newer buildings of better quality with better aesthetics have been found to improve student behaviors and teaching behaviors (Schneider, 2002). Informal surroundings can also influence learning and working behaviors (Forlano,2008). Forlano observed that a designer has a tendency to use a busy and popular coffee shop for thinking and creative activities, and a quiet and unpopular coffee shop for finalizing the design. This suggests that informal learning spaces could have different attractions for students based on their particular tasks or types of study.

### 2.5.2 Models of Informal learning spaces

Learning spaces must be movable to provide different choice of teaching and learning scenarios and technologies (Forlano ,2009). Forlano(2009) suggested that new and existing ILS must reflect the following rules to achieve a flexible learning setting:

- Zones for individual learning: some zones for private study with individual desks.
- Zones for group learning: Huge zones to be separated to smaller parts to smooth group work, and to provide students with different learning styles.
- Zones for Open, multi-use spaces: Open areas as social spaces, open areas can work as social spaces, open access learning areas, quiet study areas or meeting areas.
- Particular zones: Design establishment must be made for some particular events such as hobbies, sport and the performing arts.

### 2.5.3 Sustainable learning spaces

One of the purposes of sustainable design is to progress user's comfort whereas reducing the building’s adverse environmental impact. In tomorrow's universities, students, staff and engineers will be working on sustainable design to achieve well-being- related issues such as cleanness, safety, security, acoustics, and accessibility of space, natural daylight and natural ventilation (McMullen, 2012).

## 2.6 Environment-behavior outlooks

Grounded on Lewin's (1951) theory, many researchers have expanded the understanding of interactions between users and the surrounding environment. Settings behavior academics have theorized users' interaction with the environment through several viewpoints including, but not limited to, environmental skills, behavioral, and environmental stress approaches.

### 2.6.1 Environmental stress outlook

In this method, environmental factors might become stressful and influence human behavior, role, and emotion. Cohen (1977) recognized three aspects of environmental pressure as:

1) the cause of stress is the extreme value to contentment and confidence.

2) stress feelings powerfully influence every aspect of modification operative including, but not preventive to, problem explaining, social skill, and health/illness.

3) environment could affect stress feelings such as anxiety, fear, responsibility, annoyance, sadness-depression.

Stecker (2004) reported that experience irrepressible settings produce difficulty in task performance related to learned weakness. Both critical and long-lasting experience with noise, crowding, traffic overcrowding, and pollution are reasons causing learned weakness in adults and children. Moreover, pre-experience to short-term, serious, and irrepressible environmental stressors lead to difficulties in learning a new task and depression. In learning settings research, the stress approach on person-settings fit is commonly used to evaluate the learning setting (Porter, 2006) and to explain student achievements (Morgan, 2002).

There are challenging types of person-settings fit on pressure; one emphasis on the fit between settings' supplies and individual preferences while the other stresses the fit between environmental demands and individual abilities (Edwards, 1996). Stress is the likely result of a less than ideal match between users' needs and learning settings (Ahrentzen, 1982).

Students may become not comfortable when the setting does not match their expectation or desired amount of socialisation. Below the settings stresses and users' abilities approach, stress is the result of students’ failure to cope with settings demands such as distractions, class disruption, and noise levels (Conners, 1983). In both methods, best performance can only be achieved and stress avoided when environmental factors are well-matched with users' needs. As long as their desires to be suitable between students and the learning environment for best presentation, it must be a good idea to understand students' choice of informal learning space within the person-setting fit framework.

### 2.6.2 Environmental skills

Environmental skills are defined by Steele (1980) as "users' skill to deal with their direct surroundings in an active and motivating style (p.225)". Steele advises that environmental skills varies contingent on personal skills, behaviour, and consciousness, knowledge and practical skills. Since a person's skill to deal with the physical setting varies, their selections of informal learning spaces may differ as well depending on their own abilities to deal with the backgrounds.

Environmental skills are expressed through handling with environmental pressure, which requires effort to improve the person environment appropriate by altering the person or the environment (French, 1974). There has not been a study that discussed the environmental competence of students. Previous research has shown that students prefers to study in informal spaces (Alexander, 2008). Though, whether they are able to handle the environmental tension in informal learning spaces in an active and inspiring way is still questionable. Therefore, research is desired to understand the environmental skills and how their awareness of environmental skills affect their choices of informal learning spaces.

## 2.7 The Influence Of Covid 19 Pandemic On ILS

On 11 March, the World Health Organization (WHO) announced that the COVID-19 outbreak became a global pandemic. The governments have been implementing measures to limit the number of people congregating in publicplaces. Therefore, the Ministry of Education stated that all educational institutes should complete the 2019-2020 semester using online video conferences and virtual classes. Teaching and learning during the last three months of lockdown after shifting to virtual classes. The Adding value is improving the E-Learning process for the upcoming semesters and solving the negative points for a better education.

how we can control the COVID-19 spread. They said that institutions should follow the standard precautions, which include:

− Mask should be available.

− Regular check the soap and the Sanitizing bottle in its places. The hand Sanitizing should be near the

door and in the main halls and in the bathrooms that everyone can found it and use. Signs and orientations for COVID-19 should be posted near it.

− Avoid direct contact with blood, body fluids, secretions (including respiratory secretions). Standard precautions also include prevention of needle-stick or sharps injury;

− Safe waste management; cleaning and disinfection of equipment, and cleaning of the environment.

− Using eye protection (facemask or goggles), because sprays of secretions may occur.

− Limit infected person movement within the institution and ensure that they wear a medical mask when moving around.

− Ensure that there are healthcare workers to perform aerosol-generating procedures for emergency cases

Pretension and Control published a report to show the general steps that should be done by peoples.

The social distancing as a method of reducing the spread of Covid-19 have resulted in productivity losses, disruption in business, and may cause a cost impact in the long term, according to (MEED, 2020). The key is how that record is maintained and how it is going to be produced to substantiate the claim. The social distancing has affected some courses at the university.

UNESCO's said that COVID-19 tells us the scientific cooperation is the key when dealing with a global public health issue. It tells us that continued education must be ensured when students cannot go to schools. It is a stark reminder of the importance of quality, reliable information, at a time when rumors are flourishing. It tells about the power of culture & knowledge to strengthen human fabric and solidarity, at a time when so many people around the world must keep social distance and stay at home. UNESCO is fully committed to supporting governments for distance learning, open science, knowledge, and culture sharing as a fundamental means to stand together and tighten the bonds of our shared humanity, (UNESCO, 2020). Following the UNESCO orientation due to the extraordinary circumstances that the world is witnessing after the COVID-19 outbreak, it became crucial to continue the education.

## 2.8 Summary

This literature review examined empirical and theoretical studies related to this research. The importance of space, including its influence on learning engagement and achievement,

were reviewed. Campus spaces send messages about the priorities of the university and buildings are being renovated or created to attract new students and meet student demands. Students who are engaged in their studies and campus form attachments to their schools. Students are mobile and study in various locations and they sometimes choose spaces that are not conducive to study. These spaces are found to "demotivate" students (Khalil et al., 2011, p. 194). When examining achievement, Brooks (2011) found all things being equal "physical space alone can improve student learning" (p. 725). O'Rourke and Gonzalez-Metcalf (2011) and Yang (2006) found environment effects what happens in the space and how students use it.

Students indicated they like to study in Informal learning Spaces with comfortable seating, lockers, flexibility, facility for group study, quiet, and accessibility to services and technology. Library use has been shown to increase at the end of the semester and students tend to use the space for study, computers, access to the Internet, and to socialise. Residence halls and lounges were also mentioned as locations on campus where students study. Students chose these locations because they were comfortable, allowed food, and the students liked being around and visible to others. Locations off campus identified by students were home and cafes. Students chose these locations because they were comfortable, offered late hours, and were found to be familiar and convenient.

Students preferred spaces that had variety, aesthetics, comfort, and convenience. Students wanted their spaces to be informal and flexible so they could study or socialise individually or in groups. Students wanted space that was welcoming, that had windows for natural light, and good acoustics. Students found spaces that had flixibale furnishings that allow food, and that they could control to be comfortable and secure. Students found the ability to spread out, the offering of late hours, and access to technology to be convenient.

Learning theories help designers determine what instructional methods, strategies, and tactics are appropriate and how situate them within the overall learning environment. The challenge of creating a complete definition of learning lies in the different explanation of both the intent and method of learning.

# Chapter 3

# Methodology and methods

## 3.1. Introduction

This chapter clarifies the research philosophy and the overall approach to the research design. It looks at different approaches used in educational research as well as architectural research in relation to the PhD. The chapter broadly comprises six sections; introduction, research philosophy, research design, research process, ethical considerations and validation, and conclusion. The research philosophy introduces the research; qualitative observations, interviews and architectural analysis. The research approach adopts an

inductive process and justifies the research strategies which include case studies, ethnography and grounded theory.

The chapter firstly identifies the research context and provides a reasoned process of site selection. Secondly, it describes the method for data collection in the UK and Jordan, providing a justification for the use of this method. The case studies of the Jordan University of Science and Technology and the Hashemite University in Jordan, and the University of Brighton and the University of the West of England in the UK are introduced. The stages of the research, including the selection of participants, the data collection process and the process of data analysis are delineated. Thirdly, the chapter discusses the role of the researcher in qualitative research in relation to data comparison and data analysis. Fourthly, the development of the ILS framework is detailed, based on empirical data examined using grounded theory and then cross-checked against wider literature. From these results, Chism's (2006) model of learning is developed, and the process of this evolution is explained and justified.

The chapter progresses to a discussion of validity in qualitative research, and it evaluates the strengths and weaknesses of the methods and research tools adopted. The chapter concludes with a brief discussion of the ethical considerations and limitations pertinent to the research methodology.

## 3.2. Research Philosophy

A multi-method approach was chosen in order to achieve the aim of the study: to develop a framework for the design of Informal Learning Spaces to facilitate Informal Learning within Arabic universities based on recent developments in UK universities. A constructivist approach was undertaken, using qualitative methods to research students using Informal Learning Spaces. The methods included: participant observations, guided interviews and architectural analysis of layout plans and sections.

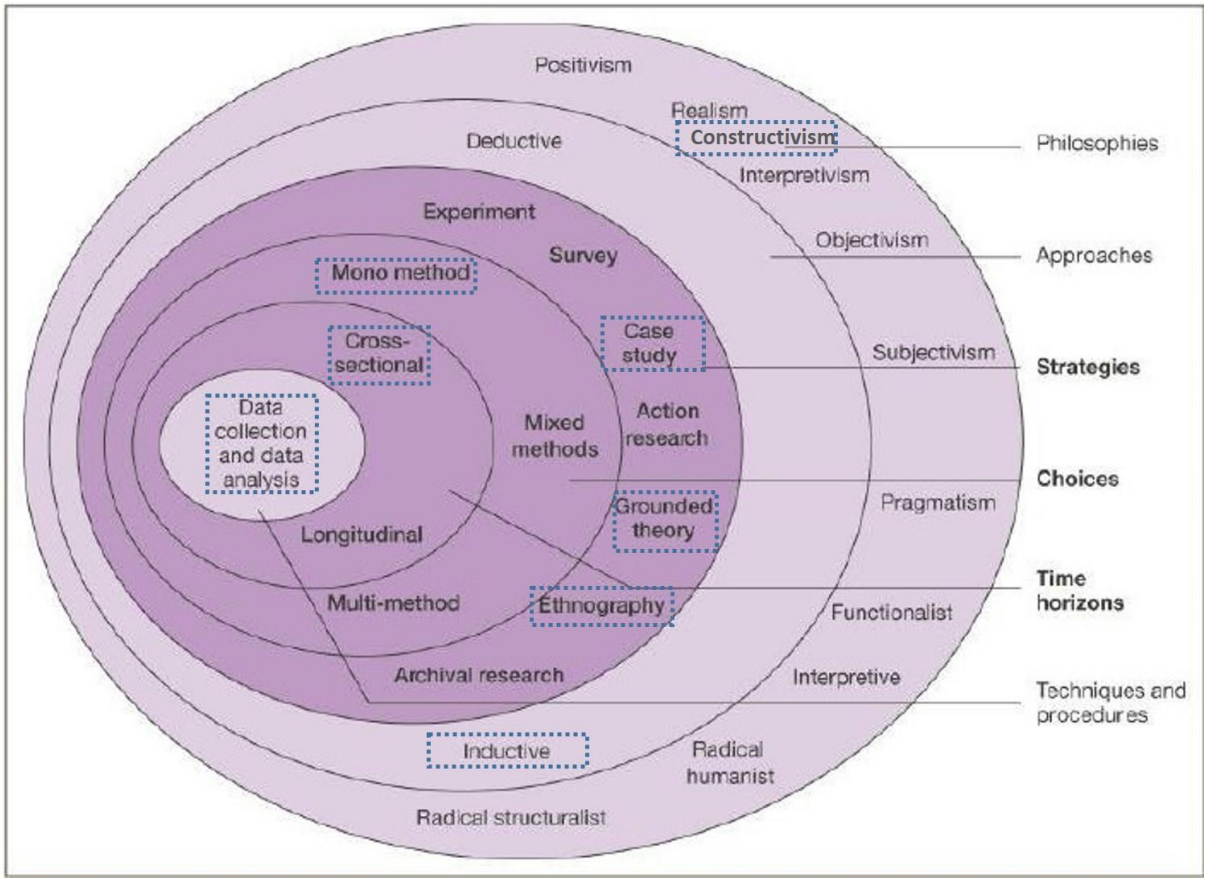



Figure 3:1: The research onion identifying the nested approach undertaken in this thesis(Saunders,2007)

Figure 2 demonstrates the research onion layers that have been chosen by the researcher to guide this research and its procedural methods and practises. Saunders (2007) layered approach and definition of each layer is used to guide the following sections.

### 3.2.1 Qualitative Research Methodology

The research is underpinned by a qualitative research approach because this reinforces an understanding and interpretation of meaning as well as the intentions underlying human interactions – a key focus of this study. Data were collected using in-depth interviews and observations. The next paragraphs justify the selection of the specific approaches and methods.

Qualitative methods are more than just research strategies and data collection procedures. These approaches represent fundamentally different epistemological frameworks for abstracting the nature of knowing, social reality and procedures for comprehending these phenomena (Filsted, 1979). Qualitative research is often seen as a way of empowering or giving voice to people, rather than treating them as objects whose behavior is to be quantified and statistically modelled (Bogdan, 1998). Therefore, this approach is

appropriate to this study, especially the framework building aspect, as qualitative research is concerned with developing explanations of social phenomena. That is to say it aims to help us to understand the social world in which we live and why things are the way they are. It seeks to answer questions concerning why people behave the way they do, how opinions and attitudes are formed, how people are affected by the events that go on around them, and how and why cultures and practices have developed in the way they have (Patton, 2002).

Qualitative research often investigates problems within natural settings and environments. It is subjective, and aims to investigate social beliefs, opinions and the understanding of human problems (Robson, 2002). Qualitative research involves using research approaches such as case studies, grounded theory and/or ethnography. It uses 'words' rather than 'numbers' to express findings, by using data collection methods such as interviews, observations and questionnaires (Robson, 2002). It is useful in answering research questions that relate to how and why (Fellows, 2008). Many studies have discussed the suitability of this method for studies that seek to enhance the understanding of a phenomenon, especially when this phenomenon is deeply entrenched in its context (Knight, 2008; Denscombe, 2014). The underlying epistemological framework for this this research is based on the following philosophy and strategy: constructivism and ethnography.

### 3.2.2 Research Approach

#### 3.2.2.1 Inductive Approach

The inductive approach moves from the specific to the general (Bryman and Bell, 2015). According to Beiske (2002), in this approach observations are the starting point for the researcher, and patterns are looked for in the data. There is no framework that initially informs data collection and the research focus can thus be formed after the data have been collected (Flick, 2015). According to Fellows and Liu (2015), the difference between deductive reasoning and inductive reasoning lies within the boundaries of knowledge. While deduction occurs within the boundaries of existing knowledge, induction extends the boundaries of current knowledge. However, it is important to understand that the deductive process will usually entail some elements of induction, and the inductive process is likely to entail some modicum of deduction (Bryman, 2008). The inductive approach was useful to generate meaning from the data collected in order to identify patterns and relationships to build the ILS framework. However, the approach did not prevent the researcher from

using existing theory (the Chism model) to formulate initial research questions or to cross-check emergent themes from the data against the literature.

### 3.2.3 Research Strategies

This section summaries how the researcher carried out the research (Saunders, 2007). A number of different strategies are available to the researcher, such as experimental research, action research, case study research, interviews, surveys, and/or systematic literature reviews.

#### 3.2.3.1 Case Studies

The case study strategy involves a detailed and extensive analysis of (a) case study/ies, where this case is interpreted very widely to include the study of the researcher (Robson, 2002; Brown, 2009). The case study approach is used to research the relationship between a phenomenon and the context in which it occurs (Gray, 2014). This phenomenon may include events, activities and practices of individuals or groups of people, and could be studied using a variety of procedures (Knight and Ruddock, 2009). The implementation of a case study strategy according to Yin (2013) entails the investigation of a single instance or event with great detail. It tends to focus on the investigation of a small number of cases rather than a large number of cases (Fellows and Liu, 2015). This strategy is used when the researcher needs to ‘understand’ rather than quantify variables (Kumar, 2011). The strategy and method for data collection depends mainly on the research questions, and on the time and resources available to conduct the research (Proverbs and Gameson, 2008).

Regarding the number of case studies to be investigated, the researcher must consider the objectives of the study (Proverbs and Gameson, 2008). Yin (2003) identifies key areas to be considered when deciding the number of cases. A single case can be used if it represents a critical case to test a theory, or a longitudinal study, where the same case will be studied for a longer period of time.

#### 3.2.3.2 Ethnography

This study is inspired by ethnography, comparing ILS in two different countries and two different cultures. The cultural context of the students and architectural spaces, and the effect of architecture on student users of ILS demands an ethnographic dimension to the research design. Ethnography means "portrayal of a people" and it is a methodology for expressive studies of cultures and peoples. There are many cultural limitations for any people under investigation. Examples of limitations include geographical, religious, social and shared experience (Angrosino, 2005). An ethnographic viewpoint is important for this study to help understand and explain the students' experiences in Informal Learning Spaces

and to make intensive observations in these spaces in different countries. Likewise, ethnography involves field-based study to allow people's everyday norms, rituals and routines to surface in detail. It might be useful to understand the differences in culture and background of the users, and their consequent effects on the design of ILS in these different countries.

#### 3.2.3.3 Grounded Theory

Grounded theory refers to the process of developing a theory based on data and information that was systematically gathered and analysed (Knight and Ruddock, 2009; Bryman, 2015). The main objective of grounded theory is to be able to develop a theory from an inquiry, which involves in-depth evaluation of the actions and behaviours of the subjects (Creswell and Poth, 2017; Corbin and Strauss, 2008). Grounded theory is considered to be qualitative and inductive; for the theory emerges from the data, instead of applying a theory to the subject (Gray, 2014; Knight and Ruddock, 2009). Robson (2011) argues that grounded theory could be considered both a strategy for doing a research and a method for analysing the data developed by the research.

## 3.3. Research Design

For qualitative research, it is assumed that the researcher can either develop a theoretical or conceptual framework to guide the inquiry, and identify key concepts and issues to be addressed in the research, or decide to work within the framework of grounded theory (Glasser and Strauss, 1967).

A qualitative approach is relevant to this study it allows the exploration of complex issues rather than causal relationships. Qualitative research is concerned with understanding (individual) experiences, meanings, language and discourse for a certain population in a certain culture, point in time, system/institution, rather than finding debatable "truths". The complexities of meaning and experience in context are documented and analysed (allowing for a multiple interpretations and meanings). This is valuable for the research as the real purpose of qualitative research is not counting opinions or people but rather exploring the range of opinions, and the different representations of the issue (Corbin, 2008).

## 3.4. Research Process

The research was conducted over four stages, all of which were aligned to realize the six research objectives (Figure 3.2).

1. To define and describe informal learning under the key fields of self-directed learning, incidental learning and socialization.
2. To define and describe Informal Learning Spaces and determine the relationship between them and Informal Learning.
3. To identify good practice in the design and use of Informal Learning Spaces in UK universities.
4. To identify the current nature and use of non-designed Informal learning spaces in Jordan universities.
5. To develop an understanding of the way in which existing spaces in the UK and in Jordan are currently used for informal learning based on observations and interviews.
6. To develop a framework to guide the design of good practice Informal Learning Spaces grounded in the literature, and empirical observations and interviews, and initially test the framework to see whether it will transfer in a workable manner to the Jordanian context .

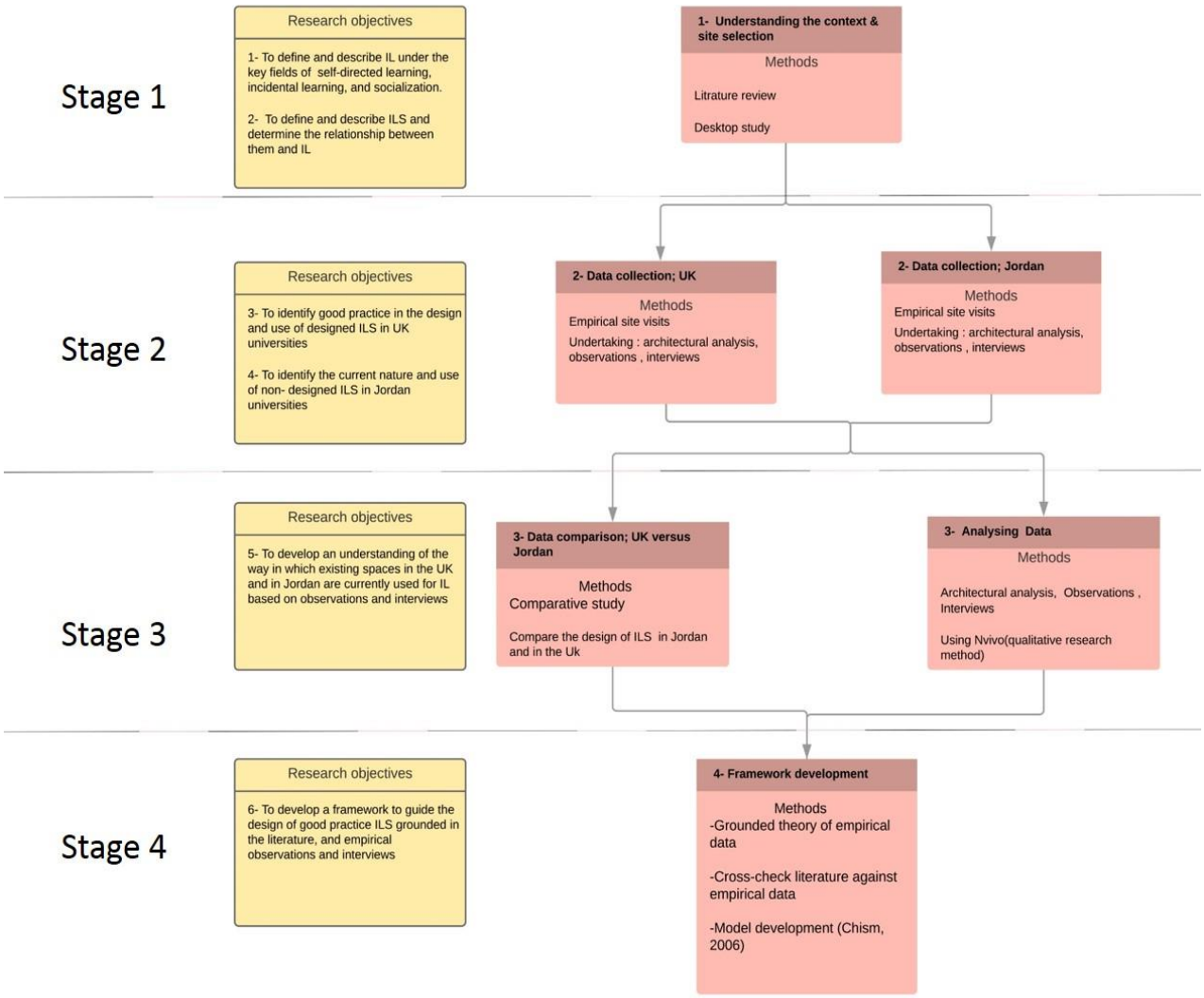



Figure 3:2 Four Stage research design of this thesis highlighting the methods adopted

A literature review was carried out to identify what is known about IL and ILS (research objective 1), and to identify the types of IL and ILS identified in Jordan and UK (research objective 2). This was followed by case studies undertaken at comparable universities in the UK. A desktop architectural analysis method was employed to identify and compare the quantity and quality of ILS between classrooms. Subsequently, the selected case studies were studied first-hand using participant observation and guided interviews, in order to understand the role that Informal Learning Spaces play in facilitating informal learning (IL) for students and to assess the impact of different ILS designs (research

objective 3). The same data collection methods were then applied in Jordanian universities for the current non-designed ILS (research objective 4). Subsequently, all data were analysed using Nvivo software in order to get clear coded findings for all observations, interviews and architectural analysis. The findings were compared in both countries using a comparative method (research objective 5). Finally, the empirical data were evaluated holistically using grounded theory, applying an analytical approach (thematic analysis) as described by Braun & Clarke (2006) to identify key emerging themes. A further targeted literature review was crossed-check against the empirical data to develop a framework for the design of ILS to facilitate informal learning for Arabic universities based on recent developments in UK universities. Additional development was applied to the framework using the model of Chism (2006) to guide the design of good practice ILS (research objective 6) (For further information see the literature chapter section 2.3.1).

## 3.5 Stage 1 of research process: understanding the context and site selection

### 3.5.1 Literature review method

The researcher began with a literature review in order to define and describe IL and ILS to achieve the first two objectives. Due to the wide range of ILS types, the study focused on ILS between classrooms. This stage sought to identify different theories of IL and ILS, and the connections between the two, as well as different approaches to the design of ILS, alongside an understanding of the different usages for these spaces. The cultural differences in attitudes towards informal learning between Jordan and the UK were also examined here. This stage provided a research base to identify existing gaps in knowledge and to build analysis upon.

### 3.5.1 Desktop study method

The researcher adopted a desktop study method to determine the case studies of ILS in Jordan and the UK. A total of 80 students took part in the interviews. This included 20 students from each university (University of the West of England, Brighton University, Jordan University for Science and Technology, and Hashemite University). The universities selected for this study were 2 universities in the UK (University of the West of England, and Brighton University) where the ILS were designed, and in 2 universities in Jordan (Jordan University for Science and Technology, and Hashemite University), where the ILS were not designed. Twenty students enrolled at each university were interviewed.The desktop study involved summarizing the mass of data collected and presenting the results in a way that communicated the most important features. Different

universities in both countries required different types of analysis. These were the size, geographical location and number of students (see Appendix 2). The findings of the literature review and desktop study provided evidence of well-designed ILS, which have been used to frame the analysis of the chosen case studies.

## 3.6 Stage 2 of research process: data collection

### 3.6.1 Empirical site visits

This method aimed to record the number of users and make observations of the way in which the spaces were being used and to identify what role the spaces played for users. At first the researcher contacted relevant staff from each university via email, to make them awre of the purpose of the study and to ask for permission to conduct the observations and to do the interviews with the students

A scheduled site visit was held firstly in the two UK universities in order to develop a framework to design ILS. The researcher documented the proportions, the furniture, the circulation, the lighting, the colours, the materials, the network connections, and any other architectural aspects of the ILS. Photographs were taken and used as documentary evidence. The analysis was used in conjunction with understanding from the literature to develop a draft framework. Then another two scheduled site visits were held in the Jordanian universities to collect the data in order to develop the framework.

### 3.6.2 Employing Research Methods

Architectural analysis, participant observations, and guided interviews were used in this research in order to document the ILS itself as well as users' experiences of ILS in use. This section explains the chosen qualitative methods and the range of studies undertaken to investigate the relationship between the variables; informal learning and the design of ILS.

#### 3.6.2.1 Undertaking architectural analysis in the UK and Jordan

The researcher used the architectural plans and sections of comparable universities in order to identify ILS and to document the size, height, three-dimensional arrangement, material and the quality of these spaces. The main resources that were observed in this study developed from working on the use of the space in general for learning or socialization; as group work or individual work. These analyses also identified some design issues, depending on the possibilities for re-designing re-arranging, for example the adopting of the non-designed ILS spaces by students in Jordan universities, as well as different new styles for ILS in UK universities.

Other design concerns were examined, such as new technologies in lighting and acoustics. The diversity of buildings and the way in which ILS were placed and designed within these buildings all played a significant role on the way in which spaces were used on these different campuses, and offered lessons for possible learning uses of spaces of all kinds. I used a case-study approach to conduct the research. Specifically, it was an exploratory case study that most effectively addressed the how and why research questions central to my study (Yin, 2003, p. 22).

I thoroughly reviewed and analyzed all architectural analysis, observations, and interviews. A case-study database allowed items to be easily traced and for the establishment of a chain of evidence that validated inferences and findings (Yin,2003).

On the other hand, organizational change and orientation noticed to be affecting those ILS, including space management and students' views on space were gained and reflected to be grounded to design the ILS  framework, see example. Table 2 and Table 3.

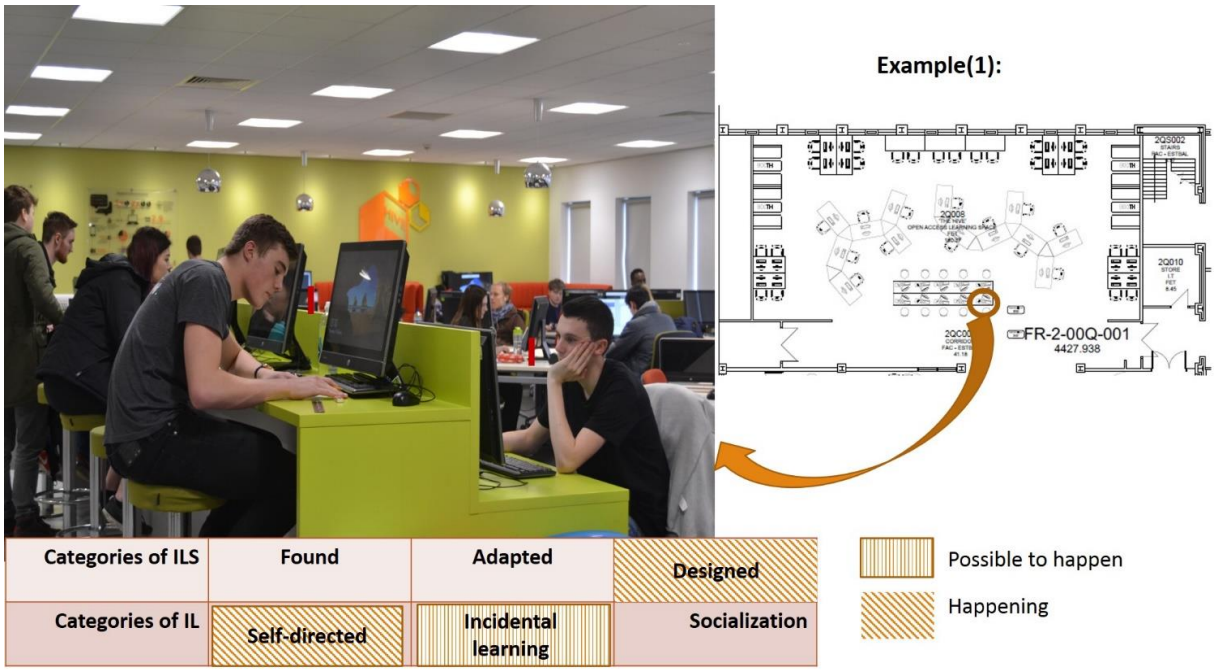
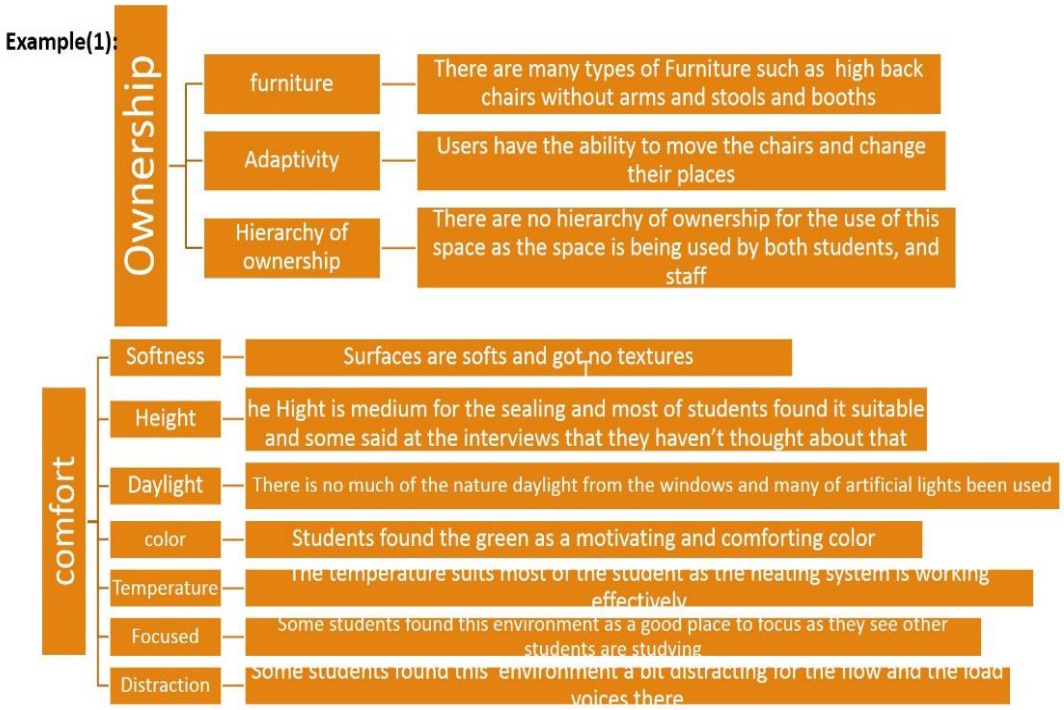
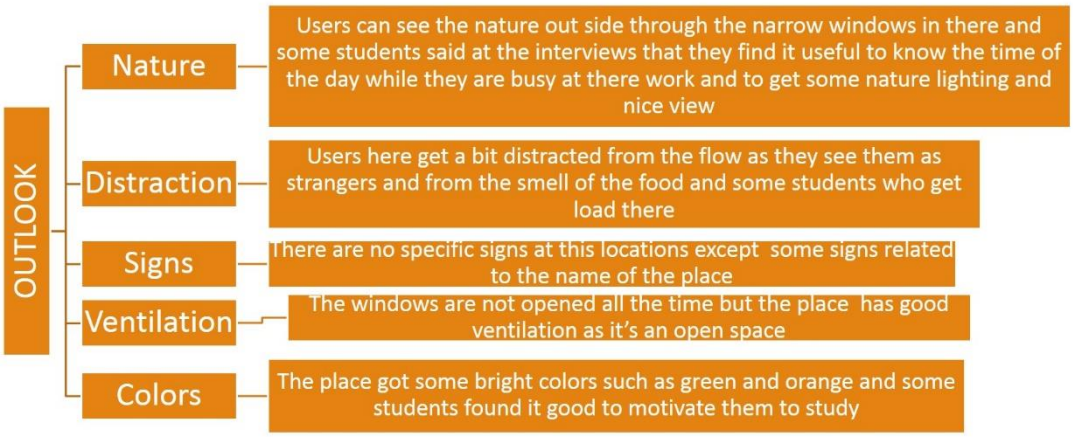



Figure 3:3: Architectural analysis example

**Example(1):**




**Example(1):**



**Example(1):**

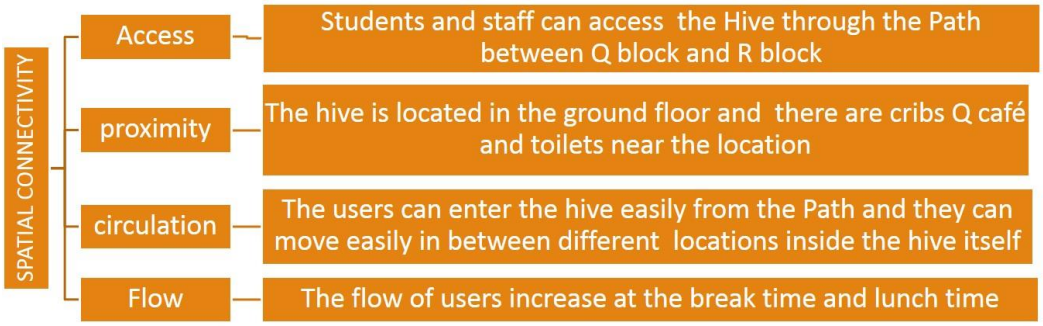



Figure 3:4: Themes group example

### 3.6.2.2 Observations

Observation is a method of data collection in which researchers observe activities within a specific research field. It is sometimes referred to as an unobtrusive method because the intention is to discretely observe real-life activity with as little interference in that activity as possible. Participant observation involves the observer being a member of the setting in which they are collecting data. Observation is normally associated with an ethnographic methodology, but it can be used as part of other research designs (Zeisel, 1981).

Not all qualitative data collection approaches require direct interaction with people. Observation is a technique that can be used when data cannot be collected through other means, or those collected through other means are of limited value or are difficult to validate. For example, in this research, students were asked about how they behave in certain situations in the interviews, but there was no guarantee that they actually do what they say they do. Observing them in those situations gave more validity to their responses: it was possible to see how they behaved. In this way the observations also produced data with which to verify and validate the information provided in the face-to-face meetings. This provides valuable background information about the environment where research is being undertaken, as observation allows the researcher to better understand and capture the context within which people interact. For example, in this research the architectural design of ILS was observed (lighting, colors, ceiling heights, and other design aspects). Actual experience within a setting allowed the researcher to be open to discovery and follow an inductive process, rather than making pre-meditated and set assumptions about what the context was like. The researcher was also able to see things that normally escape the awareness of the participants when using a different method.

Observation is a useful method to understand how people use and interact with the physical environment. Zeisel (1981, p.111) noted: "Observing behaviour means systematically watching people use their environment ... What do they do? How do activities relate to one another spatially?" So, observation is particularly important for understanding how students interact with their learning environments. This research used observations to support the context and to add depth and validity to the case studies. Pictures were taken of the various aspects of the design and layout of the ILS at universities and furthermore, a personal written descriptions of areas was recorded wherever necessary. The specific ILS being used by students were photographed at two sites in both the UK and Jordan (4 sites in total). Observations were used to provide a context for each interviewee's ILS space and to support interview data. Observations enabled inferences to be drawn about interviewees perspectives that could not be obtained by relying exclusively on interview data (Maxwell, 2005).

As part of the process, observations of people, the situation, and the environment were made by making notes recording what was observed. The limitations of this strategy are largely to do with the speed at which it is possible to take notes. With respect to this research, there was a risk that the researcher would miss an observation because she was writing about the last thing she noticed. Secondly, the researcher might find her attention focusing on a particular event or feature because it appeared to be particularly interesting or relevant and, as such, she might have missed things that were equally important but not recognised at the time.

Video recording freed the observer from the task of making notes at the time and allowed events to be reviewed repeatedly. One disadvantage of video recording is that the actors in the social world might be so conscious of the camera that this affects their behaviour. However the observations suggested that this was not the case – the activities of the actors using the space continued to seem naturalistic. Ethically, the researcher did not film people who did not want to be filmed – these people remained out of the picture, which was facilitated by the use of a fixed tripod for filming, with clear notices that filming was taking place (see section 3.9).

Observation was used as a research method in two ways: structured and unstructured observation (Pretzlik, 1994). In positivistic research structured observation is a discrete activity whose purpose is to record physical and verbal behavior. Observation schedules

are predetermined using classifications developed from known theory. In contrast, unstructured observation is used to understand and interpret cultural behavior. It is based within the interpretist/constructivist paradigm that acknowledges the importance of context and the co-construction of knowledge between researcher and 'researched'. Structured observation is used extensively in psychology, and whilst this is not a psychology study it is interested in people's behaviour. However the research was inductive, and did not seek to test a theory, but instead sought to develop a better understanding of the context, so was primarily unstructured – even though there were some elements of the observations which were repeated in each context in a structured way.

Observations provided a means to check for non-verbal expression of students' feelings, to determine who interacted with whom in the informal learning spaces, to grasp how participants communicated with each other, and to record how much time was spent on various activities. These observations were then used to develop a theoretical understanding of what was happening using grounded theory (Glaser, 2007). This aligned with participant observations as a form of data that may generate theory, or, in this case, a framework (Glaser, 2007).

#### 3.6.2.3 Interviews

Interviewing is a widely-used and valuable method for qualitative data collection (Potter, 1996). It is, as Robert Farr (1982) writes, "essentially a technique or method for establishing or discovering that there are perspectives or viewpoints on events other than those of the person initiating the interview". One-to-one interviews allow the researcher to interact with participants and to observe non-verbal cues during the interview process.

Using qualitative interviewing to map and understand the respondents' life world is the entry point for the social scientist, who then introduces interpretive frameworks to understand the actors' accounts in more conceptual or abstract terms, often in relation to other observations. Hence the qualitative interview provides the basic data for the development of an understanding of the relations between social actors and their situation. The objective is a fine-textured understanding of beliefs, attitudes, values and motivations in relation to behaviours of people in particular social contexts (Farr, 1982).

Interviews are often used as a complementary research method in the social sciences because they give the opportunity for a more in-depth, open discussion, and more informal, free interaction between the interviewer and the interviewee (Potter, 2013).With the single respondent, far richer detail about personal experiences, discussion and action sequences

can be elicited, with follow-up probe questions focusing on motivations in the context of detailed information about the particular circumstance of the person (Guest, 2006). Interviews are useful to acquire in-depth information about (students) perceptions, insights, attitudes, experiences or beliefs. Interviews are also useful in identifying individual differences between respondents.

**Why semi-structured interviews were adopted**

Interviews were used as a follow-up to the participant observations, to allow the research to respond to emerging data (Guest, 2006). In order to understand what roles students believed the design of ILS played for them, interviews were conducted at each location. By choosing interviews as a method of data collection the researcher hoped to gain a deeper understanding of the participants' constructions through dialogue and through the language they used in describing each design aspect. The interview method allowed the researcher to seek clarity and depth of understanding with the potential to provide consistent and comparable qualitative data (Cohen, 2006).

The researcher herself was a student at university in both countries at the time of the research and she was therefore able to share her own experiences in different ILS with the participants, thus placing her as equal to the participants. In this way, the researcher was able to build trust and rapport with the participants and the trust in the interaction made it somewhat easier for the participants to share their own experiences without fear of being judged (Stanley, 1990). This allowed the interviewer to be prepared for and appear skilled during the interview. The interviews were guided but open-ended, which also allowed informants the freedom to express their views in their own terms.

In general, interviews conducted by a researcher are argued to be a social process. It is a form of a two-way information exchange between the interviewer and the interviewee rather than a one-way information gathering from the interviewee. This process of exchange involves shared ideas and meanings which ultimately leads to the production of knowledge (Gaskell, 1999).

Interviews aimed particularly to acquire the story behind a participant's (student's) experiences within ILS. The interviews were recorded and transcribed. The transcripts are based on a full text of the interview. The transcription included all the spoken words, but not the paralinguistic characteristics. These interviews were analysed by using Nvivo software (see section 3.7) to gain a deeper understanding of the participants' constructions

through dialogue and through the language they used to describe each design aspect. These grounded interviews helped to develop the ILS framework.

**The structure of the interview questions**

The first questions ascertained the students' demographics, including name, age, gender, and the date of the interview. The questions then went on to cover the following themes (for a copy of the questions please see Appendix A):

The first three questions in the interview represented ILS description and usage, and student preferences. The following three questions represented ILs effects on learning and mainly on informal learning. Then the next questions explored the frequency of time that the interviewee spent at ILS; how much, when, how long. Following that, the questions asked about the features and role of ILS, students' reflections and feelings about using the ILS, including the limits and restrictions of the ILS, and suggestions about how to improve ILS. Finally the interview covered design aspects of the ILS; including flexibility, light, technology, colour, and furniture.

The interviews took place in ILS in Jordan (at the Jordan University of Science and Technology and the Hashemite University) and the UK (at the University of the West of England and the University of Brighton). The researcher gathered a sample of 20 interviews in each university. Notes were taken during interviews, alongside an audio recording to check accuracy. Both closed and open questions were asked (please see Appendix A).

The number of participants interviewed in this study was determined by the information gained during the interviews. Interviews were conducted until the data reached an acceptable saturation point and the researcher judged that the research question could be answered sufficiently. It was found that by the fifteenth interview little new information was being gained. However, additional interviews were conducted to ensure that saturation point had indeed been reached. The last interviews confirmed the information gained in previous interviews and thus demonstrated a point of saturation. It was at this stage that the researcher decided to conclude the interviewing process and proceed to analysis.

Permission to record the interview was obtained from the participants and none of the participants had difficulties with recording. During the data collection phase, the participants were able to decide if they were available for their interviews. As a result, each

participant was interviewed at a time that was convenient to them. Most of the participants indicated a preference for the interviews to take place while they were sitting in the ILS.

The 20 interviews held at each university were as below:

- The University of the West of England: from 17 to 21st of February 2017 completed within 1 week (Friday, Monday, Tuesday)

- Brighton University: from 23 to 24th of March 2017 completed within 1 week

- Jordan University of science and technology: from 24 to 28th of April 2017 completed within 1 week

- Hashemite University: from 17 to 21st of April 2017 completed within 1 week

The broad aim of the analysis was to look for meaning and understanding with the intention to move beyond accepting the face value of student comments. Sometimes a single comment took on particular significance and suggested a way of looking at the interviews. The interviews were first analysed manually. The researcher worked to detect common words and phrases, grouping them together in order to determine emergent themes in the respondents' answers.

The interviews were intended to recruit as wide a variety of students views as possible. All participants were asked to read an information sheet and to consent to take part in the survey (see Appendix 3.3). A sample size of 80 participants was chosen to achieve sufficient statistical power to demonstrate a small to medium effect. The researcher recruited and how decide who to ask from the people available, and has been just an availability sample, the researcher asked everyone and saw who was willing.

## 3.7 Stage 3 of the research process: analysing data and data comparison

### 3.7.1 Compare the case studies of ILS between Jordan and UK

The comparative research approach requires an examination of the similarities and differences between different education systems and structures (Kubow & Fossum, 2007). This stage helped to achieve the third objective of this research; the researcher here used the architectural plans and sections of comparable universities in order to identify ILS and to document the size, scale, height, spatial arrangement, material and the quality of these spaces.

**The architectural analysis method to analyse the case studies of ILS**

Identification of the case studies:

The following paragraphs describe the method for comparing case studies. These case studies were controlled by undertaking the research across comparable universities. To achieve this the researcher documented key data on a range of universities in each country in order to build a comparative table for the universities in each country and to compare them according to specific aspects such as: location, date of foundation, size, number of students, faculties, subject, urban/sub urban, and distance between the university and the city center. The researcher presented this data as an infographic in order to make it easier for the viewer, and using tools like google maps as well as google earth, to present the location for each university in each country (See Appendix G). Four case studies (universities) were selected, the characteristics of which are identified below.

3.7.1.1 Case studies in the UK

Two case studies in the UK were used: The University of the West of England, and the University of Brighton.

The University of Brighton was chosen because the Social Informal Learning Spaces (SILS) at the University have been honored with the AUDE University Impact Initiative of the Year Award. Brighton provided a distinctive experience for students by designing their social informal learning spaces to look natural and informal, with the intention of making students comfortable and at ease with their surroundings.

The University of the West of England was chosen as all the information and the architectural plans were to hand, it has many good examples of ILS in its faculties, and it is comparable withthe Hashemite University in Jordan.

3.7.1.2 Case studies in Jordan

Two case studies were used in Jordan: The Jordan University of Science and Technology and the Hashemite University.

Jordan University of Science and Technology has a total built-up area of 160,000 $m^2$. The university accommodates a lecture hall compound for the Faculty of Arts & Sciences (Departments of Chemistry, Mathematics, Physics, Biology, and Geology), a cafeteria, library, Faculty of Economics and Business Administration, Faculty of Engineering, admission and registration buildings, computer labs, maintenance units, university administration buildings, sports facilities and the utility & grand stores building. It is the

closest university in Jordan by the size and projects for redesign the learning spaces to be compared with Brighton University.

Hashemite University is well matched with the University of the West of England, Bristol according to size, number of students, year of establishment and number of faculties.

## 3.7 Using Nvivo software

Electronic techniques of data coding are being increasingly employed to obtain consistency in dealing with qualitative data. Using a computer "ensures that the user is working more methodically, more thoroughly, more attentively". NVivo software was chosen to analyse the data and identify themes relevant to the study. Researchers (Saldana, 2013) suggested it was important to look at the various options when choosing a particular qualitative data analysis software program and pick one that the researcher would be most comfortable with as the researcher. The researcher chose NVivo software as it was highly recommended by colleagues and classmates as a match for case-study anaysis. NVivo as a software tool has many advantages as it affords the researcher more time to discover tendencies, recognize themes and derive conclusions. Bazeley (2009) mentions five important ways that NVivo eases analysis of qualitative data.

One of the most important is managing data by organizing multiple documents such as interview transcripts, surveys, notes of observations and published documents. In this way NVivo also manages ideas, facilitating understanding of the conceptual and theoretical issues generated in the course of the study (Wong, 2008).

**Interviews.** Interviews are verbal reports only, as they are subjective and may not be entirely factual in nature (Yin, 2003). Interviews should be seen as simply perceptions. The interviews were recorded and then transcribed. Transcribing the recorded interviews verbatim provides the best data for analysis (Merriam, 1998, p. 88). As noted previously, the findings were triangulated with other pieces of data such as records and historical documents. Triangulation can reduce researcher bias and allow for a broad understanding of germane issues (Maxwell, 2005, pp. 93–94). Qualitative research emphasizes the importance of context in analysing data (Denzin, 2005) and as a result a reflection on the photographs of the space and other notes taken during the interview were sometimes important.

A system of coding was used to help analyse the transcripts of the interviews and to identify themes. Coding is a major categorizing strategy often used in qualitative research (Stake, 1999). As defined by Saldana (2013, p. 262), most often this was a researcher-

generated word or short phrase that symbolically assigned an attribute for a portion of the language based or visual data. The data and thus coding processes ranged in magnitude from a single word, to a full paragraph, to an entire page of text, to a photograph or to a stream of moving images. Coding organizes data into themes and issues (Stake, 1995). Coding helps in developing theoretical concepts by rearranging data in ways that can facilitate comparison (Stake, 1995, p. 97). The code in this case allowed pattern detection, categorization, and the building of a model for understanding ILS. The codes were grouped into organizational themes that were broad areas which emerged from the interviews or observations. 'They can be thought of as "bins for sorting data." Substantive categories describe participants' concepts and beliefs' (Stake, 1995, p. 97). Theoretical themes (particularly from the Chism model) put data into a more general or abstract framework.

Open coding was the first formal step in the data-analysis process and involved segmenting the transcripts of interviews into categories of information (Strauss & Corbin, 1990 as cited in Creswell, 2007). In using NVivo, codes are stored in what is known as nodes. The software is able to retrieve coded passages from the actual documents or transcripts. Codes can range from being purely descriptive to being analytic. In addition to linking data, they link to each other. Coding was used as a vehicle to analyze the interview data, separating data into "families" or "bins" of similar characteristics, leading to the identification of patterns (Saldana, 2013).

The theoretical categories are perceived as the researcher's categories or etic categories (Stake, 1995 p. 20). Etic issues, those categories identified by the researcher, included key words to summarise the characteristics of ILS that emerged from participants (Stake, 1995, p. 20) which were used to develop on from the Chism model (comparable to the development of a theory). Arguably computer programs can be used to assist in data management and in theory development. However, in making this choice, the potential impact on trustworthiness had to be considered. Trustworthiness refers to the process of establishing congruence and consistency in research, as defined by Lincoln and Guba (1985 as cited by Jones, Torres, & Arminio, 2006). Although computer programs can help in the overall efficiency of retrieving and categorizing information, the program cannot analyse the data. It was therefore important that the researcher was intimately involved in coding and analysing the information. As a lone researcher, I improved the trustworthiness of my work by beginning the coding process as I transcribed.

## 3.8 Stage 4 of research process: framework development

The purpose of this stage was to use grounded theory to evaluate and analyze the data holistically and use the data to develop a framework to achieve the fourth research objective. This stage included further literature study to make sense of the themes (codes) emerging from the empirical study. The framework was grounded in the case-studies and was reinforced and explained through the literature.

Grounded theory of empirical data

Grounded theory is "a qualitative research method that uses a systematic set of procedures to develop an inductively derived grounded theory about a phenomenon" (Strauss and Corbin, 1998, p. 24). It is an inductive form of qualitative research where data collection and analysis are conducted together. Constant comparison and theoretical sampling are used to support the systematic discovery of theory from the data. These theories remain grounded in the observations rather than generated in the abstract.

Grounded theory is an approach that develops the theory (or in this case a model) from the data collected. This can be a popular approach for people exploring a new area of research. The theory developed from the data can then be tested by further research. Strauss and Corbin (1990) suggest there are three stages in analysis in grounded theory: open coding, axial coding and selective coding. During open coding the researcher reads the text and asks questions to identify codes that are theoretical or analytical. The aim is to identify what is going on behind what the person interviewed says rather than just coding literally what is said (Glaser, 1992).

Constant comparison involves various methods: Previously coded text need to be checked to see if the new codes created are relevant. Constant comparison is a central part of grounded theory. Newly gathered data was continually compared with previously collected data and the coding in order to refine the development of theoretical categories. The purpose is to test emerging ideas that might take the research in new and fruitful directions (Silverman, 2008). Constant comparative analysis was used in this study, as the researcher started moving in and out of the data collection and analysis process. The process began with the researcher asking a question or series of questions designed to lead to the development or generation of a theory regarding the design of ILS in facilitating informal learning. The process of analysis allowed the researcher to begin to develop a theory with regard to the research question. Based on this initial theory, the researcher decided how next to sample (Glaser & Strauss, 1967). This process of repeatedly collecting

and analyzing data and engaging in a theoretical sampling (see appendix 4) process was a critical feature of the constant comparative analysis that Glaser and Strauss described.

The comparative process continued until the researcher reached the point at which there were no new ideas and insights emerging from the data. Rather, the researcher saw clear repetition in the themes already observed and articulated (Glaser & Strauss,1967).

This approach was supported by line-by-line coding.

Coding line-by-line means coding each line of an interview. This approach kept the researcher close to the data while forcing them to be analytical. This meant the researcher was thinking about what the person being interviewed was saying and hopefully limited their analysis being influenced by preconceived ideas or simply accepting the point of view the interviewee. The next step was to check the codes against the text again to see how they could be improved (constant comparison). The codes were also linked with each other and with more general codes. After initial line-by-line coding, the next step was to refine the codes and to link them together in a meaningful way according to their importance. So, there were in the end main codes with sub-codes relating to a topic (Lingard, 2008). This process was undertaken with reference to the Chism model.

The pure grounded theory approach implies that the researcher should not read any relevant literature before doing a research project; they should enter the field completely unexperienced. Reality was rather different, and the process ended up exploring and developing ideas from the literature. This is not necessarily a problem however, as Chicago stated: ‘there is no reason not to explore and test pre-existing theory, as long as the researcher is sensitive to the possibility of emergent theory’ (Chicago, 1990).

## 3.9 Ethical Considerations

There were several types of ethical issues that the researcher had to take into consideration for this research. The most important related to the informed consent of participants in the observations and the interviews.

Observations

All of the users of ILS (staff and students) were informed in advance about the purposes of this project, and they gave their informed consent in writing to participate in the project. Their identity was kept strictly confidential, meeting the requirements of the code of ethics of the University. The requisite ethics forms can be seen in Appendices B, C, D, and F. All

the information collected in the course of this thesis has been used only for the purposes of the study.

To undertake the observations in the ILS, permission was gained through notices on site. Prior to this, all potential users of the space were contacted via email to introduce the project and give participants an opportunity to find out more and/or withdraw from the study (Appendix X). Filming was undertaken in a very visible way so that as users of the space entered, it was obvious that filming was underway. Students read the notices and/or spoke to the researcher in order to gain more information or to remove themselves from the study. They excluded themselves from the footage by leaving the space, or asking the researcher to exclude them from the footage. The researcher set up a still camera and video camera within the space and took photographs and video recordings for half an hour every two hours in each location. Observations were taken over seven days at each location. The researcher documented the way in which users occupied the space. The observations focused on the role of the design of ILS in facilitating IL for students, noting the types of IL that appeared to be occurring in these spaces. Participants were able to withdraw after two weeks of completing the observations. If they decided not to participate they were aware they would not be penalized.

The information sheet and consent form for the interviews were in electronic and paper form. The information sheet included an introduction to the research, a description of the procedure and the type of questions to expect, a description of any potential discomfort, information about data confidentiality, information about participation and withdrawal, and contact details for further inquiries. After reading the information sheet, participants were given the choice to offer or refuse consent. As such, participation in this research was completely voluntary. If students decided to participate, they were made aware that they could withdraw at any time.

Once the interviews had started, participants were able to stop at any question and they did not have to answer any question they did not want to. To maintain a level of anonymity, whilst also giving students the opportunity to withdraw after submitting the data, it was decided to use coding for the participants' names.

Data Storage

Personal data is defined as ‘personal information about a living person which is being, or which will be processed as part of a relevant filing system. This personal information

includes for example, opinions, photographs and voice recordings' (UWE Data Protection Act 1998, Guidance for Employees). All data (from both the observations and the interviews) was stored in a password protected electronic format. It was accessed only by the researcher and the supervision team. Any data stored externally was on encrypted and password protected devices; a personal laptop and an external hard disk.

## 3.10 Problems and Limitations

There were several challenges that the researcher encountered while conducting the research for this thesis. The first challenge was recruiting a sufficient number of participants. The approval to do observations and interviews at Jordanian universities took a long time, and frequently the requests of the researcher were turned down, because most universities in Jordan rarely allow external research. Thus, access to the participants and obtaining permission for the research was a major challenge.

There were few language problems experienced in Jordan (the researcher's home country). People in Jordan speak Arabic and most of them understand English. Any questions were translated into Arabic as needed by the researcher.

## 3.11 Validity and reliability in qualitative research

Qualitative research has been criticised for lacking the rigour and credibility associated with traditional quantitative research (Horsburgh, 2003). With quantitative research the emphasis is on the accuracy of data and the extent to which data can be generalized. According to Denzin and Lincoln (2005), quantitative research concerns itself with the extent to which results are consistent over time (reliability) and whether the research truly measures that which it was intended to measure (validity). Qualitative research disputes the idea of the generalizability of results and argues that meaning is historically situated and therefore no two people can experience the same problem in the same way. Nonetheless the qualitative work is used inductively to develop a framework for the design of ILS. The framework emerges very much from the data, however there is much potential for the framework to be tested and further developed by future research.

## 3.12 Conclusion

This chapter has outlined and justified the research methods implemented in this thesis. Because of the nature of the research, the author opted for a qualitative strategy, seated within grounded theory. The key research tools were architectural analysis and observations, supplemented by individual student interviews. This has chapter outlined

how the research was conducted, illustrating the process used to select the participants, the method used to collect data, as well as the approach that was used in analysing the transcripts. The results were coded using NVIVO. The key findings of this research are discussed in the following chapter.

# CHAPTER FOUR

# FINDINGS

## 4.1 Introduction

This chapter presents the findings from the field research in terms of Informal Learning and Informal Learning Spaces. The chapter also discusses and analyses the findings in more depth in relation to existing literature. The implications of the findings are discussed further in the concluding chapter.

The chapter presents the findings related to the research question, explicitly how students in the UK and Jordan use Informal Learning Spaces. Before presenting details of the framework of Informal Learning Space and the main findings, it is important to present a description of participants' selection and case studies locations. As such, the chapter is categorised under three main headings: participants' classification and data analysis; a description of research sites; and the Informal Learning choice framework. The Informal Learning choice framework communicates examples from the interviews where students expressed their opinions about the roles of various factors in their choice of informal learning spaces. This third section constitutes the majority of the chapter as it builds towards the further development and explication of the framework in responding to the stated aim of the research 'to develop a framework for the design of Informal Learning Spaces to facilitate Informal Learning within Arabic universities based on recent developments in UK universities'.

## 4.2 Participants' Classification and Data analysis

A total of 80 students took part in the interviews. This included 20 students from each university (University of the West of England, Brighton University, Jordan University for Science and Technology, and Hashemite University). The universities selected for this study were 2 universities in the UK (University of the West of England, and Brighton University) where the ILS were designed, and in 2 universities in Jordan (Jordan University for Science and Technology, and Hashemite University), where the ILS were not designed. Twenty students enrolled at each university were interviewed. Table 13 (Appendix G) contains the name, year of birth, and identified gender of the participating students and the date of the interview. More than 100 images were taken by the researcher

in each university, using a professional camera with HD quality. The majority of student participants were female (57/80), undergraduate (74/80), and under the age of 24 (63/80). The gender distribution of the students is almost balanced, with a slightly higher percentage of females. According to the Department of Statistics in Jordan, females form 52% of overall university students (2016) (Figure2, Appendix G). The data also suggest that undergraduate students are more likely to use ILS compared with postgraduate students (see Appendix G).

The transcripts of the interviews with the students were coded for frequencies of words in the text. In conjunction, the researcher identified the content in the images and examined the images for occurrence of terms. In identifying the content, the researcher only listed the items and objects in the image. NVivo qualitative analysis software was used to run text frequency queries on all of the interview questions, the content, and then all the text from the interview questions and content as one query (see Appendix G). The emerging themes were then analysed in relation to the Chism model (see Figure 8 on p 94) to generate an initial development of the ILS framework, then further synthesised to develop a new framework for understanding Informal Learning Spaces.

## 4.3 A description of research sites

To provide a context for the findings, it is essential to provide a thick description of the selected universities and their Informal Learning Spaces. To do this, the researcher presents the findings from general to specific, describing the campus at large and then presenting the Informal Learning Spaces which were selected as the research sites. The description would not be complete without a picture of the users of Informal Learning Spaces. All this information establishes a clear image of the campuses under study and provides context for the analysis of the students' interactions with environmental factors and their reasons for selecting certain Informal Learning Spaces for study. For some numbers of students for each university to understand the population and potential intensity of use of the ILS see the pilot study (Appendix G).

## 1-The University of Brighton

Figure 4:1: Brighton University ILS Plan

The University of Brighton is located on three sites within Brighton, two sites within Eastbourne and one site in Hastings. This geographical spread for one university presents a number of challenges which single location universities will not encounter. In establishing the principles of the Social and Informal Learning Spaces (SILS) Estate managers have created a

mechanism by which the university's resources can be effectively applied across its estate with the intention of maximum benefit to their students.

The Social Informal Learning Spaces (SILS) project was primarily developed around pedagogic research and the realisation that the role of the university is changing and therefore they needed to provide a different experience for the student. The University of Brighton won the "Association of University Directors of Estates- AUDE AWARDS 2015" for their SILS project. The initial aim of the SILS project was to create environments within the University which bridge the gap between school and industry. These environments encourage active communication and stimulate their users preparing them for the future. Through ongoing research, the team developed a series of scenarios which encourage active socialising and promote learning informally on campus, developing a flexible model that can be implemented across the campus, in other institutions and tailored to suit the demands of the workplace.

**2- The University of the West of England**

Figure 1:2: University of the West of England 3D ILS Model

Figure 4:3 UWE ILS Plan

UWE Bristol is a University Alliance institution with a common mission to make a difference to their cities and regions. Their stated aim is to use their experience of providing high quality teaching and research with real world impact to shape higher education and research policy for the benefit of their students and business and civic partners, you can read the details in the UWE's report (UWE, 2015).

UWE Bristol is made up of 14 departments that are spread across three campuses in and around Bristol, as well as offering courses through local study partners and global partner institutions. They have also invested in the very latest facilities and learning environments to give their students access to everything they need to succeed. As part of this plan, they have created a mix of social learning spaces and more formal ones, making use of the latest technology to enhance the way learning and teaching happen. They have also enhanced the quality of the overall campus experience people can expect when they come to work or study, with green, pleasant, healthy and sustainable buildings and outside spaces and environments, where people feel inspired to learn and progress.

### 3- The Hashemite University

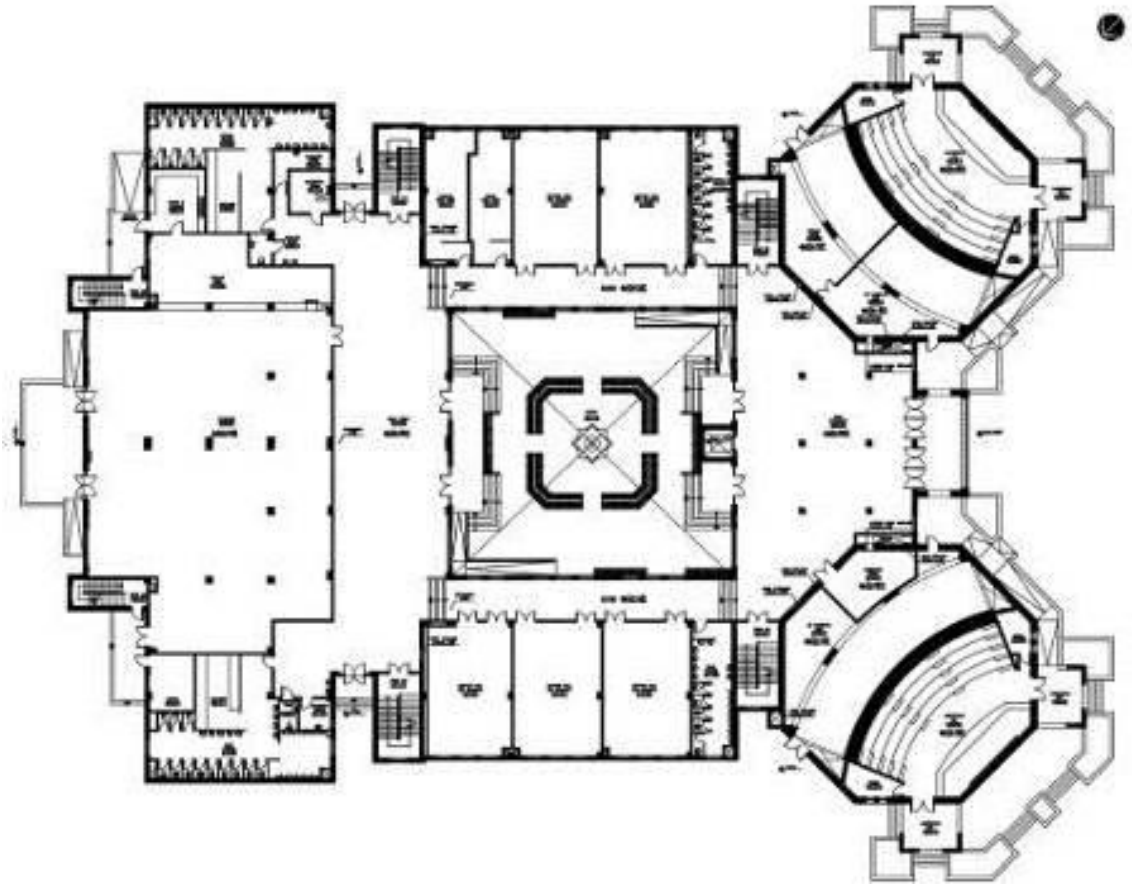


Figure 4:4: Hashemite University Faculty of Engineering Plan

The Hashemite University is based in Zarqa in Jordan, and is a state-supported university with a comprehensive campus, which has been redeveloped in four phases, the last of which was completed in 2005 and exceeds 50,000 square metres. What started out as four different colleges has expanded to fourteen. The university has a variety of faculties which teach core subjects such as arts, science, engineering, and literature, and there are many other buildings and related services. The university is said to have one of the strongest engineering schools in the Middle East, you can read the details in the HU's report (HU, 2017).

The university, in collaboration with the Ministry of Higher Education and Scientific Research, issues three international peer-reviewed scientific journals: Jordan Journal of

Biological Sciences (JJBS), Jordan Journal of Mechanical and Industrial Engineering (JJMIE) and The Jordan Journal of Earth and Environmental Sciences (JJEES). The university offers students a cafe, swimming pools, and recreational areas, which offer ping pong and board games as well as access to a village, which plays host to a large supermarket providing anything a student might need.

## 4- Jordan University of Science and Technology.

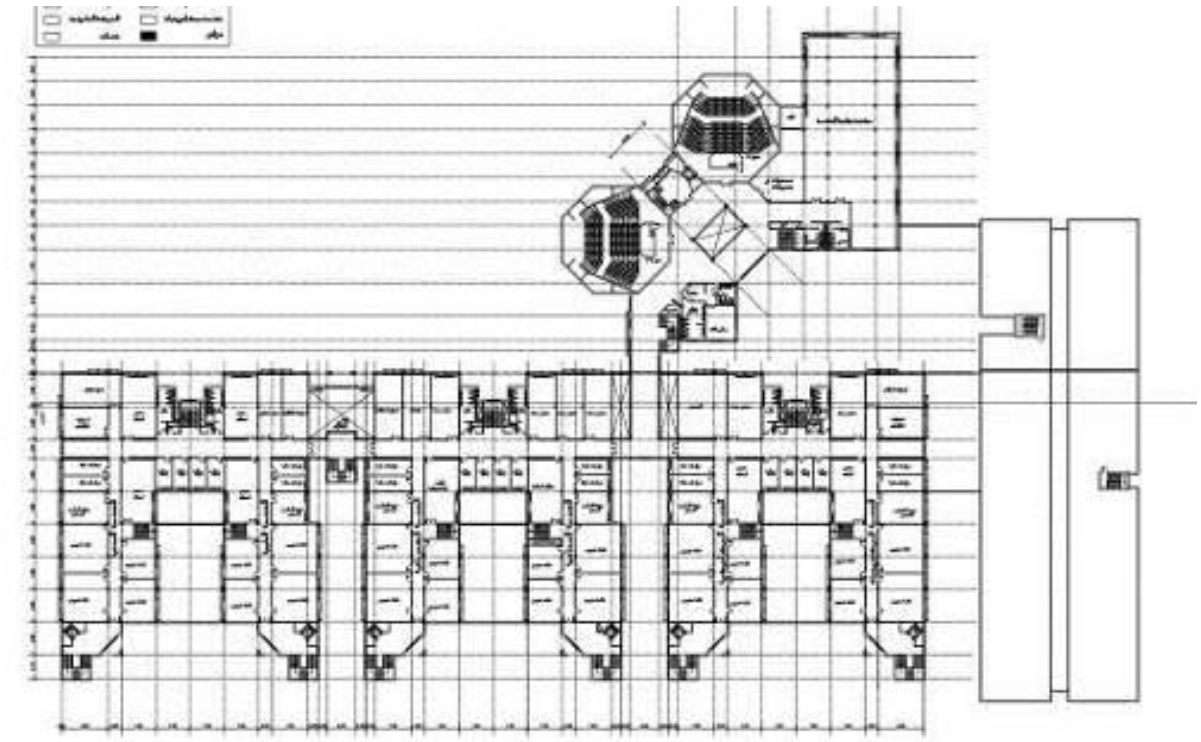


Figure 4:5: Jordan University of Science and Technology

Located in the dynamic city of Irbid, Jordan University of Science and Technology (JUST) is one of the leading research universities in the Middle East. Founded in 1986, the university was originally founded in order to produce a local workforce skilled in meeting the needs of the region. Since its establishment, the university has developed a reputation for excellence and was recently named the best scientific institution in the Kingdom by Jordan's King Abdullah II. Students' numbers have seen a rapid growth in recent years, with around 20,000 undergraduates and 1,800 graduate students, compared with a total student body of 2,300 in 1986, you can read the details in the JUST's report (JUST, 2015) .

Approximately 5,000 international students representing over 60 nationalities are among its cohort, making JUST the most culturally diverse university in Jordan, with most of its

programmes taught in English. Its international standing extends to strategic links with several partner institutions in America, Europe, Canada, Australia and the Middle East.
JUST comprises 12 faculties ranging from medicine to arts to sciences, and many degree programmes are exclusive to the university. The university has been granted special recognition for its developments in medicine, with teaching taking place in the King Abdullah University Hospital, one of the largest hospitals in the country. The university's Faculty of Medicine also hosts a number of international events and conferences each year and plays an active role in medical research.

After providing key features of each field case study, it is necessary to clarify a background to the structure of the analysis to understand the participants' use of Informal Learning Spaces. In order to present the relationship between students and the Informal Learning Space, the following framework acted as the base to recognize what were behind the actions observed. The Model of Informal Learning Space Choice and Interaction is illustrated below.

## 4.4 The Informal Learning Spaces Choice Framework

From the literature on learning theories, Chism's work (see Chapter 2) emerged as a particularly relevant way of understanding the way in which physical space is used to support Informal Learning. Chism is a past president of the professional and organizational development network in higher education. She has written about learning spaces in "The Importance of Physical Space in Creating Supportive Learning Environments", as well as writing about challenging traditional assumptions and rethinking learning spaces. According to Chism, traditional assumptions about learning spaces need to be challenged in the light of new knowledge on the influence of physical space on human activity, constructivist theories of learning (in which learning is viewed as a social process in which meaningful learning occurs when individuals are engaged in social (collaborative activities)), and descriptions of student's demographics. The first diagram below (4-6) represents several elements which have been identified by Chism as issues which support spaces that are harmonious with learning theories (focussing on Constructivist theory) and the needs of current students.

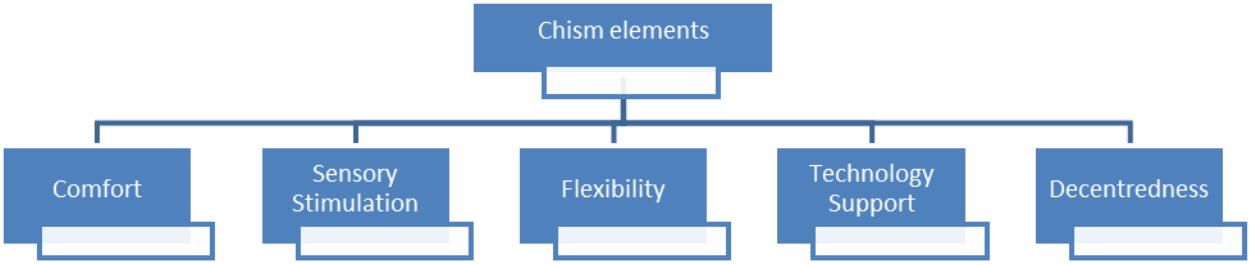



Figure 4:6: Initial ILS Framework Development, Chism

The diagram above (Figure 4:6) develops Chism's framework. The first framework breaks the issues down into 5 key themes of comfort, sensory stimulation, flexibility, technology support, and decentredness. This was developed by the researcher based on constructivist theory, the literature, and all primary data. all data were analysed using Nvivo software in order to get clear coded findings for all observations, interviews and architectural analysis. The findings were compared in both countries using a comparative method (research objective 5). Finally, the empirical data were evaluated holistically using grounded theory, applying an analytical approach (thematic analysis) as described by Braun & Clarke (2006) to identify key emerging themes. A further targeted literature review was crossed-check against the empirical data to develop a framework for the design of ILS to facilitate informal learning for Arabic universities based on recent developments in UK universities. Additional development was applied to the framework using the model of Chism (2006) to guide the design of good practice ILS (research objective 6).

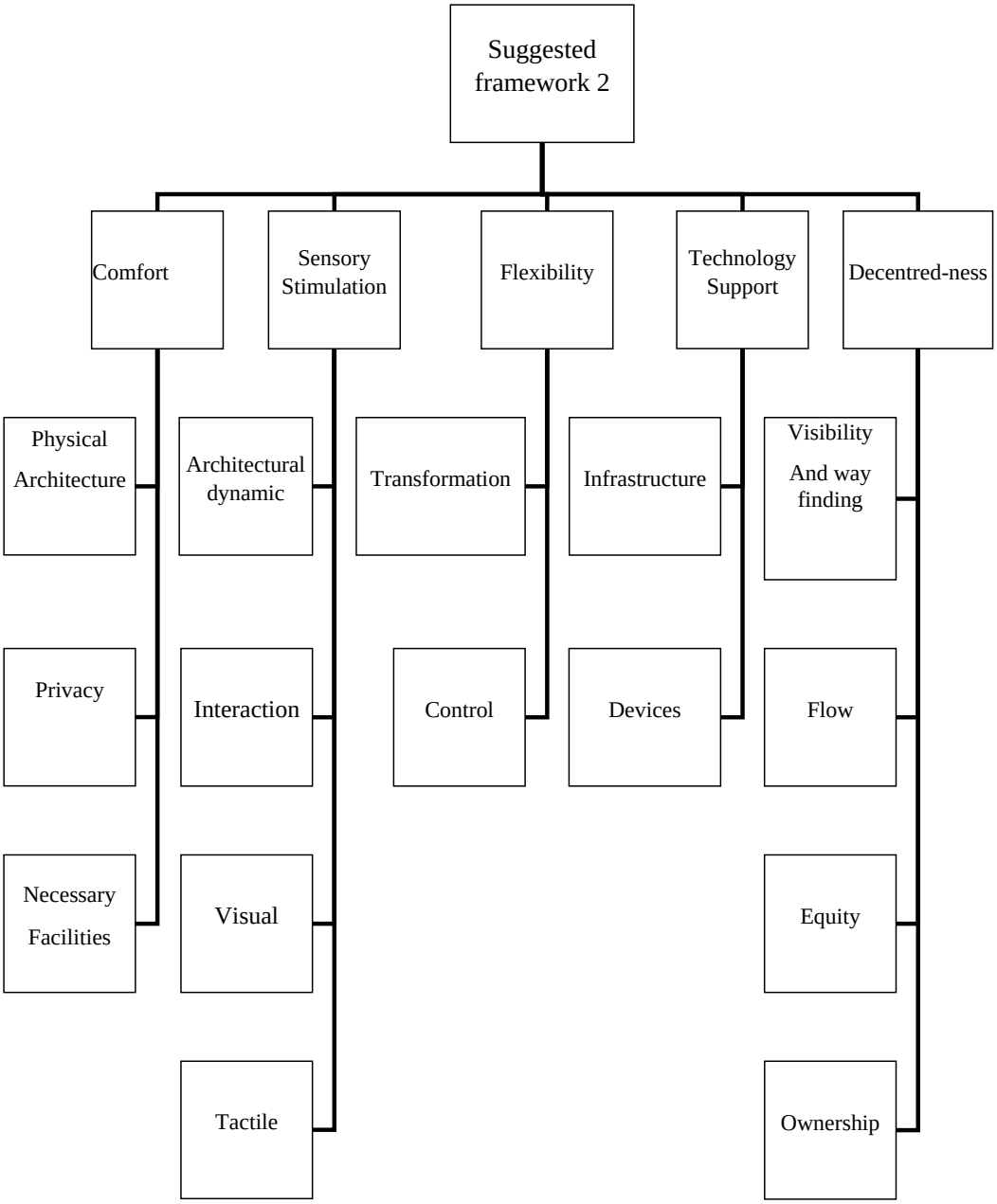



Figure 4:7: ILS Framework Development stage 2, developed by researcher

In the second framework, the researcher has listed all the themes as they emerged directly from the research.

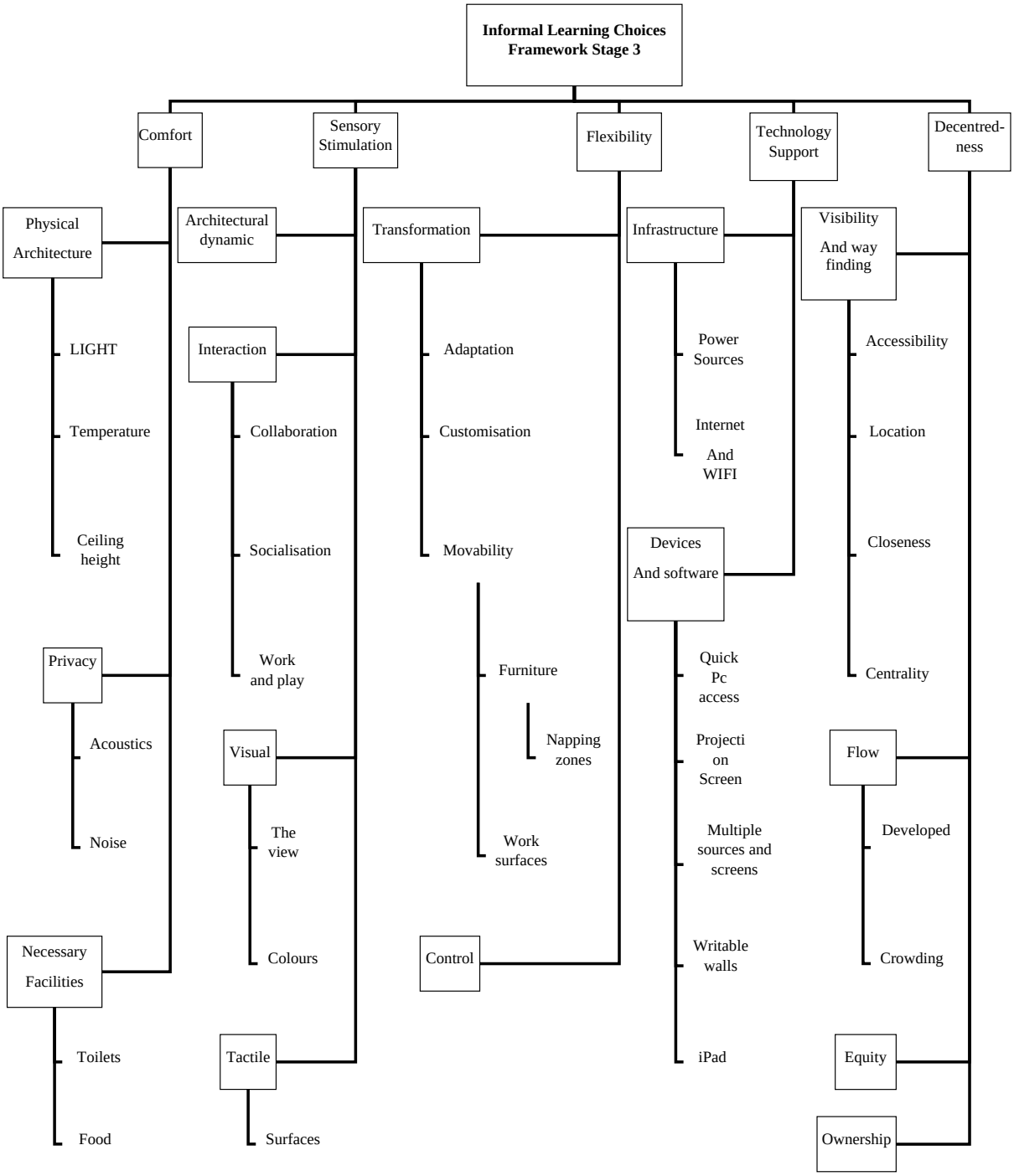



Figure 4:8: ILS , developed by researcher

Finally, the third framework (Informal Learning Choices Framework Stage 3) was synthesised from stage 2 in a way that brought together themes into more manageable and logical groupings this framework is detailed below.

## 4.5 Framework discussion

The following discussion is structured around the key themes within the framework. These themes of Comfort, Sensory Stimulation, Flexibility, Technology Support and Decentredness are discussed in reverse order (or from right to left in the diagram) so that the more complex themes are discussed first.  discussion is not just of the concept of the framework but that you are testing the efficacy of the framework with analysis of the field research.

### 4.5.1 Decenteredness:

Emphasizing the principles of social constructivism, spaces must convey co-learning and co-construction of knowledge. Implications for architecture include thinking of the whole campus as a learning space rather than emphasizing classrooms. Within the classroom, it means avoiding the message that the room has a front or a "privileged" space. Outside the classroom, it means providing ubiquitous places for discussion and study. It means that the flow of spaces from library to faculty or administrative offices to classrooms and the corridors and outdoor passageways in between must be rethought in terms of learning. Spaces should center on learning, not experts (Chism, 2008).

The researcher definition: Thinking of the entire campus as a learning space not only the classrooms. This discussion is not just of the concept of the framework but the researcher is testing the efficacy of the framework with analysis of the field research.

#### 4.5.1.1 Visibility and way finding

The role of visibility in the selection of Informal Learning Spaces can be summarized by one student's comment: “It is nice to walk through the building and notice that there are little corners that you can sit down and study” (UWE UK, Student).

Accessibility was understood as public access availability. A public place was one that could be used by students, instructors, staff, visitors, or anybody outside the universities. On campus, a place known as a “student's place” attracted more students than a place reserved for certain groups of students or for departmental use (24 responses, all cases). For example, the social space at the University of Brighton was well known as space for students, visitors, and staff. Students tended to go towards these places because they knew they were designed for them and they could “do most student-related activities without restrictions” (Brighton UK, Student). Twelve students explained that they chose to stay in ILS on campus rather than working in other publicly accessible spaces in the city, as one

student described “I would rather come to the ILS to study instead of going to the downtown coffee shops” because they felt entitled to use college spaces (UWE UK, Student).

Throughout the video records, in all cases, it was clear that the ILS were used the most during the time between lectures and lunch, with the highest usage being recorded during the 12.00-1.00 p.m. observations. These spaces were full at such peak times. This was also observed in other spaces, mostly at open labs in Jordan or Hives in UK facilities.

Many students also stated that they prefer studying at home, particularly when working alone; for example, “for quiet study I always choose home” (JUST JO, Student). Although the design of ILS can be viewed as being homelike, nonetheless creating the same atmosphere as a home is difficult. However, some of the design aspects for homes were apparent in these spaces, such as comfy booths and sofas and the availability of food. Both of these aspects can make spaces more attractive for students who prefer working at home ( Figure 11).

Figure 4:8 Use of Booths by students at UWE

Nevertheless, other students stated they cannot study at home since they experienced lots of interruptions there (41% of responses, all cases), and many students reported that they do not find home as a good place for group work (18% of responses, all cases).

Factors such as the setting, noise, crowding, lighting, and furniture could be used to explain the choices of place in some situations. However, when students were under time constraints, such as when they were waiting for their lectures, there were other factors that played more important roles: the matter of location, or the place in which the informal learning space was positioned in relation to other spaces students used. Closeness, or the distance between the space and the students at a certain time, proved to be an interesting concept. Closeness was relative, which meant that the observation of closeness was dependent on the way students viewed it. There were two types of closeness that students considered when selecting an informal learning space: closeness to the current location, and closeness to the destination, and these are evidenced below.

Many students used the time between classes to do homework and class projects (82% of responses). These students often selected the location near their destinations to avoid being late. For 33students interviewed the closeness to the destinations was more important to the students than the comfort of the space. Many students hung out in the corridor in front of their classroom for several hours before class instead of finding a comfortable place farther away ( Figure 12 ).

Figure 4:9: Hashemite Univeristy student using corridors before classroom

A student who was reading a book for class in the hall way said, “I had lunch with friends at a restaurant. Then I came here afterward. I think it's just convenient. Usually I study at

the library or student center for other classes. Today it was just more convenient to go where my class was, rather than having to walk that far to this class" (Brighton UK, Student).

Interviews with students revealed that they chose informal places that were close to their current location (70% of responses). For instance, after finishing a class or a meeting, many students in Jordan hung out in lounges in the same building or nearby buildings to complete homework before heading home or to a different class ( Figure 13).

Figure 4:10 Hashemite University students in Jordan hanging out in lounges

A student said, "I usually go to the Library on Monday when I have a class there ... however, this afternoon I did some homework at the hive. It was next to the café so I came straight there after lunch" (UWE UK, Student)

The ultimate destination that students needed to get to was one of the aspects affecting where students chose to study. For example, when students have a small break between classes in their formal teaching spaces they normally will not have enough time to find a place out of the building. Typically the short break between scheduled formal learning sessions only allowed time to find somewhere to study in the same building or in a nearby location (72 responses, all cases). But some students said that they would like to change

their studying space around and across campuses to their favourite learning spaces, as these student meet their friends to socilaise in different faculty(UWE UK, 17 students).

For some students the ILS and other non-specialist facilities rarely, if ever, featured in their day to day schedule. For example, their choice of suitable destinations was limited by requirements for discipline specific resources and environments, such as arts studio spaces or subject specific technologies. On campus cafes were observed being used as ILS and a small number of students also reported using off campus catering establishments (12 responses, all cases). Spaces in the Students Union were also being used for informal learning as were formal teaching environments such as PC labs, when they were not in use for classes (observed at Hashemite University).

It became evident that students selected spaces to learn based on their own personal list of requirements and preferences. These changed according to the learning activity being undertaken, leading them to use different spaces at different times and for different purposes. For example, “using the ILS for a group activity, but returning home to undertake individual study” (UWE UK, Student). Habit also played a role in the selection of spaces, with 16 students referring to it, and one student stating "I'm a creature of habit”. Some learners had a favourite location and even a preference for a specific seat in a few instances. However, others were happy to study anywhere that fulfilled a few basic requirements and they selected a space to learn on a simpler basis. For example, they were content to use any space that had a PC ( image 32, appendix K) .

The identification of a place as suitable for study is critical because without recognizing its existence, people would probably not go there. To be visible, it is essential that the learning space is located in high traffic areas where students tend to gather. It would not be a good idea to place ILS in an unfrequented corner of the university. It would be better to place them in the center of the university. The idea is for students to easily notice the existence of these learning spaces as they move from one building to another on a daily basis and to conveniently use them. From the results, it seemed that the more centrally located a building was, the more likely it was to be crowded (image 33 appendix 5) also see (image 34 appendix 5) which Indicate the placement of popular ILS on the plans which demonstrate the importance of location and centrality. Mark them up in relation to formal learning spaces and they would show closeness. Mark them up in relation to circulation systems and they would show accessibility. Nevertheless, once the students discovered a

place suitable for study, they tended to return to it. One student expressed, “I usually go to the library. However, I just discovered this place this semester. It is quiet and cosy. I come here more often since” (Brighton UK, student).

Another example of how students choose where to study and when they relocate their learning location was provided by students who described that they chose a learning space depending on their mood: they prefer to use learning spaces to set in the mood for study or just to relax from the study. “I don’t really use it for learning, I just use it to crack on whatever I need to do, so I learn in my class and then I just come here to follow up” (Brighton UK, Student).Some participants talked about their personal preferences of replacing the learning spaces to “focus more in my study” (JUST JO, student). “I get bored and distracted when I am at the same space for long time” (UWE UK, student), a student noted. She said usually she studies at the main Library because “I study in the quiet section at the library sometimes as I get bored and I would like to go to a different space instead of continue studying here” Hashemite Jo, Student).

The identity of a learning space is about the character of the space and how it feels it should be used. Learners reported seeking a range of spaces, including those offering studious, relaxed and informal atmosphere “(33 responses, Jordan), as well as spaces typified by buzz and activity (65 responses, all cases). How a space was laid out influenced usage and there were many positive examples observed of spaces enabling the activities expected. Similarly, there were examples where a space had been designated for a particular purpose, but the layout and location gave mixed messages or suggested a function that was incongruous in that area. It became evident when observing spaces that because learners select a space based on their own list of requirements and preferences, the space may not be used in the way anticipated by the institution. For example, learners were observed using tables for individual study which were intended to be used for collaborative work (Figuer 14).

Figure 4:11: UWE students using large groups tables for individual study

Spaces can therefore have multiple identities, with learners having different and often contrasting views of a space and how it should be used. Multiple identities can be very positive for some areas, as this means they can be used flexibly for a range of learning activities.

However, in other spaces this can lead to a negative experience if the identities are incompatible. Learners expressed the importance of spaces living up to expectations, most often in relation to silent and quiet study areas. It was regularly observed that learners reconfigured their work areas, in particular by moving chairs, but also in limited incidence, tables and equipment (both universities in Jordan).

#### 4.5.1.2 Flow

While noise was the acoustic source of distraction, crowding was the visual one. Students moved in and out, moved around, talked, ate, laughed, and all these movements drew the students' attention away from their learning. Most students in this study all believed that the more crowded a place the less private it was (64 responses, all cases). Findings revealed that in the students' mind the perception of crowding was more related to the size of the place and the number of people in the space (34 responses, UK).

It seemed that being in a spacious place and seeing a lot of people made the students feel less comfortable than being in a smaller place with higher density (video observations, all cases). While over-crowding was not preferred in most circumstances, a certain level of

crowding seemed to be desirable by many students. Particularly, the students enjoyed places where they could see the traffic and the crowd without being part of them(Image 35, appendix K). Being in the middle of the student commons, being inside the study rooms overlooking the crowded commons, being in the corridors, or being in the libraries exposed the students to crowding (image 36, appendix K).However, being in the middle of the crowd was not the optimal choice unless other seating was not available. A student commented, “I preferred the study booths, however, most of the time they are occupied. So, I'm sitting here nearby, waiting to see if any opening comes up” (UWE UK, student).

Seeking a private zone within a social setting was a common practice among the students. To do so, they tended to find seating adjacent to the walls or facing away from the crowd. For example, in the ILS at the University of Brighton many students expressed that they preferred to sit along the glass window where they could look outside to the scenery instead of looking into the crowd inside (image 37, appendix K), as mentioned above; students are seeking a closeness to crowds but a partial separation from those crowds in order to maintain concentration, hence the glass partitions or booths. These architectural elements are allowing a connection to the ‘flow’ of people and visual connection to crowds but one that is reduced in its impact on concentration.

In a similar way, the transparent study rooms or the glass-door study rooms attracted many students (Brighton UK, video observations). The transparent study rooms usually had one or two walls made of glass (found at both Brighton and UWE). Additionally, the transparent partition kept others from invading the study room space, creating “a psychological territorial feeling for students inside the study rooms” (Brighton UK, Student).

Another way to establish privacy in the middle of the social-oriented setting was to limit conversations with strangers or go to places where friends did not gather. A student explained, “If I really want to focus on finishing my work. I would go to the fifth floor in the library. Not many of my friends study there” (UWE UK, student). By contrast, some students disliked being in places where they were totally isolated and had minimal contact. For example, the solid study rooms were very private places but they were not the students’ favourite spaces (JUST JO, the bookable room at the library). During the observations, the researcher rarely found the students using the solid study room (JUST JO, video observations). Even the cafeteria (one zone) in at night time saw no students

because the places were so far away from the public eyes as classes were not in sessions (UWE UK, video observations).

### 4.5.2 Flexibility

A group of learners should be able to move from listening to one speaker (traditional lecture or demonstration) to working in groups (team or project-based activities) to working independently (reading, writing, or accessing print or electronic resources). While specialized places for each kind of activity (the lecture hall, laboratory, and library carrel) can accommodate each kind of work, the flow of activities is often immediate. It makes better sense to construct spaces capable of quick reconfiguration to support different kinds of activity such as by including moveable tables and chairs (Daggett, 2008).

The researcher's definition: to design a space that can be used professionally regardless of changes in operational requirements, whereas an inflexible design might become ignored.

#### 4.5.2.1 Transformation

In the interviews with students, the researcher asked students to describe the ideal informal learning space and things that they would recommend to campus facilities. A student described a perfect study room that he had in his mind:

"Not too big, maybe just a couple of tables, maybe some dividers. Maybe divided into different seating zones with tables and chairs and a white board" (UWE UK, Student).

Another student shared the same view. She described her ideal study room like this:

"I know a lot residence hall have study rooms, they have a big white board that you can use and tables and stuff. I feel like that would be good to have in certain academic building" (JUST JO, Student).

Another student responded:

"the ILS could have a few tables, a white board so you can go over what you study, and things like that. And a few textbooks that you could take a glance" (Brighton UK, Student).

Students seemed to seek out semi-private seating too. Booths were among the most favourite furniture:

"Maybe more kind of individual private booths. You kind of need to have a big table space to bring your stuff out. I would just like to see more of that types of stuff" (UWE UK, student).

"Yeah, if you have a booth, it will shut everyone out." Another student from Brighton UK commented about the usage of booths to eliminate unwanted noise. Students also preferred more tables than sofas because tables kept their attention levels high enough to study and not to lie down and sleep (see images under Napping Zones heading).

A student said "We usually try to come to the table like this. We all go up to the center for student involvement upstairs, or a table. But we usually try to find a table rather than a booth or something that makes us more prone to do homework" (Brighton UK, Student).

Another student shared a similar view, "I suppose it would be better if they have tables here. Because just these comfortable chairs and couches, I tend to just lay down here. I have to pick up somewhere that has a table nearby so that it keeps me awake and more focused. Not necessarily things that are not comfortable but things that can assume productivity. Because when you are sitting on a couch you may become too comfortable with the settings" (Brighton UK, Student).

During observations, the researcher realized that students needed a lot of space to place all of their devices. On average, a student placed a laptop, some notebooks, some books, an iPad, a phone, some pens, a cup of coffee or a bottle of water and some snacks on the table they were using (See images 38 and 39, Appendix K).

Many students preferred to have some table space beside them or made use of adjacent surfaces to spread the learning materials (42 responses, from all universities). A student commented, "The table is better for doing homework" (Hashemite JO, Student). Another student added, "For us it seems to be better. And you can usually fit more people at the table too. So, if we have a big group, we would take a bigger table. Like I am here by myself before I go to a meeting, so I can take a smaller one" (UWE UK, Student), "And I

don’t study well if I am sitting on a couch or a comfy chair, I need to have this in front of me or at a desk” (Brighton UK, Student).

Large personal work spaces were a common preference expressed by students in the form of a need for larger tables and space to spread out. Verifying this, it was observed that students in Jordan universities using ILS struggled to find space for the all resources they were using and also for personal belongings and refreshments (see Figure 15) and (Figure 16). Some students expressed a preference for more relaxed comfortable seating (22 responses, from all universities), while others preferred formal chairs to help them stay motivated and awake (58 responses, all cases). It is therefore appropriate to provide a range of furniture to support difference preferences.

Figure 4:12: Hashemite University

Figure 4:13:  A Student using a window sill at Hashemite University

Indeed, it was a common sight to see students lying around in one of the booths or sofas at the ILS ( Figure 17). It seemed that napping in Informal Learning Spaces was a popular practice. The student participants told the researcher that popular places to take a nap on campus were quiet zones inside the ILS (UWE UK, Student). Places that were equipped with sofas and low lighting were preferred ( Figure 17). Students were also observed by the researcher napping in booths. Some students even took a nap on the sofas or benches. Obviously, their actions were not approved by the buildings' administrators.

Apart from learning and environmental factors, building management also played a significant role in students' choices of Informal Learning Spaces. Every building had its own facility usage regulations, which were maintained and executed by the administrators of the place. The students were required to follow the regulations and this affected their choices of place. From the data, it seemed that students' choices of place were more related to accessibility and flexibility in the learning space.

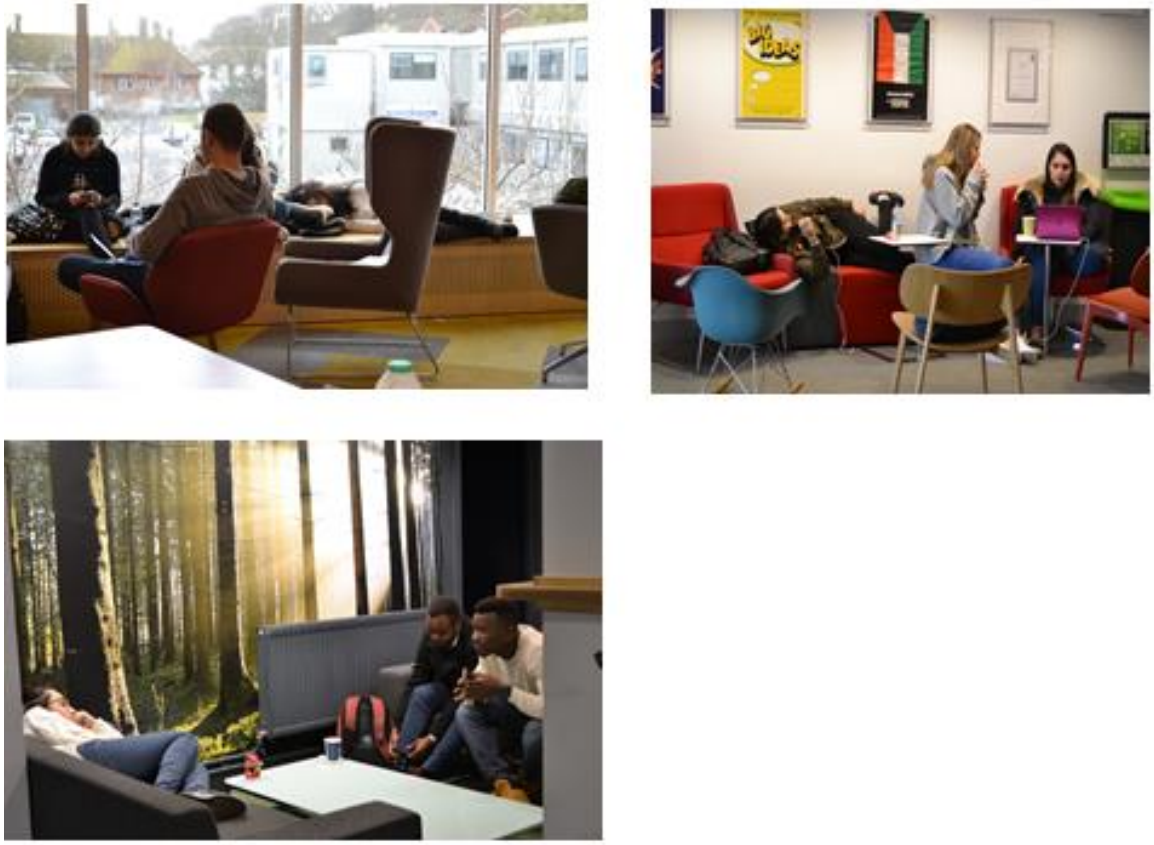


Figure 4:14: Brighton University

Composed of comfortable seating in diverse arrangements that support a range of activities and postures, this transition space takes advantage of its primary purpose as a pathway to connect people, particularly through unprepared meetings ( see figure 40, Appindex K). Within situations described in Figure 41,Appindex K. Students and faculty can perch in this space between classes to text, recharge their devices, or socialize, or they can settle into more comfortable seating to study for a few hours. Curved benching adds an element of fun and encourages students to relax. Whiteboards and monitors that display class and campus information round out the functionality of this space (Oblinger, 2007).

Centrally located on campus and accessible to everyone, a maker space supports students as they tinker, deconstruct, and innovate either individually or with other students and faculty. A purposeful variety of furniture groupings supports different activities and postures. Digital and analog tools (such as 3-D printers, laser cutters, and mobile whiteboards) enable co-creation and display, while ample storage houses personal items and shared tools and supplies. Mobile furnishings allow students to easily adapt the space

to their work in the moment, while adequate circulation space encourages movement (Oblinger, 2007). There were, however, instances where students simply could not customize the learning space. In most of these cases, students learned to adapt themselves to the environment so that they could perform the learning task (Oblinger, 2007).

The researcher's own experience studying in Informal Learning Spaces informed the observation about the ability to adapt to environmental factors in these spaces. Initially, the researcher was not very comfortable with the noise in the student commons, which interfered with her ability to focus on reading and writing. In the researcher's first few study sessions in the student commons, she brought along simple homework such as editing photos and typing information. Soon, the researcher began to do more complicated tasks without paying much attention to the surrounding noise.

Similarly, students who were observed by the researcher seemed to customize and adapt to learning situations. Because there was limited private space for students to use outside the classrooms, many had no choice but to make use of the busy social commons that were observed in Jordan universities (Figure 16, Figure 18, and Figure 19). Eventually, students became used to learning in social-oriented settings, "At first, I felt it is so hard to find a place to spend my time in between classes. The library is very tense. I choose the court now. I am used to that now. The noise, the people don't bother me at all. And you can always find quieter space, if you go upstairs or downstairs areas" (Hashemite JO, Student).

A student commented "Outside the building it is so sunny, we prefer to be in the lounge on the ground floor. It is quiet there. Outside, it is very noisy, but we need a chair to sit on that is why we dragged this chair inside" (JUST JO, Student). Another student said "Yes, sometimes the common social spaces get noisy but I use my headphones, then everything is fine" (UWE UK, Student).

Figure 4:15: Students using the stairs for deating at Hashemite University

Figure 4:16: Students using corridors for group study at JUST

Customizing could only happen when students had a measure of control over the learning spaces. Without the right to make changes to the environment, students could not take the necessary actions to change the surrounding environment to fit with their needs. They were left with the option of adapting or leaving the place altogether. The most popular way students customized public informal learning places was to rearrange the furniture ( Figure 42, Appendix K) . They improved the informal spaces by adjusting the furniture to

maximize table space, sitting space and privacy, and to lay down their learning materials. During her observations, the researcher found that students needed large table spaces to lay their learning devices in many Informal Learning Spaces ( Figure 43, Appendix K). Many tables in the Informal Learning Spaces were too small to place all these items.

Grouping of tables was needed to enhance the selected study area and to make it more suitable for the practical needs of the students. As the researcher noted earlier, privacy was an essential element for learning in the student commons. Even though semi-private seating, such as study booths, were highly sought after in the student commons, many students had to find ways to create their own privacy zones within the crowd ( Figure 20 and Figure 21).

However, customizing was not equal in all Informal Learning Spaces. The students seemed to be more comfortable customizing furniture in the ILS, but they hesitated to do so in the commons of the library for fear of distracting other students. A student commented, "When I move something in the library, I have to be very careful. Any movement makes noise, even in the commons where they allow you to talk, we try to show respect to other people's space by talking in a low voice, and trying not to make noise from moving furniture"(JUST JO, Student).

In some places, the furniture was designed so that it would be easier to customize. For example, small tables could be arranged into bigger tables and movable whiteboards could be relocated near the student group discussion (Figure 44, Appendix K).

Figure 4:17: Group Study Booths at Brighton University

Figure 4:18: Students arranging ILS furniture at Brighton University

#### 4.5.2.2 Control

Having a measure of control when students were in an Informal Learning Space was also an important factor in the selection of places study (88% of responses, all cases). Control, in this case, is defined as the ability to make changes to the surrounding environment to fit individual needs. On campus, places where students had the most control were inside student facilities including the ILS. Having taken some control of the student commons,

students usually arranged the furniture to fit their needs ( Figure 21).Often, students would pull several tables together to make a group study space. They could do so in the library too but they tended not to do so, often for “fear of causing distractions to others who were studying nearby” (UWE UK, Student). One student said, “I usually don't move tables in the library. I may move a chair to make space for my legs. But moving the table would make a lot of noise” (JUST JO, Student). Factors that they considered as they made the decision to choose the learning places included the nature of learning tasks, the settings which provided different level of noise and natural light, furniture, and amenities. They also considered whether the Informal Learning Spaces were nearby and visible to the public. Being able to access and customize the learning place were also important to their choices of going there.

Students also preferred to use the university's facilities to study rather than private companies' facilities to study. A student said, “I don't feel like studying in coffee shops downtown because I am taking their space and not buying their products. But I prefer to go to this university, so I could stay in the ILS as long as I could” (Brighton UK, Student). However, students in the UK tended not to use empty classrooms for self-study. It seemed that there was an unwritten rule about the usage of academic buildings: academic buildings were under the control of the academic departments, specifically the administrators and the teachers. The students had this to say when I asked them why they were not using empty classrooms for self-study: "I don't feel comfortable using classroom spaces for my own study” (Brighton UK, Student). Another student added, “It is weird to have 30 tables and chairs for yourself” (UWE UK, Student). “Classrooms are for teachers. When I finish my class, I just want to get out, not stay over and do my homework” (Brighton UK, Student). By contrast, many students in Jordan Universities were observed to use empty classrooms to study between their lectures ( Figure 22).

So far, the researcher has identified how students go about choosing the places to undertake self-study beyond class time. Many students wanted to be academically competent and socially connected (27 responses, UK universities). They usually selected a place to study where they could achieve both. Depending on the learning task, the places chosen were more private than others but students wanted some elements of sociality in these places. And they were not very interested in places that were extremely social or extremely private for study (57 responses, all cases) but places that allowed for control over the degree of privacy and sociability.

However, in Jordan universities; it was not always the case that students could find a place that satisfied all their requirements for learning and socializing needs. Often, they decided for themselves which factors would be the most critical, and sacrificed the rest of their needs (Figure 44, Appendix K). This led them into the situation of taking actions toward a place or toward themselves in order to fit their learning and social needs into the chosen informal learning space ( Figure 45, Appendix K). The first action to fit them into the informal learning place was to customize and if even customizing did not satisfy their needs, they adapted and possibly changed the learning space (video observations, Jordan Universities).

Figure 4:19: Students using classroom for informal group study, taking control of the space

### 4.5.3 Technology Support

As Oblinger and Brown (2008) pointed out, the current generation of students expects seamless technology use. Their older counterparts and teachers would appreciate the same capability. As technology changes, smaller devices will probably travel with users, who will expect wireless environments, the capacity to network with other devices and display vehicles, and access to power. Rather than cumbersome rack systems and fixed ceiling-mounted projectors, learning spaces of the future will need more flexible plug-and-play capabilities.

#### 4.5.3.1 Infrastructure

Of all the amenities provided by the informal learning spaces, power sockets were in the most demand. Indeed, distribution of seating in the rooms seemed to be dependent on the distribution of sockets: “Could you tell them that many of us need the power sockets? I used to study down there in the big room where the big tables are. Now I can't because my computer does not hold battery long enough. I need to use the power sockets” (JUST JO, Student). Of course, there are ways around the matter of power sockets, but students did not seem happy to use alternatives. As one student commented, “Out of all that is necessary for learning, I wish there were more sockets” (Hashemite JO, Student). Because this whole middle area there is no sockets, so if you sit there, I hope that you don't have to charge to computer. Usually, if my computer dies, I would go over here and charge it and rent a computer while my computer charges. So, there are ways around it but it is a little annoying”. The complaints about sockets shortage continued, “Students kind of always fight to see if there are sockets around here. I just think that if they have more power sockets, students would be able to study longer. If you don’t bring your charger, you got to go home to get it. I don’t know. Maybe that’s the one thing that I would like to see” (Hashemite JO, Student). A further student noted, “The power socket problem is very real. That is also another reason why I don't like studying here. The sockets are concentrated around certain areas. And those are always crowded to find plug-in” (JUST JO, student). In the researcher’s opinion, having to put away the laptop in the middle of using it could affect the student's flow of thought. Thus, it may affect the student's learning quality.

#### 4.5.3.2 Devices and Software

Access to IT resources was important to the majority of learners (75% of responses, all cases). This usually meant PCs, but also printers, large screens, and access to the internet and software. Observations of usage of spaces with and without PCs resulted in a complex picture because spaces across the Universities were not necessarily comparable with respect to IT provision and power availability. For example, in open access PC labs all of the students using the spaces were frequently observed using PCs, while in catering establishments with very few PCs, the numbers were consistently low. For both UK universities, a mix of desks occurred in ILS, some with fixed PCs and some with no fixed PCs but with access to a plug socket, and some with no PC or access to a plug socket. In the selected cases, the usage of individual desks with a PC was significantly higher than desks with no PC (70% higher).

Despite having a campus-wide secure wireless network, the level of laptop usage observed was lower than expected (31% of students at UK universities), but was higher where students were readily able to access plug points (55% of students in Jordan). Therefore, all desks and tables in new or refurbished spaces in the ILS in the UK offer desk mounted plug sockets, even if they are intended to be used with a fixed PC (Figure 46, Appendix K).

### 4.5.4 Sensory Stimulation

**Sensory stimulation (Chism's definition):** Antiseptic environments consisting of white rectangles with overhead lights and bland tiled floors create a mood for the occupants of these spaces. Human beings yearn for color, natural and task-appropriate lighting, and interesting room shapes. The current generation of students, attuned to home remodeling television shows and examples of stimulating spaces in the coffee shops and clubs they frequent, seem particularly sensitive to ambiance. One study found that the majority of students, male and female, continually rearranged their living spaces to be more attractive. In evaluating a model learning space, they noted the paint colors, carpeting, and lighting without prompting (Nancy, 2008).

#### 4.5.4.1 Interaction

Learners placed a great deal of importance on spaces for collaboration and interpersonal communication. Most learners reported experience of learning in groups which is to be expected with group assessments being a feature of undergraduate and postgraduate courses at universities (26 responses, UK; 10 responses, Jordan).

The popularity of the ILS for group work was clear from the study, with many learners citing them as their first choice of place to study in a group ( Figure 23). This can be attributed in part to the ILS, at the time of this study, being unique in the University in providing dedicated, bookable and open access spaces for students undertaking collaborative work. The ILS group spaces were also viewed as neutral territory, familiar to all parties and therefore appropriate for group work especially when the group members did not live near each other or know one another well. A student from Hashemite University at the interview said "we have a deadline and all the group members living in different cities so we cannot find a place to work together at university even in the library we are not allowed to talk so we are planning to go to café and work there".

Figure 4:20: Students' interaction in  Group work at UWE

Socialisation is about social interactions, support and sense of common purpose which can be found in shared learning spaces. The qualitative data demonstrated the importance of social interactions to learners, in terms of study and for relaxation. Working in close proximity to friends or peers to create a sense of community was important for students; for example, "I came in to revise, my friends were already here so I joined them" (JUST JO, Student). Observers also noticed that there were many learners working alongside colleagues and/or friends (Figure 47, Appendix K) Working alongside refers to learners undertaking an independent piece of work, but working near to or next to peers who are known to them (usually 2-3 people) (Figure 48, Appendix K).

Observations also uncovered incidences of unexpected meetings and of individuals and groups meeting, splitting and re-joining ( Figure 49, Appendix K). It appeared that shared learning spaces support the need for social and learning related conversations, both planned and unplanned. Some learners reported choosing spaces where they knew their friends were also likely to come (32 responses, all cases).  sometimes the same students also worked elsewhere when they considered that the social element was likely to be a distraction (same 7 students were observed to work at library and the Hive, UWE UK).

Another aspect of community is the feeling of a common purpose. Many learners reported that working in a shared learning environment is motivational (69 responses, all cases). It seems that students are aware of what makes a space feel like a place. Place is about environment, but also about people and what is going on inside.

Figure 4:21: Student interaction in Hashemite University

#### 4.5.4.3 Visual

Colour is an essential factor in the physical learning environment, and it is one of the most important elements in interior design, because it can support light and enhance the impact of lighting on users. Colour can make light brighter or darker. Colour is a main design element, which can be used to create an enriched learning environment with additions to interior form, space, light, and texture (Daggett, Cobble, & Gertel, 2008). Using colour in learning environment design will motivate students to learn better. The variety of colours in a learning environment reduces tedium and passivity. It also impacts students' performance, as well as teacher and staff efficiency. Hence, "Learning spaces should incorporate a variety of colours (based on age, gender, subject and activity) to reduce monotony and visually refresh perception" (Daggett, 2008). Same as light and the influences of that colour is the other significant element that directly affects people emotion. This effect can increase or decry people's performance as well.

Different colours have different effects on people. Warm colours (like red and orange) and cool colours (like blue and green) have different psychological meanings and different outcomes on people's feeling. For instance, research shows that workers make more errors in white offices than in coloured offices (Bellizzi, 2009). People have different reactions to various colours and lights, and the combination of them. For example, blue interiors for shops are associated with more favorable evaluations, and make them more attractive than orange interiors. However, the result of effecting lighting after combining with colour is different. Applying soft lights with an orange interior generally remove the ill effects of orange (Babin, 2003).

Window seats were more occupied than seats in the middle of learning spaces, or in areas with less natural light ( Figure 25). In the interviews, one student stated:

"I love sitting by the windows looking over the campus" (Hashemite Jo, Student).

"My favourite seat was the one that faced the large window over there. I could see the trees as the spring sets in" (Brighton UK, student).

Figure 4:22: Students choice for sitting by large windows at Brighton University

“I just pass by and I think, oh my god, it is beautiful over here in the sunset'. So I decided to stay here to study instead of going downstairs to the common area” (Brighton UK, student).

Participants thought that windowless seating caused them to *“feel down”* (UWE UK, Student), *“upset”* (JUST JO, student), and *“cramped in”* (UWE UK, student). The students, due to feeling uncomfortable, did not favour places without natural light (66 responses, all cases).

The role of colour was also an interesting finding in this study. Participants seemed to favour warm and vivid colour over plain ones. A student described her preferences:

“The colour of the wall? Well, I would prefer it to be warmer, in the orange kind of tone for example” (JUST JO, Student).

Another student said:

“It should not be too colourful. That is distracting. But warm colour with some decoration could help making the place warm and welcoming” (UWE UK, Student).

### 4.5.5 Comfort

**Comfort (Chism's definition)**: A central design principle is the comfort of the users of a learning space. This principle encourages the use of natural light, good acoustics, controlled temperature, and comfortable furniture. The design for each of the Faculty-based learning common spaces involved all of these elements, through the combination of high-quality seating, ceiling fans for convective cooling and air circulation, heating, large windows, and acoustic shielding (Chism, 2008).

Uncomfortable chairs in learning spaces takes students’ normally casual attitude about comfort into the realm of attrition. Campus seating must take into account different body sizes and the long periods of time students must sit without moving. Discomfort makes a compelling distraction to learning. Universities should also provide surfaces for writing

and supporting computers, books, and other materials. The small, sloping surfaces on most standard tablet arm chairs are inadequate for these purposes (Chism, 2008).

## The researcher's definition:

**Comfort:** To provide the essential settings for IL, and to provide answers for everyday challenges with affordable solutions. Also, it is about enabling and supporting all the basic needs for the users (students).

4.5.5.1 Physical Architecture

The objective of lighting is meeting students' requirement from body needs to mental and emotional needs. Some students during the interviews said that lighting had no effect on their activities (26 responses, from all universities). However, many students believed that background lighting had a direct outcome on their mood and believed it could change their performance (54 responses, from all universities). Based on these observations and interviews lighting has a very powerful and essential role on students' learning performance in learning spaces. According to the literature; lighting and the way of applying that in learning places is dependent on the students' activities at ILS. Lighting control to avoid discomfort and glare in all different types of lighting is very important. Also, students feel and act well in a place with good lighting quality. The best lighting quality comes from the combination of daylight or natural light and artificial light (Erwine, 2002). Light sends a visual message to people's minds which can affect people's motivation levels and moods. Any changes in people's moods can be a cause of physical problems or health. Therefore, learning places should be designed in a way to meet the varying learner needs (Cayton, 2009).

Lighting and natural light were frequently described by students as important (40 responses, all cases). Outdoor spaces, spaces that replicate an outside environment, views of outdoor spaces and fresh air were also frequently referred to as a preference (Image 1). The students in this study also reported performing better under natural light conditions. One student had this to say about the natural light

"so that is kind of why I don't like the library, because it is kind of dark and it is kind of hard to concentrate on reading" (Hashemite JO, Student).

“Sometimes meeting my classmate there, but not for long. It was too gloomy to feel comfortable. Most of the time, we would go to the student centre. It was much airier over there. And we would sit in one of the tables by the windows and have some snack while talking over the class project” (Brighton UK, Student).

In Jordan, students seem to be satisfied by the natural lighting. Hashemite University has succeeded in providing the whole campus with electricity by using solar panels. Universities in Jordan are provided with essential ceiling lights, but no desk lamps or any kind of different lighting were observed. Some corridors were very dark, however, some students responded during the interviews that they feel cooler in dark places because it is too hot in summer there. Also, universities are closed after 5 pm so there are no lectures after that time, even the library it is closed after 5 pm.

In the UK, by contrast, campuses are provided with different kinds of artificial lights such as (ceiling lights, pending lights, desk lights etc.). Most parts of campuses are open for 24 hours (mainly the library and the ILS spaces), and corridors are provided with motion sensor lights which are very effective at night time. The natural lighting is very poor in winter according to the UK weather.

Figure 4:23: Students' seating choice near natural light at Brighton University

#### 4.5.5.2 Privacy

Students indicated that sound levels could prevent concentration in silent areas (30 responses, all case studies), whereas students using other spaces reported sound levels offering a positive contribution to the social or motivational environment (50 responses, all

case studies). Sound levels can therefore be a positive or negative aspect of a learning space depending on the requirements and expectations of the learner.

There were various levels of noise in Informal Learning Spaces on the different campuses depending on where the learning space was located on the social-private spectrum. The designed spaces for socialising had a lot of conversational noise, whereas learning spaces for private study seemed to receive minimal noise (this was observed in video observations, all case studies). However, the most interesting part of the finding was not the level of noise, but how students perceived noise affected their ability to focus on learning tasks. Traditionally, noise was believed to be a source of distraction. However, in this study, whilst some students found that they could not study if they were in the noisy student commons, others preferred to study in the commons because they either found a way to block unwanted noise with their headphones (Figure 49, Appendix K) or found that the buzzing conversational noise helped them focus. One student noted:

“In fact, the buzzing background noise helps me focus better. I get distracted when it gets too quiet” (Brighton UK, Student).

Being distracted was similar to the feeling of being out of place, which often led to them going somewhere else to study:

“I do not like to study in the court it is too noisy, I prefer library for studying” (JUST JO, Student).

During her observations, the researcher noticed that many students used headphones when they studied (Figure 49, Appendix K). The type of music they listened to was varied and it seemed that turning on the music that they liked helped them to get into study mode. In this sense, the headphones not only helped them to block noise but also helped them to relax during their study (UWE UK, Student). Because students could supply the type of noise/music that they liked from headphones, a quiet place may not have been very quiet as they could listen to rock music, pop music, or any programs that they liked. Further interviews with the students exposed that the feeling of “distraction” did not come from being exposed to a source of noise but rather being able to produce noise. A student compared his learning experience in the student commons and the library:

“In the libraries even dropping a pen or unzipping a backpack could get people to stare. Every sound seems to be amplified in the library. But here, I could talk to my friends, I could eat, I could tap my feet ... and nobody cares” (UWE UK, Student).

Students seemed to be attracted to places where they could make noise because this made them more relaxed and less tense (Hashemite Jo, video observation). Places such as the quiet floor in the library, where students had to be respectful of the study environment, may have been intimidating for some students, in turn heightening their library nervousness. In fact, they preferred informal learning spaces such as the study rooms and ILS. In the private study rooms, students could discuss without bothering other people and in the student commons their voices were usually lost in the buzzing noises of these spaces. Students commented:

“In the student commons, you can barely hear a conversation from the adjacent table. Everybody talks. Nobody could really overhear anything. It is like your conversation being buried in the buzzing noise” (Brighton UK, Student).

“I often book a study room because there I could discuss with my friends without making people around me feel bothered by our conversation. It is pretty private” (UWE UK, Student).

In Jordan, the whole library is a quiet space. Students are not allowed to have loud conversations and there is no specific place for group work, some students were observed to be not committed to regulations, trying to do group work on tables in the library, but they were prevented from continuing by the supervisors in the library. Corridors and staircases were very loud as students in Jordan use them to study and socialise (Image 3).

In the UK, by contrast, students who use the designed ILS seem to get loud sometimes as they can have phone calls and loud conversations. In libraries, there are areas that are designed for group work and students can have conversations there.

Figure 4:24:  A student using headset at UWE

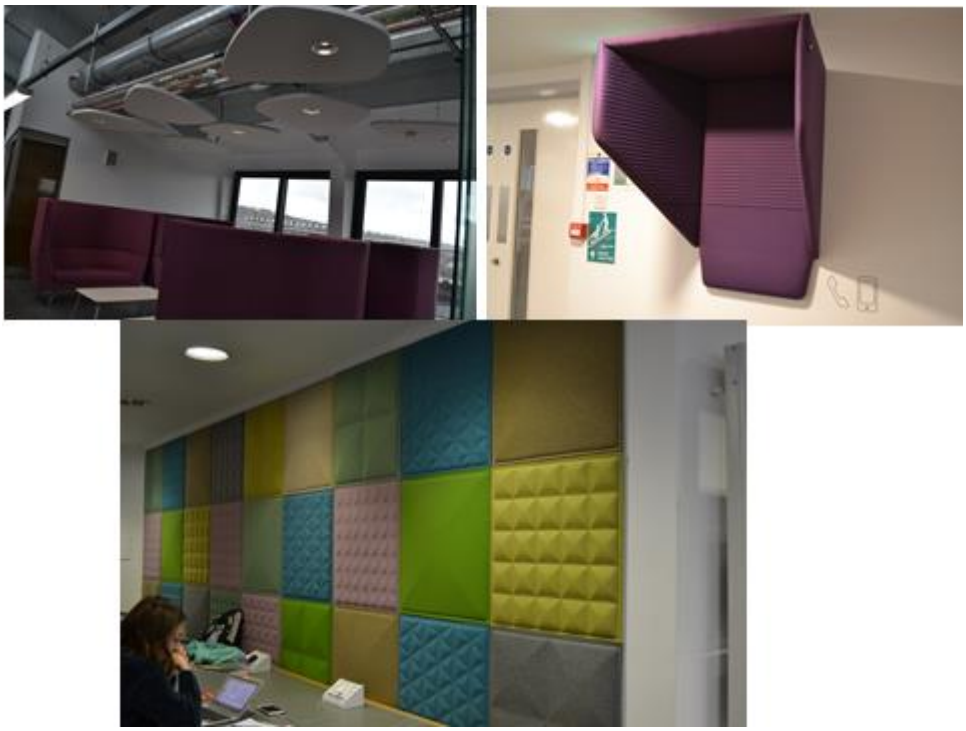


Figure 4:25 The use of acoustic absorbant elements to dampen direct or reflected sound at Brighton University

4.5.5.3 Necessary Facilities

The observations found the majority of learners had food and/or drinks visible on their desks or tables (60% of students in the UK case studies). For obvious reasons this was seen most frequently in catering environments, but it was also common in ILS and centrally

provided PC labs. Rules in these areas allow students to consume drinks and cold food. Food and drink was also frequently mentioned in the qualitative research and learners preferring a home environment gave easy access to food and drink as one of the reasons (55 responses, all case studies). Students infrequently reported using city centre spaces for food and drink, although observations show that food and drink are brought in from home and from shops and catering outlets external to the University (UWE UK, 12 responses).

Food was essential for long hours of study. Thus, restaurants, coffee shops and snack or drink machines were needed (Figure 50, Appiendix K). A student commented, “So when I study for several hours, I need refreshment. I would go get a coffee or something from cafeteria.” Another student added, “It would be nice when you study late at night and have something to eat to get more energy” (UWE UK, Student). “So I could go and grab caffeine if I need to. I can rent out computers” (Brighton UK, student).

In Jordan, students are not allowed to have food or drinks in the library, but they were observed to have food on staircases and corridors and in the courts. They were noticed to smoke indoors, although that was not allowed. In the UK, students are allowed to have drinks and cold food at the ILS. On the other hand, students are allowed to have drinks and hot food at the designed ILS.

# Chapter 5

# Discussion

## 5.1 Introduction

The Informal Learning Spaces framework, was mainly developed around research and the realisation that the role of the University is changing. Learning is changing with technology and campus design is changing with social habits, students are now and continue to expect different things from their university experience. The initial aim of this research was to develop a framework for the design of Informal Learning Spaces to facilitate Informal Learning within Jordanian universities based on recent developments in the UK universities, and that was to create environments within the University which bond the gap between students outside the formal learning spaces, these environments will encourage active communication and inspire its users preparing them for the future. Through constant research the researcher developed a series of scenarios which encourage active socialising and promote learning informally on campus, a flexible model that can be applied across the campus, in other institutions and designed to suit the difficulties of the Jordanian universities.

The research objectives guiding this study were:

1. To define and describe informal learning under the key fields of self-directed learning, incidental learning and socialization.
2. To define and describe Informal Learning Spaces and determine the relationship between them and Informal Learning.
3. To identify good practice in the design and use of Informal Learning Spaces in UK universities.
4. To identify the current nature and use of non-designed Informal learning spaces in Jordan universities.
5. To develop an understanding of the way in which existing spaces in the UK and in Jordan are currently used for informal learning based on observations and interviews.
6. To develop a framework to guide the design of good practice Informal Learning Spaces grounded in the literature, and empirical observations and interviews.

This chapter contains a discussion of the results and the conclusions drawn from the analysis of the data.

## 5.2 Principles

The research found that the designed learning spaces at the UK universities were important places, where students learned. Students did not work much off campus (except at home). Instead, they explored university spaces and identified favourite places to work. Seeing others working has encouraged other students to work. Working beside others one knew was also important for company rather than working exactly on the same task. Those designed Informal Learning Spaces in the UK universities, where students worked for long periods alongside friends, were a home base on campus, possibly more than academic designed spaces. Different types of Informal Learning were best done where there were particular sensory possibilities. It follows that the features of the physical spaces used for informal study are important; it can affect what types of learning are supported through. This aligns with studies of basic learning activities such as reading and writing. Choices of who to work alongside and whether others were visible, what they were doing, and privacy, were also important.

## 5.3 The Role of ILS in Facilitating IL

Students who have been involved in this research, have mentioned that they select spaces to learn based on their personal recurments and prefrences. Similarly, These changed according to the learning activity being undertaken, leading them to use different spaces at different times and for different purposes.

New space models for educational institutions need to focus on enhancing quality of life as well as supporting the learning experience, because students had the tendency to choose spaces they liked, not just what spaces were available. Students during the observation identified the ILS as “the most-preferred study space” .

### 5.3.1 Situated Within Learning Theories

The learning process where learners take the ability to assess, with or without the help of others, and that would be available by identify the nature of their learning needs and goals, and evaluating learning outcomes "(Knowles, 1972).

The literature suggested some specific features of self-directed learning such as the fact that learners can be allowed to take more duties for several choices related to their learning aims, as well as self-direction is best viewed as a feature that exists mainly in every person and learning situation (Chickering, 1987). In describing active learning two contexts for interactions have been identified: individual and social (Bates, 1995). Bates states that, “there are two rather different contexts for interaction: the first is an individual isolated activity, which is the interaction of the learner with the learning material, could be text,

computer; the second is a social activity, which is the interaction between two or more people about the learning material

## 5.4 Unplanned Learning

this relates to incedantal learning that happens at any time and in any place, in everyday at informal learning spaces.Observations also uncovered incidences of unexpected meetings and of individuals and groups meeting, splitting and re-joining. It appeared that shared learning spaces support the need for social and learning related conversations, both planned and unplanned. Some learners reported choosing spaces where they knew their friends were also likely to come (32 responses, all cases). sometimes the same students also worked elsewhere when they considered that the social element was likely to be a distraction (same 7 students were observed to work at library and the Hive, UWE UK).

### 5.4.1 Situated Within Literature

Engagement and collaboration are characteristic of constructivist view of learning that engages learners in meaningful, problem-based thinking, and requires negotiation of meaning and reflection on what has been learned" (Jonassen, 1995, p.21). Collaborative learning is aimed at enhancing critical thinking skills. According to Berge (1998) improving critical thinking skills, reasoning, and problem-solving skills is best achieved by highly structured and collaborative activities. As collaborative skills are improved the student has increased self-esteem and higher level of achievement.

## 5.5 Social Learning*:*

The qualitative data in this research demonstrated the importance of social interactions to learners, in terms of study and for relaxation. Working in close proximity to friends or peers to create a sense of community was important for students; for example, "I came in to revise, my friends were already here so I joined them" (JUST JO, Student). Observers also noticed that there were many learners working alongside colleagues and/or friends. Working alongside refers to learners undertaking an independent piece of work, but working near to or next to peers who are known to them (usually 2-3 people). The interview suggested that the quality of group work depends on the way the group is organized, nature of the tasks, diversity of participants, and the way the group is held accountable. Students tend to work more in groups outside the classroom. As they are

given the flexibility to choose the location for the out-of-class group activities, they may meet in a range of different Informal Learning spaces.

### 5.5.1 Situated Within Literature

This refers to processes of interaction where individual learns the habits, skills, beliefs which are necessary for participation in social groups and communities (John, 1968). Social learning presumes that social interaction plays an important role in learning (Miller, 1941). Bandura (1977) further developed social learning theory which suppose that learning takes place in a social context and can occur purely through observation or direct instruction. These three categories of informal learning are used to structure the literature review. Similarly, Conner (2010) discuss that the new perception of social learning heavily weighs the role of social media. They wrote that “to learn is to optimize the quality of one’s networks. Learning is social. Most learning is collaborative. Other people are providing the context and the need, even if they’re not in the room” (p.21). New social learning centers on information distribution, communion, and cocreation (Bingham & Conner, 2010).

Recent expansion of social learning has considered the impacts of the Internet and technology (Brown & Adler, 2008). The Internet has provided a sophisticated participatory medium to support sharing and multiple modes of learning whether it is formal or informal learning; people tend to offer access to other by providing access to information. The description of social learning, therefore, has changed from learning as received knowledge to learning as knowledge created through interaction with others (Brown & Adler, 2008). However, the new definition of learning emphases on the "how" instead of the "what" in learning.

Even though, in terms of learning together in informal learning spaces, there is not much information available to determine whether students are influencing each other's knowledge as they study together in informal setting. A study has pointed out that not much learning actually takes place in social facilities (Arum, 2011), however, it is unknown whether this conclusion is applicable across all social facilities and all types of learning. Given that current college students' interest in social facility is increasing (Alexander, 2003), more research is required to understand how learning, especially social

learning take place in informal learning spaces, and how current college students find value in studying in these spaces.

In summary, recent movements in education such as active learning, collaborative learning, informal learning, and social learning influence the interest in informal learning spaces of current university students. In response, Institutes of higher education have established Informal Learning Spaces (ILS), which can be found alongside the traditional classroom, within the intention of raising student participation in the learning process (McDonald, 2013).

Outside the classroom, students may continue to collaborate as part of the group project assigned by their teachers or voluntarily work together to help each other in completing class projects. However, collaborative learning is not as easy as putting several students together.

## 5.4 Students Choice of Learning Spaces

Students use many places to study. Where they choose to study depends on a number of factors. This section reviews literature on the locations students use to study including the library, other campus spaces, and off campus spaces.

### 5.4.1 Library

The interviews with students in this researchs, suggested that libraries promote learning behaviors which are important to them, and that students valued library space almost like Faculty. When examining what students were doing in libraries while there, a large majority mentioned study. Researching and group work were mentioned along with using computers or the Internet. Other things to do in the library were sleep, socialize, use time between classes, and take a library class. However there where some negative comments from the students, most common complaint dealt with the busyness of the library, other reasons cited were that the location of the library was “inconvenient” and the library was “less comfortable than home”. Also some students did not believe they needed the library to complete their work. However, the reasons cited as why students chose not to use the library mirror the reasons above. The location and environment of the library are the main reasons given for non-use. Students wanted a “strong internet connection, but unfortunately these areas lacked a sufficient number of power outlets” found “poor lighting, too quiet, too noisy, uncomfortable, puts me to sleep, and tendency to watch other people” as reasons not to use the library.

#### 5.4.1.1 Situated Within Literature

Temple (2008) referred to the library's traditional designation as the "heart of the university" (p. 233). However, the traditional library has changed; it is no longer a warehouse of books (Acker et al., 2005; Feather, 2013). Users are "finding something else of value in academic libraries" (Gayton, 2008, p. 62) such as "a 'third place'—a place away from both the workplace and the home to study in peace, work collaboratively, or socialize" (Latimer, 2011, p. 126). Because of this shift in purpose, libraries have been studied to identify use, preference, and perceptions. The quiet atmosphere as a main reason for studying in the library. Also found the comfortable furniture and availability of lockers as reasons to use the library. The availability of group space and an atmosphere of studying people were mentioned as positive influences of libraries on study.

Kuh and Gonyea (2003) found that "student use of the library has changed over time" (p. 266). Antell and Engle (2006) concluded that "more space for library users and less space for library materials is exactly on target" (p. 553) for library design. Bailin (2011) found that flexible and adaptable spaces are essential for design of spaces.

Along with the permanent change of library use, Applegate (2009) confirmed the "seasonality of the library" (p. 343) along with a preference for study rooms and groups. The library was often seen as a space for study and reflection. Kuh and Gonyea (2003) stated that, "Students who more frequently use the library reflect a studious work ethic and engage in academically challenging tasks that require higher-order thinking" (p.270). Kuh and Gonyea also found that humanities and social science students were "the most frequent users of the library" (p. 265). Libraries were frequently used by groups for meeting, studying, and socializing (Bailin, 2011; Bedwell & Banks, 2013; Hunter & Ward, 2011). Bedwell and Banks (2013) reported, "Several observations were made of individuals selecting a group study table (a large table) to work at, spreading out books, papers, laptops, and supplies" (p. 10). But "despite observations that students come to the library in groups and study in groups, the most common reasons students gave for coming to the library were to escape from noise and distraction" (Hunter & Ward, 2011, p. 266). Webb et al. (2008) found more individuals than groups in their library, but Peterson (2013) found a

mix of groups and individuals in their spaces, which is indicative of the differences between universities generlly.

Applegate (2009) confirmed the seasonality of the library with an increase in use “towards the end of each semester” (p. 344) and a drop in usage on Fridays. More, Zwanzig, Ruona, Stomberg, and Borkgren (2009) found students stay longer to study “toward the end of the day” (p. 14) and into the evening, but during the day “last minute preparations for exams or lectures” (p. 14) happen before class. How long students studied varies by school. Peterson (2013) identified “between thirty minutes and two hours” (p. 41), Hunter and Cox (2014) found students come for “under one hour or for over four hours” (p. 42), and Gardner and Eng (2005) found undergraduates spent 3 hours or less and graduate students spent 6 hours or more in the library.

When looking at why students use the library, the primary reason was privacy quietness, and a distraction free space (More et al., 2009; Peterson, 2013; Webb et al., 2008). Comfort and materials were also mentioned as why students use the library (Peterson, 2013; Webb et al., 2008). Also mentioned were the location of the library, group tables, lighting control, and power outlets (More et al., 2009; Peterson, 2013; Webb et al., 2008).

### 5.4.2 Other Campus Spaces

According to the observations, Libraries were no longer the preferred option for many students. Students were requesting informal spaces for groups, food, and social activities. Students who live on campus were less likely to use the library and study instead in their residence halls. Students schedule time between classes to prepare for later activities..

#### 5.4.2.1 Situated Within Literature

Multiple researchers identified informal learning spaces were where students go to study on campus (Harrop & Turpin, 2013; Matthews et al., 2011; Pizzuti-Ashby & Alary, 2008). McLane (2013) found that the visibility of the space was important to get students into the areas, but too much visibility hampered the use of the space. Crook and Mitchell (2012) found “open learning space (was) popular (for) collaborative work or group technologies” (p. 129). Rozaklis (2012) noted, “50% of respondents used another building on the university’s campus to work on coursework” (p. 97). Cafes, dining halls, and locations that served food were frequently identified as locations where students studied (Bennett, 2011; Harrop & Turpin, 2013; Misencik, O’Connor, & Young, 2005;

Muslim, 2011; Newbold et al., 2011; Pizzuti-Ashby & Alary, 2008; Seddigh, Hosseini, Abedini, & Lou, 2011; Thoring et al., 2012; Vondracek, 2007;Yang, 2006).

Student support centers and unions (Bennett, 2011; Harrop & Turpin, 2013; Kuh & Gonyea, 2003; Misencik et al., 2005; Newbold et al., 2011; Mehta, & Forbus, 2011; Pizzuti-Ashby & Alary, 2008), residence halls (Bennett, 2011; Kuh & Gonyea, 2003; Seddigh et al., 2011; Vondracek, 2007), and computer labs (Bennett, 2011; Bridges, 2008; Cox, 2011; Kuh & Gonyea, 2003) were identified as popular locations of informal learning. Outdoor campus spaces were also studied as possible locations of study (Bennett, 2011; Speake, Edmondson, & Nawaz, 2013; Yang, 2006), along with spaces like department hallways, campus walkways, parking lots, restrooms, gyms, and locations close to classrooms (Bennett, 2011; Chism, 2006; Cox, 2011; Harrop & Turpin, 2013; Muslim, 2011; Seddigh et al., 2011; Thoring et al., 2012). In identifying what students did in the spaces they chose, Voela (2014) found "communal spaces support an exchange of gazes as a way of getting to see what others do and doing like them" (p. 71).

The main activity happening in on-campus spaces were individual and group study (Acker et al., 2005; Ashby & Alary, 2008; Bennett, 2011; Crook & Mitchell, 2012; Lomas & Oblinger, 2006; Matthews et al., 2006; Misencik et al., 2005; More et al., 2009; Speake et al., 2013; Spooner, 2008). The other common activities were social communication (Acker et al.,2005; Ashby & Alary, 2008; Crook & Mitchell, 2012; Lomas & Oblinger, 2006; Matthews et al., 2011; Speake et al., 2013; Spooner, 2008) and eating (Lomas & Oblinger, 2006; More et al., 2009; Speake et al., 2013; Spooner, 2008). Resting, people watching, non-serious study, and quick tasks (Harrop & Turpin, 2013; Matthews et al., 2011; Speake et al., 2013; Spooner, 2008) were other behaviors identified in research. The main reason students used these spaces was for the flexibility offered in the spaces (McLane, 2013; O'Rourke & Gonzalez-Metcalf, 2011; Yang, 2006).

Some articles found that the "chance encounter" (Acker et al., 2005, p. 6) and the ability to "learn from each other... and apply their own... learning styles" (Jackson & Shenton, 2010, p. 216) were beneficial aspects of on-campus spaces. Hunter and Cox (2014) reported that, "Being around others and taking in the atmosphere seemed to inspire students to work effectively" (p. 45), a finding supported by Crook and Mitchell (2012), who cited the ambiance, and by O'Rourke and Gonzalez-Metcalf (2011), who found room size, lighting, and ventilation as important. Pizzuti-Ashby and Alary (2008) found students preferred "a relaxed atmosphere that allows them to 'escape' from the

stress of classes and work" (p. 6), while McFarland, Waliczek, and Zajicek (2008) found the green spaces on campus improved freshman quality of life and "could potentially be a contributing factor in student retention, particularly among students new to the university" (p. 237).

### 5.4.3 Off-Campus Spaces

Campus was not the only location students used to study in. The interviews suggested that Students tends to study everywhere, in city sidewalks, in coffee shop, in restaurants, in bookstores, and on playgrounds. However, the primary location not on campus mentioned was home.

#### 5.4.3.1 Situated Within Literature

The most cited location for off-campus study was a coffee shop (Harrop & Turpin, 2013; McLaughlin & Mills, 2008; McWilliam, 2011; Rozaklis, 2012). Rozaklis (2012) also found the workplace as a location to complete work. A comfortable physical environment was the most cited reason students give for why they study off campus (Antell, 2004; Dugdale, 2009; Harrop & Turpin, 2013; McWilliam, 2011; Thoring et al., 2012). Words used were *cozy*, *relaxed*, and *comfortable* (Harrop & Turpin, 2013; McWilliam, 2011). Dugdale (2009) found the availability of late hours a reason to use off-campus space. Antell (2004) found convenience and familiarity and Thoring et al. (2012) mentioned "personal freedom to do whatever they wanted

## 5.5 Interpreting emerging framework in relation to existing literature

### 5.5.1 Ownership is Key

This research found ownership of the space as one of the most important feeling in choosing a location. Students repeatedly stated they needed the space to spread out the items they brought with them; therefore, they chose locations with medium to large tables or booths where they could sit by themselves. What they did not seem to notice was that even in smaller locations, they had a propensity to spread out their bodies or their belongings to claim space as theirs. In the observations (photographs) part of the students themselves, their legs were lifted onto a chair or bench in front of them. They mentioned it

was for comfort, but it was also a sign of ownership to those around them. Even in ILS students were mindful of others around them, sometimes to distraction. However, the need to have others around and the privacy aspect of the common area locations balanced the complete ownership of space and was replaced with a more indirect ownership of space.

Likewise, unless they wanted silence, students did not notice the barriers (doors, students flow, and printers' noise) they used to help label ownership of space. These design aspects provided fences to others and enhanced the students' feelings of security. When students felt safe, comfortable, and in control of the spaces they were using they had a tendency to stay longer and work on more multipart forms of study. When a location was too warm students regularly took breaks and became distracted. Other distractions identified by students were other people and loud noises. Students preferred privacy when they were studying intensely. Other people were frequently a distraction by walking by, talking around, or talking to the studying student. To limit this distraction, students closed doors or chose locations with few people. Loud noises were also viewed as a distracting irritation. To limit this irritation, students wore headphones or chose locations with minimal noise. Students often worked within a time limit. The time limit could be caused by a due date, the time the class or another task started, or the time the room in which they were located was no longer booked or available. In these cases, the student remained sensible of the restriction and never fully engaged in hard study.

#### 5.5.1.1 Situated Within Literature

Tibbetts (2008) observes that students' perception of a sense of ownership over their space contributes to the success of ILS. Students typically spend more time in these spaces when they have the ability to change the layout of space to accommodate a variety of needs. Personal space is moveable, self-justifying, and related to culture, condition, and sometimes difficult to identify (Sommer, 1969) An early research found that male students enjoyed larger seating distance than female students (22 inches, 13 inches) and that users preferred semicircle and U shape seating (Heston, 1972).

### 5.5.2 Control of the Environment

Along with ownership, customisation of the environment was important to students. Student carried the sounds they wanted into the environment with headphones and Air Pods. When they did not bring sound, they found locations with ambient sounds for slight

distractions. Students only seemed to notice distracting smells or temperatures. If the smell or temperature was disrupting they tried to move to another place for their personal comfort. Students similarly controlled the location they use by choosing locations by windows for the natural light. They adjust the environment of those spaces by adjusting curtains and blinds to control how much light came through windows. By making minor adjustments to the location students were able to control the environment. Students often noticed when music was not present in a location. Students indicated that music helped them ignore surrounding environmental factors that could distract them. When in public locations, students used headphones to listen to music and not disturb others around them. Headphones were brought with them in their backpacks, along with other items they needed for study.

### 5.5.3 Furniture and Technology ( flexibility)

Observations in this research suggested that, desks and tables were classically large enough for students to spread out their tools and still have space left around them. Chairs and couches were typically cushioned with smart seats to provide comfort for longer periods of usage. Couches provided the added option to lean in and relax in the space while working. When the couch was in ILS location, the capability to lounge or raise their feet allowed students to own the space and feel more comfortable. laptops, computers, books, notes, writing instruments, printers, and outlets. Students typically brought these materials with them if they were studying in a location that was not theirs. Notes and books were essential elements of study because the students were learning or using the information stored in books and notes. Students used writing tools, laptops, and computers to support in the production as proof of understanding from what they were learning. Pens, pencils, highlighters, and laptops were typically brought with them. Computers also afforded the students the ability to communicate but they were typically provided by the location. ILS locations also provided printers, which were used to create a physical copy of assignments or a homework. Sometimes the lack of an item, such as printers, scanners, and computers, drove students to locations. Most students owned laptops, which were frequently shown in the images, but few owned printers or scanners. In many cases, students went to a location, such as the library or ILS, to have access to printers and scanners. Occasionally, students brought their personal laptop, but worked on a university computer to be able to print the items they were completing. Fixed PC were also used when students chose to leave their laptops in their residences and then later found they needed to get online or finish an

assignment. The absence of equipment often caused students to seek a location not originally chosen for study. Coloured walls and furniture in a variety of locations allowed students to have an essential need in an effort to increase study time. When a student noticed the verity in colours, it was because the location was new, or the coloured had changed in some way. Colours were mentioned by students to enjoy a space, and used by campus locations to inspire or make the space more homey, and making it more comfortable. When a student was familiar and comfortable with a space, the colours in the location disappeared into the background.Access to IT resources. This usually meant PCs, but also printers, large screens, and access to the internet and software.

#### 5.5.3.1 Situated Within Literature

Learning spaces should be student-centered and providing the necessary technology to meet student and "subject" needs (JISC, 2006). The informal learning space must be flexible in terms of the time that it can be used by students. The use must also be flexible, that is the space must provide conducive seating facilities with food and beverages served in the area and equipped with pervasive information technology facilities (Acker & Miller, 2005).McLaughlin and Mills (2008) found students wanted to study "in a relaxed, informal setting" (sect. 3 para. 10), which was supported by other researchers (Acker et al., 2005; Ashby & Alary, 2008; Bailin, 2011; Bedwell & Banks, 2013; Ibrahim & Fadzil, 2013). Another feature identified by students was a space that was flexible so it could be used for multiple purposes (Acker et al., 2005; Bailin, 2011; Ibrahim & Fadzil, 2013; Koski, 2011; McLaughlin & Mills, 2008; Parisio, 2013; Souter, Riddle, Sellers, & Keppell, 2011; Twait, 2009; Uline & Wolsey, 2011). Riddle and Souter (2010) identified flexibility as "'repurposing' [which] acknowledges that different activities go on in learning spaces over the course of the day, the week, the semester, or the year and depend on many different factors" (p. 4). Harrop and Turpin (2013) stated that, "Spaces can therefore have multiple identities, with learners having differing and often contrasting views of a space and how it should be used" (p. 66).

Technology or the ability to be mobile was the most frequent characteristic identified with convenience. McLaughlin and Mills (2008) and Levine and Dean (2012) all recognized

that students have grown up with technology, which makes them prefer spaces that are technology-abled (Acker et al., 2005; Koski, 2011; McLaughlin & Mills, 2008; Parisio, 2013; Rozaklis, 2012). Also identified was access to computers (Bailin, 2011; Hunley & Schaller, 2009), power outlets (Peterson, 2013; Riddle & Souter, 2010; Spooner, 2008), and Internet and/or wi-fi access (Ibrahim & Fadzil, 2013; Koski, 2011; Nixon et al., 2008; Riddle & Souter, 2010; Souter et al.2011**).**

### 5.5.4 Crowding and Accessibility

Accessibility was understood as public access availability. A public place was one that could be used by students, instructors, staff, visitors, or anybody outside the universities. On campus, a place known as a "student's place" attracted more students than a place reserved for certain groups of students or for departmental use (24 responses, all cases). For example, the social space at the University of Brighton was well known as space for students, visitors, and staff. Students tended to go towards these places because they knew they were designed for them and they could "do most student-related activities without restrictions" (Brighton UK, Student). Twelve students explained that they chose to stay in ILS on campus rather than working in other publicly accessible spaces in the city, as one student described "I would rather come to the ILS to study instead of going to the downtown coffee shops" because they felt entitled to use college spaces (UWE UK, Student).

Throughout the video records, in all cases, it was clear that the ILS were used the most during the time between lectures and lunch, with the highest usage being recorded during the 12.00-1.00 p.m. observations. These spaces were full at such peak times. This was also observed in other spaces, mostly at open labs in Jordan or Hives in UK facilities.

#### 5.5.4.1 Situated Within Literature

The amount of density affects the physical movement of activities in the ILS, nevertheless, crowding affects performance depending on users and settings (Gifford, 1987) observations of crowding varied by professional perspectives; the relationship between crowding motivation and achievement was reasonable level of crowding was more useful to learning; and moderate level of density was more beneficial than low or high levels of

density. Therefore, the awareness of crowding and density may affect student's choices for informal learning spaces.

### 5.5.5 Territoriality

Students who who have been observed in this research enjoy studying in informal learning spaces, and they have both similar and more context-specific perceptions about territoriality that affect their choices of informal learning spaces, it was notised that they were have unseen limitations surrounding them where strangers are not welcome. Territoriality is the act of inhabiting space and keeping the social order of individuals using the space to avoid personal space overrun, Student accepted actions to reach their freedom because keeping the freedom of choice was an important inspiring aspect.

#### 5.5.5.1 Situated Within Literature

Privacy by Christie (2009) on activities in a cafe exposed five different findings about privacy and territoriality in the digital age:

1. Individuals operated individualistically, silently, and surround themselves with their belongings to get their territory.
2. Individuals created their own space with technical devices (they did not remove their headphones while communicating).
3. Individuals do not mind taking up social space for personal activities.
4. Individuals acted similarly in private space as in public space.
5. It was informally suitable to regularly use public space for personal activities

Hunter and Cox
(2014) reported that, "Being around others and taking in the atmosphere seemed to inspire students to work effectively" (p. 45)

### 5.5.6 Noise

Noise was observed to increase divert attention, and raise worries. However, noise was also observed to increase levels of awareness and attentional discrimination, and that improves performance. Nonstop noise or background noise is a worry in informal learning spaces. Low frequency noise was found to restrict performance of particular tasks such as

reading and increase annoyance compared to mid frequency noise, The majority of participating students who were observed preferred quiet and calm, but not silence and solitude, while the rest of them enjoyed some noise and distraction.

#### 5.5.6.1 Situated Within Literature

Nevertheless, investigators have noticed that students, seem to enjoy noise (Advokat, 2011; Bennett, 2007; Head, 2011). Bennett (2007) stated that college students wanted study at places that were free of distractions, but with some level of noise and movement. Numerous students were observed listening to music while reading (Head, 2011). The students also mentioned that headsets and music are useful to block disruption from the atmosphere (Advokat 2011). This shows that noise interruptions from the informal learning spaces may play a role in students' choices for informal learning spaces.

### 5.5.7 Light and colour in ILS

Lighting and natural light were frequently described by students as important (40 responses, all cases). Outdoor spaces, spaces that replicate an outside environment, views of outdoor spaces and fresh air were also frequently referred to as a preference (Image 1). The students in this study also reported performing better under natural light conditions. One student had this to say about the natural light

Participants thought that windowless seating caused them to *"feel down"* (UWE UK, Student), *"upset"* (JUST JO, student), and *"cramped in"* (UWE UK, student). The students, due to feeling uncomfortable, did not favour places without natural light (66 responses, all cases).

Some students during the interviews said that lighting had no effect on their activities (26 responses, from all universities). However, many students believed that background lighting had a direct outcome on their mood and believed it could change their performance (54 responses, from all universities). Based on these observations and interviews lighting has a very powerful and essential role on students' learning performance in learning spaces. According to the literature; lighting and the way of applying that in learning places is dependent on the students' activities at ILS. Lighting control to avoid discomfort and glare in all different types of lighting is very important.

#### 5.5.7.1 Situated Within Literature

Natural sunshine is significant for students to feel relaxed and ready to learn (Haijing,2011). Excellent indoor settings can affect wellbeing and productivity improvements for all users of the building: students, staff, and community. Creators and projects owners can work together to provide best learning environments that prevent the

negative effects of insufficient lighting, absence of daylighting and poor air superiority (Haijing,2011).Light and color has been mentioned in the research on settings for learning, but, the connotation between light, color and learning, performance and wellness are not very strong Connotation (Gifford, 1987).

This gave an idea that variety lighting may be good for different types of learning activities. Furthermore, day lighting or electric lighting did not affect task performance, however, it affected the mood of users (Boyce, 2003). Daylight was most desired by the learners as it shaped better moods (Boyce, 2003). This advises that lighting; especially daylight may be a factor that affects the students' choice of informal learning spaces. Lighting was another feature mentioned by students as important for study. Many researchers found good lighting a necessity (Acker et al., 2005; Hunley & Schaller, 2009; Webb et al., 2008) and control over lighting was mentioned by Twait and Webb et al. (2008). Yang (2006) found "students tend to seek out large windows when studying" (p. 91) and natural light was identified in multiple articles (Hunley & Schaller, 2009;Koski, 2011; Riddle & Souter, 2010; Souter et al., 2011; Twait, 2009; Yang, 2006).

Windows were a good way to see a natural view and the landscaping of the campus. Yang (2006) found that landscaping was seen as organic, non-oppressive, calming, and relaxing. When looking at where students preferred to go outside, Speake et al. (2013) found "students do not use the green periphery of the campus, and that their responses focused on green spaces immediately surrounding university buildings" (p. 27), which spoke to the convenience factor of spaces. Ashby and Alary (2008) found that students identified the "physical beauty of the campus" (p. 11) as important.
. Also, students feel and act well in a place with good lighting quality. The best lighting quality comes from the combination of daylight or natural light and artificial light (Erwine, 2002). Light sends a visual message to people's minds which can affect people's motivation levels and moods. Any changes in people's moods can be a cause of physical problems or health. Therefore, learning places should be designed in a way to meet the varying learner needs (Cayton, 2009).

### 5.5.8 Food

A feature identified within the realm of comfort was the ability to have food and drinks. The ability to eat and drink in the space was mentioned (Acker et al., 2005; Hunley & Schaller, 2009; Webb et al., 2008), along with the ability to make or purchase food (Harrop & Turpin, 2013; Souter et al., 2011; Twait, 2009). Seddigh et al. (2011) found that, "Sixty-three percent of the respondents mentioned snacks or drinks as helping them to focus, either alone or with other focusing aids" (p. 476).

## 5.6 Informal Learning Activities in ILS

Informal learning was through mix of diversity of activities: revision, reading, quiet conversations with others, group work and socialising. Different learning tasks ideally required a particular sensory landscape. Students mentioned through the interviews different temperature, noise, and privacy in different locations and variations at different times of day. These findings reflect that space is important to learning. The learning atmosphere, to adapt seems to be designed partly through the essential architecture, relatively by furnishing and layouts, but also actively by the students transform the space themselves.

## 5.7 Learning Spaces for Jordan University Cases

This study found the university's library were the only accessible designed location for students to study in Jordan universities, and that was outside their classrooms. The library offered silence, privacy, and bookshelves as walls. Traditional desks and chairs were mainly used for research and homework when the students felt focused, encouraged, and motivated. However, the library caused some students to be uncomfortable because the space was only for quiet study and only for individual studying. As such, there were shortage of furniture, equipment, natural light, coffee shop, and social atmosphere of the library's, which prevent students to have comfortable, suitable, social, and encouraging learning space. However, some students also felt uncomfortable with the number of people in the library. Some students found the warm temperature and quietness distracting and isolating. The campus as a whole in Jordan universities did not offer a variety of environments in multiple options. This prevent students to choose the best location based

on the design aspects they have mentioned in the interviews. Students in Jordan universities also did not offered equipment and furniture to allow for best study. Therefore, this study provides support for universities to make investments in renewing or building new ILS.

Students settled to locations with windows and natural light. Light was necessary to see what the student was working on and natural light was viewed as more comfortable than luminous light. While inside buildings, students often chose seating that provided a view of trees and nature, which provided a calming effect for some. Being calm allowed a student to concentrate on the task. Sometimes students studied outside, which provided natural light, trees, nature, and shade. Students in Jordan universities typically studied outside for a change, but they also mentioned that the location was relaxing. When they were outside, they typically sat under a tree for shade, which helped reduce the temperature. When students studied in automobiles, they ran the air conditioner to mitigate the outside heat. In addition, students sought cold temperatures because they said it improved focus and concentration. Increased focus allowed the students to stay on task longer without distraction.

Benches were typically used in hallways and were identified by students as hard. This made them uncomfortable. Students therefore spent minimal time on them, preferring instead to move into the classroom when it became available. The opposite was true of booths and very comfy couches in the UK universities. They were found to be too comfortable. Students would move to another location with a chair and surface or couch to avoid the distraction of sleep.

## 5.8 Recommendations for Practice

The designed ILS at the UK universities where the study took place recently upgraded its facilities like the University of Brighton, providing evidence that universities can improve their environments to improve student use. This university's developments to the building and campus setting have worked to attract and keep students on campus to study and use the facilities. If Jordanian universities create spaces with the identified design aspects, students will be more likely to study in these locations. The first suggestion to update or create better ILS settings. If the university does not have the financial plan necessary for

this upgrade another option is to create small spaces across the campus. The research indicated that ownership and flexibility are important design aspects for students when they choose and stay in a location for study. Therefore, the researcher suggests universities create rooms in each campus building that are set up with the same furniture, equipment, and colour scheme to provide students with study locations across campus that provide the same feelings of security and flexibility. The same colours and furniture would also be used in the ILS to help students in recognizing these areas as comfortable spaces to study.

A variety of furniture should be in the study locations, including booths, chairs, couches, tables and chairs. Movable chairs were preferred to fix seating. The one person tables must be wide enough to hold many objects, such as books or laptops, because students chosen locations where they could spread out their items to show ownership of the space. Printers and scanners must be accessible in each location. ILS need to provide the impression of privacy, with room dividers, high booths and plants as separators. Study environments need to be controllable for the students. A cold temperature was connected with focus, but colder ILS should allow students control over the sensor or provide covers for student use. In the same manner, warmer ILS should provide air conditioning for students to switch on if they feel it is too warm. Large windows for natural light are chosen in study locations, but in spaces that cannot have windows, use a variety of artificial lighting with no fluorescents, such as lamps, it is preferable to lower the intensity of the lighting. To increase student comfort, produce light smells into the background. Students preferred natural smells. A low static sound was favoured over music because music preference was very personal. Accordingly, the sound of air conditioner could be used to increase concentration without disturbing study.

## 5.9 Implications

The findings of this study inform the fields of facility design, educational leadership, and student support. Study findings have implications for practice and leadership in higher education with particular emphasis on recruitment, retention, and fiscal management. Because most campuses do not have one person responsible for all spaces of the university, this study was not only important to library managers but to executive administrators, college and department administrators, student service administrators, and facility managers.

## 5.10 Practice

This research found that ownership and familiarity, not accessibility, were key design aspects mentioned by students. While accessibility was noticed in a location, the ability to make a space theirs was what kept them in a location. Spaces that had been used before and found to be supportive were returned to regularly. Universities can create branded rooms in each building so students have a familiar location to go to no matter where they are on campus. This will increase the amount of time spent in these study locations and improve study. This research also found that disliked spaces would be used if needed features

of the area outweighed the negative affordances of the site, but the time spent in the location may be reduced. Students used what was available on campus, but they did not stay long in locations they found uncomfortable. With little money, spaces in current environments could be rearranged to create spaces students would use more often. This would keep them on campus and increase learning. These features could be used in recruitment to show support of learning and the university's acknowledgment of student needs.

## 5.11 Leadership role

Universities can attract and keep students on campus for study with minor amendments to learning spaces. Administrators can assign budgets to improve the current ILS in the UK universities or to create multiple locations across campus in Jordan universities. By doing this, the university increases the impression of learning spaces for the students, the classifying of the universities, and maintenance of students. In the end, spending money on minor adjustments to various spaces saves the university management costly resources on new structure and broad remodelling.

## 5.12 Recommendations for Further Research

This study used observations via photographs and videos to gather data. Although this method produced significant results, the interviews created data that could be better

examined via another method. Therefore, the researcher suggests following researchers might using interviews using fewer students. In-depth interviews of students about the locations they chosen, feelings, and preferences.

This study examined the ILS that had undertaken wide construction and renovations with UK university cases and undersigned ILS in Jordan universities. This limitation was chosen to provide information on universities that recognize the need for better ILS. Students attending universities that do not recognize the need for better spaces shows different results. Therefore, the researcher suggests future researchers study institutions with fewer renovations and new buildings. The researcher suggested creating similar study spaces across different faculties in a campus to provide understanding and to encourage more students to study on campus. A recommendation for research is to examine schools with designated ILS in multiple universities that are set up similarly to determine the effects on students and the amount of time they spend on campus.

## 5.13 Interviews for initial validation with Jordanian Architects:

In June 2019 I had one to one open interviews with six Jordanian Architects, these interviews were longer than one hour with each architect. In order to initially validate my framework to design Informal Learning Spaces ILS I had interviewed Jordanian architects who have been involved in designing learning spaces in the Jordanian universities. Information sheet and consent form were handed to each architect in the start, the purpose of this document was to specify the terms of their participation in the project. If they are happy for me to interview them, then they need to read the information about the project in the sheet and confirm that they are happy with the information they have been given by ticking the boxes in the form.

Firstly, I presented my framework for ILS to the Architects, that was followed by description of the research idea, aims, objectives, methods and process, then we discussed the case studies for universities in Jordan and the UK, the open interviews were focusing on three main ideas, firstly to check if the aspects in the framework are good fit for Jordanian universities and if there is a need for any modifying, secondly, to discuss the challenging that could face the design of ILS in Jordan universities, thirdly, to discuss the cultural differences and climate differences in both countries which could apply to the framework to modify some design aspects, the following headings present main ideas in each interview with these architects.

### 5.13.1 Interview with Architect Thaer Qubaa: Industrial Architect and Lecturer

- His experience as an Architectural Lecturer at German University in Jordan, he said the ILS is a must at universities, as for his case he needed this place to meet with his students for informal meetings, he does not have an office at the university as he is an industrial Architect.
- He mentioned that Architecture students need these spaces the most also, they have special needs as they need bigger tables, plotting machines, and model making labs.
- He described the ILS as soft and fixable spaces.
- Architecture faculty should be open 24 hours as architecture students need these spaces at night.
- Students learn from each other more than they learn from the lecturer.
- In Jordan we have public and private universities, private university they have the chance to have these places more as financially they are supported, whereas in public universities they will need many stamps and signature to get a new chair.
- The main challenge and limitation for ILS in Jordan universities is the financial support.
- The more you define and limit the ILS the more it might fail, as the ILS should stay fixable and undefined and give students the freedom to create their own space.
- Plug sockets are very important to students to charge their laptops.
- Natural light and the view are very important for ILS.

### 5.13.2 Interview with Architect Dr Rasem Badran: Jordanian and International Architect

-The problem in our cities and buildings that they are seen as a functional or commercial design only, the social use and benefit of these buildings have been ignored.

- Himself as an Architect has been always trying to create a liveable value for each space by dividing the solid masses.

- He designed some open courtyards as ILS at German University in Jordan but that was not applied or followed by the university.

- He got an international American award for his design at Alreyadyeh museum in KSA and that was for the design of open courtyards at this museum.
- Closed corridors will cause annoying noise, however, open courtyards will be better.
-ILS in Jordan should be outdoor oriented as we have excellent sunny weather most of the year.
- He suggested to add “Humanising Learning Spaces” and outdoor learning spaces to the framework.
- The biggest limitation for ILS in Jordan Universities that most of them are commercial.

### 5.13.3 Interview with Architect Bashar AlBitar: Jordanian Architect

- Himself and other architects in Jordan as well usually use the space program and design depending on the ratios there, ILS are not existing yet in the spaces program for university’s design in Jordan.
- There is always a misconception between architects and heads of universities as they always see the circulation area as a waste, they think that architects just wasting the space with circulation area to increase the cost.
- Architecture students needs ILS as they need to work as groups in their projects.
- It is expected that the ILS will be misused in the beginning if it will be designed at Jordanian university and there should be camera security system to prevent the misused.
- There are some commercial ILS in Jordan outside universities where students can meet and work there but they have to pay hourly for staying there.
- Student unions at Jordanian universities and group of students should be requiring the ILS spaces in order for administrations respond.

### 5.13.4 Interview with Architect Ayman Zuaiter: Jordanian Architect

- The building owners should allocate ILS in the space program; however, most owners just focus on the commercial benefit and profit only, but they could be convinced by the academic view of ILS and marketing view.

- There is some learning lab/ study lounge outside universities in Jordan as a making up for ILS at universities, where students can go there with their laptops and have coffee or tea with a light snack and work there.
- When applying ILS in Jordan universities there is no need to separate between males and females but it will be useful to have a common space for both genders and two other separate private spaces for males only and females only as there is preference for some students sometimes to stay with the same gender.
- The framework should consider the outdoor spaces more, it is recommended to open the indoor ILS to outdoor like a terrace for example.
- We always have problems and tension between students in Jordan universities, these ILS could open dialogue between students and reduce the tension between students in order to communicate peacefully.
- ILS at Jordanian universities should be provided for accreditation as a necessary requirement.

### 5.13.5 Interview with Architect Bilal Hammad: Jordanian Architect

- He is familiar with ILS as he designed an ILS outside universities in Jordan as a study lounge, he said it is not a very successful business as there are many study lounges outside universities now and it is very competitive, but he is the owner of the place so he does not have to pay the rent.
- In the meantime, we do not have ILS inside universities, as the administrations are not architects and do not release the need of ILS at universities.
- ILS is a necessity for students.
- It is difficult for architects in Jordan to make a change for the design of current universities as universities in Jordan are closed entity and it is difficult and complicated for architects to enter universities.
- In his view he sees the ILS more successful in urban universities rather universities outside cities as students will not use these spaces for long time as they need time with transportation to get back to their homes.
- The framework should focus more on outdoor spaces.
- Equisetic panels are important to prevent Echo in ILS.
- Plug sockets at ILS should be universal.

### 5.13.6 Interview with Professor Shaher Rababah: Vice President of Hashemite University and Jordanian Architect and Lecturer

- ILS is important and it supports the Informal learning Spaces.
- There is a need for Technology support in order to have a smart campus.
- WIFI is a platform for application of smartness.
- Safety is very important for ILS and should be under comfort in the framework.
- In Jordan universities they realised the need for ILS in the landscape at universities but ignored the inside ILS.
- Economic wise, ILS cost a lot for designing, furnishing and equipment.
- ILS is not existing in the space programme for universities in Jordan.
- Control and regular cleaning for these spaces are very important.
- There is no need to separate genders at ILS as we are modern Eastern in Jordan.
- We need to provide smart ILS by following the guides to get smart learning, smart building, energy efficiency and water management.
- Most Jordanian Universities are located in harsh environment, although the landscape is designed nicely, students will run away inside the buildings, we currently only have corridors inside which are not designed for over flow, this creates a serious problem when students leave the lecture halls same time while other students coming from outside.

## 5.14 What we learn from Covid 19?

A research published in WILEY library entitled “Audio peer Feedback to Promote deep Learning in Online Education investigated the relationship between providing and receiving audio peer feedback with a deep approach to learning within online education” stated that students may be supported by online audio peer feedback as a method to choose a deep approach to learning, (Renée, March 2019).

However, the University of the West of England (the researcher’s university) decided to continue to use the same blended approach of online and face-to-face teaching that has been in place since the beginning of the term. Students are expected to continue to engage with your timetabled activities and not move out of your term-time residencies. Online lectures will take place where it involves large groups of students and follow the government’s social distancing rules. For example: they have made the decision for all lectures to happen online for Teaching Block : Autumn term, due to their size and it being

extremely hard to manage social distancing with large groups of students. Lectures will be enabled through the use of technology so that students can share content with a large group without the need for social distancing. It means that students are able to view the content more than once and learn at their own pace having the resources available to go throughout their course. Face-to-face teaching  are activities such as seminars, small group sessions and practical elements of courses. These will take place face-to-face on campus to allow for discussion and interaction with your academics as long as government guidance allows for this.

## 5.15 Using studying spaces during Covid 19

Jordanian universities decided to move to online, while in the UK university they decided to use both blended approach of online and face-to-face teaching. In UWE university students have to wipe down all the surfaces they use before and after use. This includes the monitor, keyboard, mouse, desk space, chair, telephone/headset etc.  It is essential that students do this before you sit down.To maintain social distancing rules and your safety, the numbers of occupants using an area may be ‘capped’. Where possible students been asked to refrain from using printers and other shared devices. If necessary to use a printer, students should wash their hands or use sanitiser from local stations before each use. Floor space in laboratories, workshops are marked or managed to ensure that social distancing is maintained around equipment, work benches .

## 5.16 Summary

A significant percentage of a university’s budget is spent on services, insurance, and maintenance of campus spaces. Even today, the majority of students and faculty meet on a campus to exchange knowledge. University campuses are essential to a
student’s higher education. Therefore, university is responsible to maximize the spaces they have to draw more students onto their campuses and to keep them there. This research examined the ILS students used for study and the students’ perceptions of those spaces. The data analysis revealed a number of design aspects. Design aspects that shows student and the location interacted with the designed ILS to influence the studying activity. This combination of design aspects produced a clear understanding that while no space was perfect, locations could be improved for student comfort and accessibility to enhance their study activity and learning.

Students preferred locations with a variety of design aspects affecting to their learning atmosphere, the objects they used to study, and the objects they wanted to have around them. A complete list of design aspects and their explanations were provided in Chapter 5; however, a few design aspects deserve recognition here. A variety of furniture was necessary because students will choose how and where to sit dependent on how they feel, how much time they have, and the location's accessibility. This was also true of lighting, smell, and sounds, although students often bring their chosen sounds with them. Some design aspects were so rooted in the students' study behaviour they were no longer acknowledged unless they were absent, like printers, laptops, and Wi-Fi. If there were not enough in a location the students would seek out a different space or try to expand the space with personal items to increase the positive aspects of the setting.

The findings show that the majority of students in the UK universities, use the Informal learning spaces. The study finds that majority of the students use Informal Learning Space regularly and good number of students feels Informal Learning Spaces correspondent to library. Additionally, the research released the fact that students use informal learning spaces for academic purpose. And furthermore, most of students feel that library plays an important role in making them to use informal learning spaces for academic purpose.
Although the study is narrowed to design a framework for ILS to be used in Jordanian universities, results are not limited to this environment only and could be generalized. However, considering the worth of Informal Learning Spaces in academic setting, it is suggested that there must be some more comprehensive studies especially be conducted in a comparative nature covering some more academic institutions together to know the students' opinion and behaviour regarding Informal Learning Spaces.

The researcher drew five main design aspects from the analysis of the data. What creates an imperfect space was the interface between the students' personal needs, actions, and feelings and the design aspects in the ILS. Students wanted to own the spaces they used to increase their personal comfort. They achieved this by creating a space around them that they claimed with their bodies and the belongings they brought with them. Comfort for students was also enhanced with the capability to control the location. They did this by selecting the location based on personal desires and combining their personal preferences, such as music, into the environment they chose. Lastly, the results of the study showed that students preferred to study in the designed ILS when they were on campus. If a university

allocates money to renew or design ILS with an appropriate mix of comfort, sensory stimulation, flexibility, technology support and decentred-ness. However, if this is not an option, a less costly designed ILS was also outlined.

# Chapter 6

# Conclusions and Recommendations

## 6.1 Research summary

This research investigated the spaces students used in studying outside of class time via qualitative methods using architectural analysis, photography and interviews. Chapter 1 contained an introduction to the research through a description of the background, purpose, approach, significance, delimitations and limitations, and key words of the study. The problem was identified as a lack of clear understanding of learning spaces on university campuses and how students used them.

Chism (2006) ILS framework helped this research by providing the initial theoretical framework for the study and the grounded theory guided the data analysis. This information is anticipated to assist administrators and architects in creating active learning spaces for students to enhance retention and enrolment. A review of relevant literature related to this study was presented in Chapter 2. Areas discussed included the influence of space on student engagement and achievement, locations identified through research affecting to where students study, the characteristics of spaces students use. Spaces included in the literature review were residence halls, lounges, stairs, and corridors.

## 6.1 Research Summary

The aim of this research was to develop a framework for the design of Informal Learning Spaces to facilitate Informal Learning within Arabic universities based on recent developments in UK universities. This has been achieved by meeting the research objectives set out in Chapter 1 and could be achieved by completing the following tasks:

### 6.1.1 Critical Literature Review:

- Directing through literature review about: Informal learning, informal learning spaces, learning theories, active learning, collaborative learning, Self-directed learning, Incidental learning, Socialisation, informal learning spaces their definition and effective design and efficient ways to address these designs.

### 6.1.2 Developing and Validating the ILS Framework

- Developing a new classification system for the ILS into a Dynamic framework that facilitates informal learning and meets students' requirements.

- Analysing and coding all the observations and the interviews, by generating a framework which meet students' needs and then into the more detailed, satisfying requirements.

- Further developing in detail and presenting the initial Chism framework for the purpose of validation by architects and administrators in Jordan , through interviews and cross checking with the findings and the literature .

- Revisiting the initial Chism Framework and updating it in several iterations, based on the findings of the validation process.

### 6.1.3 Validating the ILS Framework:

- Developing ILS Framework that is aimed at facilitating informal learning for all types of construction projects by users with various levels of expertise and experience.

- Validating the ILS framework with different groups of participants (architects and administrators) that represent multiple roles in the construction industry, and with different levels of experience in the industry. Conducting interviews to define the weaknesses and strengths of the ILS framework in comparison with the current status of Jordanian universities see 5.13 chapter 5 for detailed validation interviews with the architects.

- Reaching the final results and recommendations for further research, architects, and administrators, work on the Chism model and Framework that has been presented in this chapter.

## 6.1.4 New Validated ILS framework for Jordanian Universities

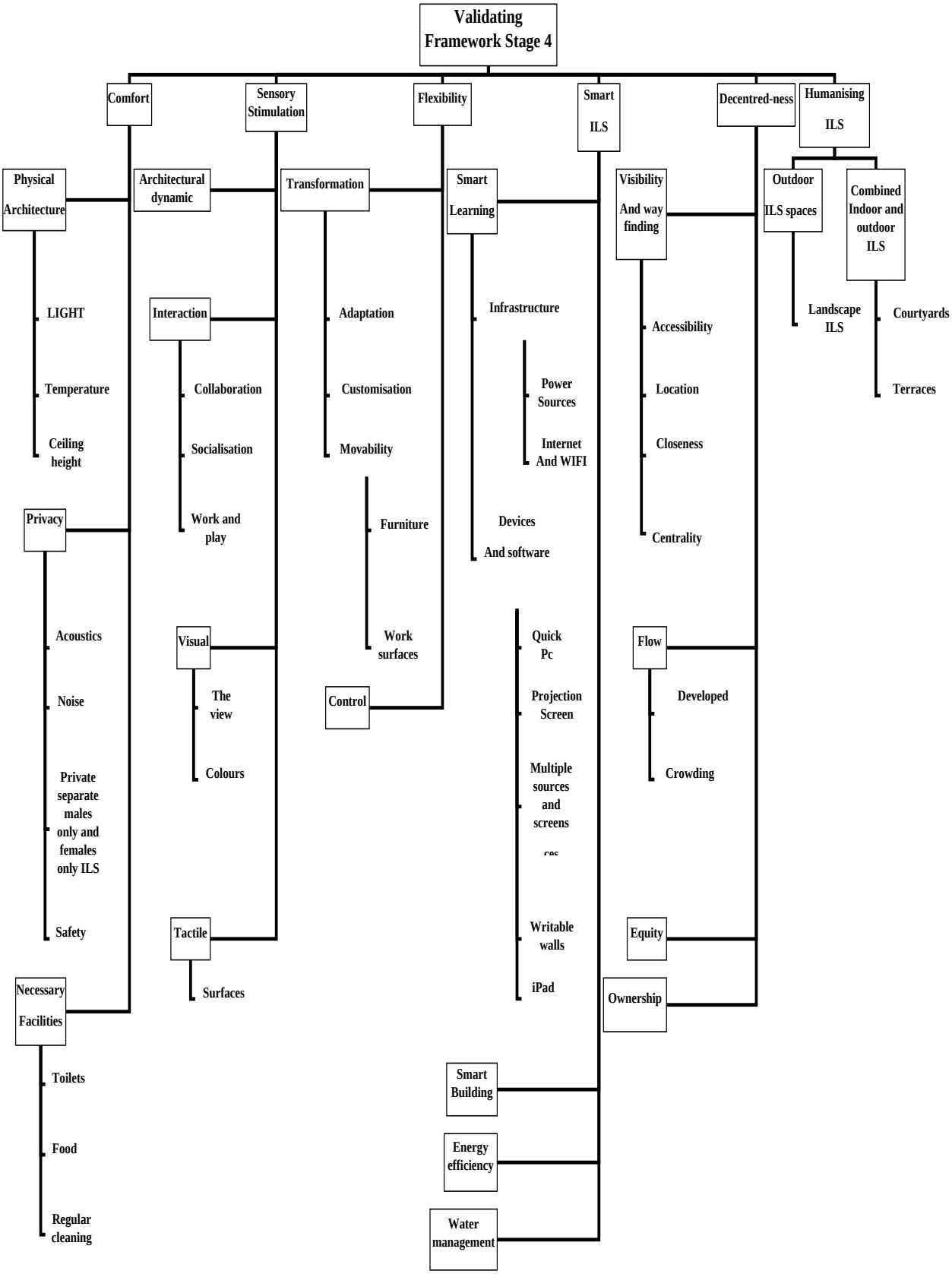



Figure 6:1: Validating Framework

## 6.2 Achieving Objectives

For this research to achieve its aim, which was to develop a framework for the design of Informal Learning Spaces to facilitate Informal Learning within Arabic universities based on recent developments in UK universities, a set of 6 objectives were formed and those were achieved step by step during this research. The achievement of the objectives is illustrated through the key findings presented in the following sections:

### 6.2.1 Achieving Objective 1 'To define and describe informal learning under the key fields of self-directed learning, incidental learning, and socialisation.'

To achieve this objective an extensive literature review was conducted on what 'Informal learning' means and refers to in this particular research. And how proper identification of IL leads to the delivery of successful ILS design. The research especially examined the importance of defining IL under the key fields of IL and these fields were identified from the beginning of the research, and how good identification of ILS fields play a significant role as an essential success factor of ILS projects. This research also included the different definitions and categorisations of IL fields, in addition to the difference between 'self-directed learning', 'incidental learning', and 'socialisation' which has proven useful when developing the ILS Framework and categorising the design aspects.

### 6.2.2 Achieving Objective 2 'To define and describe Informal Learning Spaces and determine the relationship between them and Informal Learning.'

For this objective, the expression ILS was defined in terms of its relationship to IL in design projects and specifically as a corner stone for facilitate the IL in the literature review and discussionchapters, the existed ILS in the UK has been described and analysed, from the beginning of the project until the delivery of a full and complete ILS framework. Also, the proper specification of IL was explored and the important role IL plays in the success of ILS design, in addition to the sources of literature needed for a completed detention for ILS. Furthermore, a critical review was conducted for current ILS in the UK, in identifying their features and design aspects and achieve lessons learnt that were valuable for the development of the ILS Framework. After achieving those two objectives, it was clear that there seemed to be an urgent need in the Jordanian universities for an ILS Framework due to:

- The vital importance of defining proper IL in the success of ILS in the UK universities.

- An evident lack of research on ILS that are clear and understandable for all types of users and that can assist them in successfully designing complete ILS in Jordan universities;

- Currently available approaches to developing ILS make it easier for designers in Jordan and administrators to effectively and efficiently define their requirements, mainly due to the sheer volume of unorganised information.

### 6.2.3 Achieving Objective 3 'To identify good practice in the design and use of Informal Learning Spaces in UK universities.'

Based on the literature review and the fulfilment of the first two objectives, it was possible to identify the good practise in the design and use of ILS in UK universities to contribute to the success of the ILS framework, which is one of the aims of this research. The initial framework presented two main concepts of the ILS framework, which were the classification of students' needs and related rations into main themes and sub-themes, and the concept of the breakdown of design aspects starting from the identified high-level needs, until a set of satisfying needs. After identifying the concepts used in the framework that will support the specification of the completed ILS, this objective covered the presentation of the framework using grounded theory. The validation of the framework took place with Jordanian architects. The validation criteria were set to evaluate the framework in terms of the categorisation of design aspects, the quality of students needs that have been reached, the understandability of the process, and the completeness and generality of the produced set of the ILS framework.

Although the framework scored high points in each of the criteria in the interview with the experts, the interviews allowed participants to give more intricate feedback. Feedback on the framework included the need to add additional needs than the ones already reached and elaborate more on some of the existing needs by producing further design aspects that could be used exclusively for Jordan.

### 6.2.4 Achieving Objective 4 'To identify the current nature and use of non-designed Informal learning spaces in Jordan universities.'

Based on the observations for the non- designed ILS in Jordan universities, students been adapting with the non-designed ILS, but it was obvious that they were not satisfied as there were a lack of the furniture, technology, and studying materials.

### 6.2.5 Achieving Objective 5 'To develop an understanding of the way in which existing spaces in the UK and in Jordan are currently used for informal learning based on observations and interviews.'

Findings verified how students used ILS on both countries for learning. Environmental and cultural diffrences have been backgrounded using the grounded theory as well. This research used that to develop the Framework to design the ILS.

### 6.2.6 Achieving Objective 6 'To develop a framework to guide the design of good practice Informal Learning Spaces grounded in the literature, and empirical observations and interviews.'

Findings of the qualitative observations and interviews, were aligned and cross checked with the existing literature to design a framework to design the ILS, and that was by using the grounded theory and developing the Chism model.

## 6.3 Key Findings

Key Findings; were either reached through literature review, or through contact with the architects and administrators during the validation process.

Key findings from the critical literature review included:

- There is a need in the Jordanian universities for a framework that will enable the architects in designing ILS in a clear and understandable way.

- Update and review should occur on existing standards and practices due to the confusion it creates for each university in Jordan due to the need for these spaces in Jordanian universities.

- There is not currently one single comprehensive source, from which architects could produce a complete and comprehensive ILS.

Key findings gained from the interviews, and direct contact in general with the architects and administrators included:

- Existing informal learning spaces standards do not sufficiently guide in a step by step clear process in defining.

- The existing categorisation ratio for Jordanian universities spaces and requirements should be updated, and simpler clearer ILS categorisations should be used.

- Jordanian architects in the industry encourage the development of new frameworks for designing ILS.

- Any new ILS framework should be made very user-friendly and clear especially for Jordanian universities to encourage them in designing and developing ILS, given the importance they have in managing a successful ILS design.

The ILS at Brighton university where the study took place recently upgraded its facilities, providing evidence that universities can improve their environments to improve student experience. Brighton university's improvements to the building and campus environment have worked to draw in and keep students on campus to study and use the facilities. If universities create spaces with the identified comfort, flexibility sensory stimulation and technology, students will be more likely to study in these locations. The first suggestion is to update or create better study environments in the ILS. If the university does not have the budget necessary for this upgrade another option is to create small ILS spaces throughout the campus.

The current study indicated that ownership and comfort are important for students when they choose and stay in a location for study. Therefore, the researcher suggests universities create ILS in each campus building that are set up with the same furniture, equipment, and color scheme to provide students with study locations across campus that provide the same feelings of security and familiarity. The same colors and furniture would also be used to assist students in recognizing these areas as comfortable spaces to study. This is similar to what national fast food restaurants do to make customers, wherever they go, feel familiar and comfortable with the atmosphere and product.

A variety of furniture should be in the study locations, including comfortable chairs and couches and tables and chairs. Movement in the chairs was preferred to static seating. Single person tables must be large enough to hold at least three medium sized items, such as notebooks or laptops, because students preferred locations where they could spread out their items to indicate possession of the space. Networked printers and scanners must be available in each location. ILS needs to provide the illusion of privacy, with dividers, or plants as separators.

Study environments need to be controllable for the students. A cold temperature was associated with focus, but colder rooms should allow students control over the thermostat or provide blankets for student use. Also, warmer rooms should provide personal fans for students to switch on if they feel it is too warm. Large windows for natural light are preferred in study locations, but in spaces that cannot have windows, use a variety of lighting with no fluorescents, such as lamps. If overhead lighting is necessary, replace florescent bulbs with natural light bulbs to lower the intensity of the lighting. To increase student comfort, create clean smells that blend into the background. Students preferred natural smells such as old books, rain, leather, or light fruit. A low static sound was preferred over music because music preference was very individualized.Therefore, the sound of air conditioner could be used to increase concentration without interrupting study.

This study found Brighton university's ILS the most positive (successful) location for students to study. The pre-booked ILS rooms offered quiet and privacy for individuals and groups. Traditional desks and chairs were mainly used for research and writing when the students felt inspired, encouraged, and alone. However, some ILS at Brighton university caused some students to be uncomfortable because the space had florescent lights and was dark. The variety of seating, equipment, natural light, and social atmosphere of the ILS allowed students a variety of relaxed, convenient, social, and motivating actions, including group study, reading, emailing, and printing.

However, some students felt uncomfortable with the number of people in some ILS. The Hive at UWE offered traditional seating, booths, windows for natural light, equipment, and less noise than the ILS at Brighton university. Students could read, write, and research in familiar comfort, focused privacy, and personalized safety. However, some students found the warmth and quietness distracting and isolating. The ILS as a whole offered a variety of environments in multiple affordance options. This allowed students to choose the best location based on comfort, sensory stimulation, flexibility, technology support, and decentredness. The ILS also offered equipment and assistance for students to allow for ideal study. Therefore, this study provides support for universities to make investments in upgrading or building new ILS.

The following findings were made by the researcher, based on the information gathered about locations, actions and behaviour, and spaces design. There was a variety of study locations because everything interacts within the space. Ownership of space was very important to students even when they did not recognize they were claiming the

space. Students sought an atmosphere where they were most comfortable and had some control over environmental factors. In this study, findings suggested the ILS was the best location on campus for students to study.

Latest technology and offering multiple types of study spaces are seen as important features of modern ILS (Hunter, 2013) which have opened the multidimensional ways of learning for students. The findings indicate that the majority of the students in the UK use the informal learning space. And the study finds that majority of the students use informal learning space regularly and good number of students feels informal learning spaces equivalent to library. Furthermore, the study also reveals the fact that 67.5% students opined that they use informal learning spaces for academic purposes. Furthermore, the majority of students feel the library plays an important role in encouraging them to use informal learning spaces for academic purpose.

Along with ownership, control of the environment was important to students. Student brought the sounds they wanted into the environment via headphones and music. When they did not bring sound, they found locations with ambient sounds for minimal distractions. Students only seemed to notice distracting smells or temperatures. If the smell or temperature was disruptive they tried to alter the environment for their personal comfort. For example, one student in Jordan frequently brought a fan with her to use whenever she was in a location she found to be too warm. Students also controlled the location they sat in by choosing locations by windows for the natural light. They controlled the environment of those spaces by adjusting curtains and blinds to control how much light came through windows. By making minor adjustments to the location students were able to control the environment. They maximized the positive usage and minimized the negative distraction of the location.

## 6.4 Contribution to Knowledge

Due to the increase need of ILS adoption in the construction industry, there is an apparent need to find a framework that enables architects to define more coherent, complete and consistent design aspects that will help to plan and guide the whole ILS. The aim of this research was to develop a framework for the design of Informal Learning Spaces to facilitate Informal Learning within Arabic universities based on recent developments in UK universities. This research makes significant contributions to knowledge, which can be summarised as follows:

- This research provided a deeper understanding of the literature and the requirements needed to plan and organise this framework.

- The research raised key aspects that affect the definition of students' requirements and ILS at universities.

- This research showed a critical review of the existing situation in the design of ILS and the challenges facing the existing practices in the UK; and put forward solutions to manage these challenges both more effectively and efficiently to apply it at Jordan universities.

- The research presented new concepts in producing requirements using an ontology-based framework and supporting software (NVivo), that have been validated and concept-proven through cross-checking with the literature and with experts from within the Architecture sector in Jordan.

- The main aim achieved by this research was fulfilled by developing a successful framework for defining ILS, which was a contribution to the universities in Jordan in terms of supporting the definition of complete sets of design aspects in an easy, understandable and user-friendly way.

## 6.5 Research Limitations

As an effective learning space to support students' learning activities in the morning and overnight, ILS were allowed for projects and collaborations as common activities. The analysis of the specific activities and needs of students' activities is significant and allows architects and administrators to better understand and enhance the service of a 24 hour opening Informal learning space in order to better support and maximize learning effectiveness. Despite the fact that digital services are the most important parts of recent developments amongst the campus, the results of this study could no doubt serve as evidence for convincing its administrators that formal learning spaces are still very much needed, and ILS can never completely replace them. In providing the whole campus community with an IL place and iconic center for student life, ILS conveys the notion of the strengthened role of the campus building as a center of campus life and learning a symbol of the college's mission.

Although the research was able to achieve its aims by fulfilling all the objectives set out, a number of limitations have to be noted:

- Although the framework was developed by studying the existing UK ILS and the available standards and studies, other research and other practices and standards worldwide may be worthwhile considering. In other words, the research was focused on the design of ILS in the UK and Jordan only.

- The validation process and therefor key parts of the research were based on the personal views and perceptions of domain experts and professionals in Jordan construction industry.

- Although the framework was validated and evaluated positively, and feedback was used to update and further improve the framework, there are some comments and other feedback that will be taken into consideration for future research on and the design of the framework.

## 6.6 Recommendations and Future Works

Based on the finding of this research, two types of recommendations could be put forward, recommendations for the construction industry, and recommendations for future research.

### 6.5.1 Recommendations for the construction industry

Based on the literature reviews conducted and the findings of this research, the following recommendations can be put forward to improve the definitions of ILS:

- It was found that there is an obvious lack in the industry in terms of available frameworks for defining requirements for ILS projects. There should be clearer and more understandable standards and tools for defining ILS that are also directed at less experienced clients.

- The definition of requirements should be more pro-actively supported by means of design technology, in particular regarding the development of ILS.

The development of ILS framework was not an easy task considering the complexity of many different components from various design fields, which all contribute to creating learning experiences for the students. Still ILS needs many things to be considered and be implemented, and be tested for better results. Future research directions include the following:

- Understanding how ILS contributes to motivation and learning.
- Research on how the suggested ILS framework can be used to support learning in formal learning environments.
- Developing the suggested ILS framework for different learning environments.

The challenge is to design and develop learning environments that simultaneously create an enjoyable experience for the students as they develop or improve their skills or knowledge set as a result of using these newly developed settings. A well-designed ILS could provide the motivation that learners need to learn and socialise at the same time, enhance both the achievement and the social interactions of the learners. The task of understanding the several aspects of learning environment and then attempting to develop a new learning environment is a complex undertaking. In order to design a useful ILS, we must understand what motivates learners to use and need these spaces, and how to develop appropriate educational spaces. Technical limitations still greatly exist to develop and implement for learning but it is critical that architects develop innovative models of learning environments as well as methods, processes, and design that effectively use for our future generation. In order to significantly enhance the learning educational experience for future generations of students.

Students preferred locations with a variety of comfort and flexible to the environment, the items they used to study, and the items they wanted to have around them. A complete list of the flexible aspect and their explanations were provided in Chapter 4; however, a few flexibility and comfort aspects deserve recognition here. A variety of seating was necessary because students will choose how and where to sit dependent on how they feel, how much time they have, and the location's atmosphere. This was also true of lighting, scents, and sounds, although students frequently bring their preferred sounds with them. Some of these aspects were so entrenched in the students' study behaviour they were no longer acknowledged unless they were absent, like printers, laptops, outlets, and writing tools. If there were not enough of theses aspects in a location the students would seek out a different space or try to augment the space with personal items to increase the positive aspects of the location.

### 6.5.2 Recommendations for further research

Although the feedback from the validation processes was overall very positive, some of it could not be addressed as part of the present research due to the limited time available. This feedback is presented here as recommendations for future research and work:

- Further development and industrialisation of the ILS framework could incorporate learning spaces at universities, to allow designers to develop the plan according to the students' requirements expressed in the ILS.

- Develop the framework further into a 'smart' tool. Where the generated framework is custom-made for the students' requirements and business objectives of the project in Jordan. This may help in the reduction of irrelevant information, save time and produce a successful Framework for the project and students.

This research used qualitative methods to gather data. Although these methods produced significant results, the interviews created data that could be better examined through another method. Therefore, the researcher suggests following researchers might use a case study method using fewer students sample. In-depth interviews of students about the ILS might elicit more detail about locations, and feelings. This research concentrated on students at four particular institutions. This was done to assist in collating a number of responses in a short amount of time. However, this caused the data collected to be from a female majority between the ages of 19 and 25. The researcher suggests conducting a study that includes a larger variety of students (graduate students, male students) at multiple universities to see if the results of this study can be duplicated.

This study examined the spaces of two UK universities that had recently undergone major construction and renovations. This limitation was chosen to provide information on universities that recognize the need for better spaces. Students attending universities that do not recognize the need for better spaces may show different results. Therefore, the researcher suggests future researchers study institutions with fewer renovations and new buildings. The researcher suggests creating similar ILS space across a campus to provide familiarity and to encourage more students to study on campus. Fast food and chain restaurants with multiple locations create spaces that are the same to make customers feel familiar and comfortable with the product. A recommendation for research is to examine schools with designated study rooms in multiple buildings that are set up similarly to

determine the effects on students and the amount of time they spend on campus.

A significant portion of a university's budget is spent on utilities, insurance, and maintenance of campus spaces (APPA, 2012). Even today, the majority of students and faculty meet on a campus to exchange knowledge. University campuses are essential to a student's higher education. Therefore, it requires a university to maximize the spaces they have to draw more students onto their campuses and to keep them there.

This research examined the ILS spaces students used for study and the students' perceptions of those spaces. This combination of comfort, sensory stimulation, flexibility, technology support, and decenteredness produced a clear understanding that ILS was extremely satisfactory, locations could be augmented for student comfort and convenience to enhance their study activity and education.

The researcher drew four conclusions from the analysis of the data. What makes space imperfect was the interaction between the students' personal needs, actions, and feelings and the locations' flexibility, technology, and comfort. Students wanted to possess the spaces they were in to increase their personal comfort. They did this by creating a bubble of space around them that they claimed with their bodies and the belongings they brought with them. Comfort for students was also increased with the ability to control the environment. They did this by selecting the location based on personal desires and incorporating their personal preferences, such as music, into the environment they chose. Finally, the results of the study indicated that students preferred to study in the ILS when they were on campus. If a university allocates money to renovate or build ILS with an appropriate mix of affordances, students will use it regularly. However, if this is not an option, a less costly recommendation was also outlined as in the case of Jordanian universities.

Since, the study is limited to the students of the Jordanian universities to explore the students' opinion on the use of Informal Learning Space by students the research results are limited to this environment only and should not be generalized. However, considering the worth of informal learning spaces in academic environment, it is suggested that there must be some more comprehensive studies especially be conducted in a comparative nature covering some more academic institutions together to know the students' opinion and behaviour regarding informal learning spaces. The findings and recommendations outlined in this chapter are specific to Jordan universities, but may have some generalizability in designing and arranging optimal learning environments in the 21st century.

Though several researchers have talked positively and negatively about the informal learning spaces; for example Lippincott and Brown (2003) mentioned that Coffee bars can be considered as a place for social learning, especially in libraries." Whereas on the other hand, Bryant, Matthews and Walton (2009) disagree and believe that coffee bars do not promote "conducive learning atmosphere." But at last, it can be concluded that due consideration is required on how different generations use the informal learning spaces as the concept of informal learning space is evolving as an important phenomenon in academic environment.

Space design should encourage students to reflect on their learning preferences and translate these preferences into space selection. IILS has a responsibility to ensure users understand the character of the space they occupy. This can be particularly problematic when an understanding of a space is vague to the learner. Based on study outcomes, ILS now seek to either design in, or out, particular activities, with minimal signage used as a complementary measure to support wayfinding. For example, at UWE in spaces designed to support individual learning, only one chair per desk was purchased; in contrast, spaces with a collaborative function offer a purposefully higher chair to desk ratio derived from understanding of group sizes.

Universities are competing for students and the campus environment is a part of this competition (APPA, 2012). Universities can draw and keep students on campus for study with minor adjustments to learning spaces. Administrators can allocate budgets to improve the current ILS and create multiple locations across campus. By doing this, the university increases the footprint of learning spaces for the students, the branding of the school, and retention of students. In the end, spending money on minor adjustments to multiple spaces saves the university administration costly resources on new construction and extensive remodelling.

This study found that comfort, sensory stimulation, flexibility, and technology support and were key aspects to space use by students. While comfort and flexibility were important students noticed in a location, the ability to make a space theirs was what kept them in a location. Spaces that had been used before and found to be supportive were returned to

frequently. Universities can create exclusive ILS in each building so students have a familiar location to go to no matter where they are on campus. This will increase the amount of time spent in these study locations and improve study.

This research also found that disliked spaces would be used if needed, but the time spent in the location may be reduced. Students used what was available on campus, but they did not stay long in locations they found uncomfortable. With little money, spaces in current environments could be rearranged to create spaces students would use more often. This would keep them on campus and increase learning. These features could be used to show support of learning and the university's acknowledgment of student needs.

The findings of this study inform the fields of facility design, educational leadership, and student support. Study findings have implications for practice and leadership in higher education with particular emphasis on management. Because most campuses do not have one person responsible for all spaces of the university, this study was not only important to ILS managers but to executive administrators, college and department administrators, student service administrators, and facility managers.

Introducing the latest technology and offering multiple types of study spaces are seen as important features of modern academic libraries (Hunter and Cox, 2013), which have opened the multi-dimensional ways of learning for students. Now the students not only access the information within library but from outside also, resulted into the emergence of the concept of informal learning space. The study investigates the student opinion about the use of informal learning space. The findings indicate that the majority of the students of UK universities use the informal learning space. And the study finds that majority of the students use informal learning space regularly and good number of students feels informal learning spaces equivalent to library. Furthermore, the study also reveals the fact that 61% students opined that they use informal learning spaces for academic purpose. And furthermore, majority of students feel that library plays an important role in making them to use informal learning spaces for academic purpose.

Since, the study is confined to the students in the UK and Jordan, to explore the students' opinion on the use of informal learning space by students the research results are limited to this environment only and should not be generalized. However, considering the worth of informal learning spaces in academic environment, it is suggested that there must be some more comprehensive studies especially be conducted in a comparative nature covering some more academic institutions together to know the students' opinion and behavior regarding informal learning spaces.

Though several scholars have talked positive and negative both about the informal learning spaces for instance Lippincott and Brown (2003) claim that Coffee bars can be considered as a place for social learning, especially in libraries." But on the other hand, Bryant, Matthews and Walton (2009) disagree and believe that coffee bars don't promote "conducive learning atmosphere." But at last, it can be concluded that due consideration is required on how generation use the informal learning spaces as the concept of informal learning space is evolving as an important phenomenon in academic environment

Universities are a cultural hotspot composed of talented individuals. Great ideas and relationships are formed when collaboration occurs between individuals and groups and this research has further contributed to this growth. Within this research, the researcher has learned so much regarding the social importance of a university campus, in addition to the minute details of respecting one's self and place.

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Appendices

Appendix A

Sample semi-structured interview questions

University of the West of England

# Appendix A

## Sample semi-structured interview questions:

Interviewer to record data, time and location.

Interviewer to approach users of the space to invite them to participate in the study and give them a consent form.

- Name:
- Age:
- Gender:
- Date:
- What degree are you studying?

1_ How would you describe this space?

2_ What have you come here to do today?

2.1. Do you feel that you use this space for learning/Academic work/ studies?

3_Why did you come to here to do this?

3.1. Do you use this space for learning in, and if so how do you feel it helps or hinders your learning?

3.2. How do you feel that informal learning is supported by this space?

3.3. How much time do you spend working with other students outside the class?

4_ When do you tend to use this space?

4.1. How long do you tend to use it?

5_What is this space good for?

4. Can you do multiple types of activities here?

6_Where is your preferred location to work within this space?

7_How does this space compare with other spaces you use for learning?

8_How does using this space tends to make you feel?

8.1.How would you change or improve this space if you could?

9_Is there anything that you can't do here that you would like to be able to do?

10_Do you have any other thoughts about the design of these spaces?

20_Do you feel safe at this space? And what aspect here make you feel safe? Does it provide the ownership of this space for you?

---

- Specific questions for the design aspects:

1_What kind of flexibility does the design of this space provide to you?

2- Do the artificial lights here help you with your study/ socialization? or would you prefer natural lights?

3- Are you satisfied with the technology implementation( such as the WIFI availability, number of plug sockets etc) in this space?

4_Does the color of this space affect your productivity in this space? And what colours might you prefer instead?

5_Does the height of this space help to make a productive space? If not what height might you prefer?

6_ Is there a variety of furniture which you prefer to use here? If not what you prefer to add?

# Appendix B

## Email draft- Introduction to research project

**Opportunity to find out more and/or withdraw from the study (observation phase).**

**Permission to film in communal areas of informal learning spaces in universities.**

### Introduction

I am Noura Qazza, a PhD student at the University of the West of England UWE in the department of Architecture and Built Environment, I am developing a framework for the design of informal learning spaces (ILS) to facilitate informal learning in Arabic universities, led by Dr. Rachel Sara from the University of the West of England, Bristol.
Research title:
A framework development for the design of informal learning spaces (ILS) to facilitate informal learning in Arabic universities.

### Procedures

My research will investigate how students use informal learning spaces in order to develop a framework to guide the design of new informal learning spaces. To do this I hope to collect information by observing your behaviour at these spaces by using video recordings and by taking photographs of you in these spaces in order to analyse them afterwards. I am therefore inviting you to take part in my research by allowing me to observe you in these spaces.

### Opportunity

Participation in this research will help us to understand how informal learning spaces can best be designed in order to help students to learn. We hope that the research will lead to the development of better informal learning spaces.

**Opportunity to withdraw:**
**Your pictures and films will be used in:**
**Conference publications -**
**Online publications -**
**Printed work (papers, posters) -**

**Please identify if you would like your identity to be removed. This can be achieved by cutting footage in which you are present, by blurring your face or by not filming in your location. Please indicate which of these you would be happy with.**

### Risks/Discomforts

Risks are minimal for involvement in this study. However, you may feel that your privacy is eroded when I take pictures in these spaces or record videos.

## Participation

Your participation in this research study is completely voluntary. You may choose not to participate. If you decide to participate in this research, you may withdraw after two weeks of completing the observations by contacting me via email during this period. If you do not want to be included, you do not have to. If you decide not to participate in this study you will not be penalized. Consent is implied through continued use of the space after seeing the filming in progress and the explanatory notices. Anyone not concenting will be excluded from the photographs and observations. Any video footage captured of people who wish to be excluded can be subsequently edited to hide faces. Please contact me if you would like to be excluded from the study.

## Data storage

All data will be stored in a password protected electronic format. It will be accessed by my supervision team and myself and may be also shared with UWE research team. Data may be offered to a data archive to be stored for further research. Any data stored externally will be on my encrypted and password protected devices; my laptop and external hard disk.

## Questions about the Research or your rights as Research Participants

If you have any questions or concerns, please feel free to contact me via Noura2.Qazza@live.uwe.ac.uk or my supervisors, Dr. Rachel Sara via rachel.sara@uwe.ac.uk and Dr. Jonathan Mosley via jonathan.mosley@uwe.ac.uk

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Telephone: +44 (0)117 965 6261.

# Appendix C

## Information sheet and consent form - Interviews

A framework development for the design of informal learning spaces (ILS) to facilitate informal learning in Arabic universities.

**Introduction**

I am Noura Qazza, a PhD student at the University of the West of England UWE in the department of Architecture and Built Environment, I am developing a framework for the design of informal learning spaces (ILS) to facilitate informal learning in Arabic universities, led by Dr. Rachel Sara from the University of The West Of England, Bristol.

**Funded by**
The University of the West of England

**The purpose of this document is to specify the terms of your participation in the project. If you are happy for me to interview you in the space, please read the information about the project below and confirm that you are happy with the information you have been given by ticking the boxes at the bottom of this form.**

**Procedures**

My research will investigate how students use informal learning spaces in order to develop a framework to design informal learning spaces. To do this I hope to collect information by interviewing people who use these spaces.

### Opportunity

Participation in this research will help us to understand how informal learning spaces can best be designed in order to help students to learn. We hope that the research will lead to the development of better informal learning spaces**.**

### Risks/Discomforts

Risks are minimal for involvement in this study.

### Participation

Your participation in this research study is completely voluntary. You may choose not to participate. If you decide to participate in this research interview, you may withdraw after two weeks of completing the interviews. If you do not want to be included you do not have to. If you decide not to participate in this study you will not be penalized.

### Questions about the Research or your rights as Research Participants

If you have any questions or concerns, please feel free to contact me via Noura2.Qazza@live.uwe.ac.uk or my supervisors, Dr. Rachel Sara via rachel.sara@uwe.ac.uk and Dr. Jonathan Mosley via jonathan.mosley@uwe.ac.uk

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* you can be interviewed at a different place/time if you are working and don't want to be disturbed.
*I will ask you some questions and document yours answers, I expect it will take about half an hour.

**Consent form checklist**

Please tick the relevant box below concerning the collection and use of the research data.

| | | YES | NO |
|---|---|---|---|
| I have been given sufficient information about this research project. The purpose of my participation as an interviewee in this project has been explained to me and is clear. | .1 | | |
| My participation as an interviewee in this project is voluntary . There is no explicit or implicit coercion whatsoever to participate. | .2 | | |
| Participation involves being interviewed by researcher Noura Qazza from The University of the West of England. The interview will last approximately 20 minutes. I allow the researcher to take written notes during the interview. I also may allow the recording (by audio/video tape)of the interview. It is clear to me that in case I do not want the interview to be taped I am at any point of time fully entitled to withdraw from participation. | .3 | | |
| I have the right not to answer any of the questions. If I feel uncomfortable in any way during the interview session, I have the right to withdraw from the interview. | .4 | | |
| I have been given the explicit guarantees that, if I wish so, the researcher will not identify me by name or function in any reports using information obtained from this interview, and that my confidentiality as a participant in this study will remain secure. In all cases subsequent uses of records and data will be subject to standard data use policies at the (Data Protection Policy). | .5 | | |

| | | | |
|---|---|---|---|
| I have been given the guarantee that this research project has been reviewed and approved by reviewed by a supervisor to a Faculty Research Ethics Committee (FREC) in accordance with the policy at http://www1.uwe.ac.uk/research/researchethics | .6 | | |
| I have read and understood the points and statements of this form. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study. | .7 | | |
| I have been given a copy of this consent form co-signed by the interviewer. | .8 | | |
| I am over the age of 18. | .9 | | |

_____ _____

Participant's Signature Date

_____ _____

Researcher's Signature Date

# Appendix D NOTICE OF FILMING

This area is being used to photograph and record video and film footage in connection with:

A piece of research of a PhD for framework development for the design of informal learning spaces (ILS) to facilitate informal learning in Arabic universities.
By your presence in this area, you acknowledge that you have been informed that you may be photographed and recorded as part of this study. Further, by your presence here, you grant your permission for your likeness and voice to be included there in without compensation, credit or other consideration. If you do not wish to be photographed, recorded, or appear under these conditions, see the option to withdraw. Thank you for your cooperation.

## Opportunity to withdraw:

Your pictures and films may be used in:

- Conference presentations and publications
- Online publications
- Printed work (papers, posters)

Please identify if you would like your identity to be removed by speaking to the researcher who is filming the space or contacting the researcher at a later date.
You may withdraw immediately or up to two weeks after completing the observations. If you do not want to be included, you do not have to. If you decide not to participate in this study you will not be penalized. Consent is implied through continued use fo the space being filmed. Anyone not consenting will be excluded from the photographs and observations. Any video footage captured of people who subsequently wish to be excluded can be edited to hide faces. Please contact me or my supervisor if you would like to be excluded from the study.

**Questions about the Research or your rights as Research Participants**
If you have any questions or concerns, please feel free to contact me via Noura2.Qazza@live.uwe.ac.uk or my supervisors, Dr. Rachel Sara via rachel.sara@uwe.ac.uk and Dr. Jonathan Mosley via jonathan.mosley@uwe.ac.uk , or by post via the University of the West of England,

# Appendix: G

Figure7:1: (Brighton University) Students were content to use any space that had a PC

Figure7:2:(Hashemite University) The importance of location and centrality

Figure7:3: (Hashimite University)The importance of the accessibility

Figure7:4: (Brighton Univirsity) Students enjoying places where they could see traffic without being part of it

Figure7:5: (University of Brighton) Students preferred to sit a long the glass window

Figure7:6: (University of Brighton) Students and staff placing laptop, some notebooks, cup of tea on the table they were using.

Figure7:7: (University of Brighton) Pathway to connect students

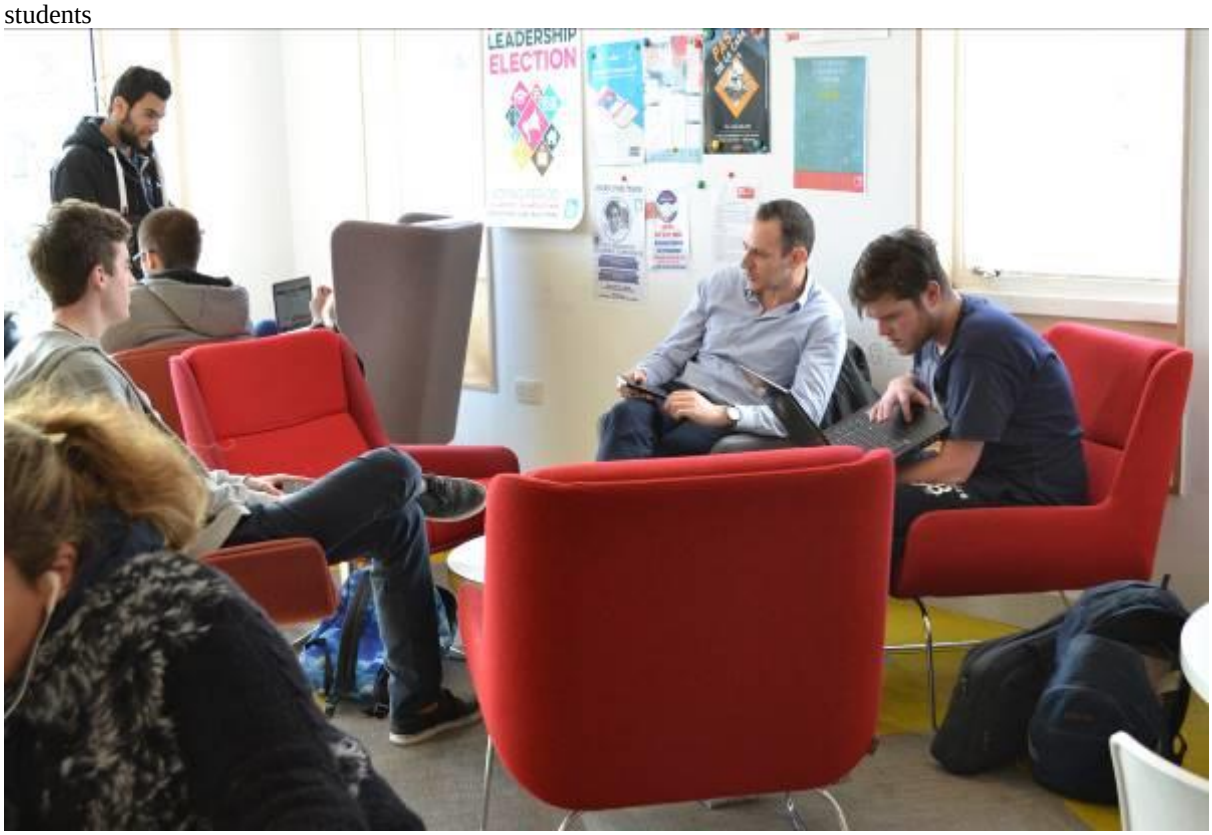


Figure7:8: (Brighton University) Students perch in ILS between Classes to study, text, socialise

Figure7:9: (University of Brighton) Students customized puplic informal learning places

Figure7:10: (University of Brighton) Students need for large table to lay their belongings

Figure7:11: (Hashemite university) Students adapting with non designed ILS in Jordan

Figure7:12: (Brighton University) Students using private stairs in order to fit with their social and learning needs

Figure7:13: (Bighton University) Tables offer plug socket even if they are intented to be used with fixed PC

Figure7:14: (university of Brighton) Learners working alongside colleages

Figure7:15: (Hashemite university) Students prefer to work near to peers

Figure7:16: (Brighton University) Using headphones to block unwanted noise

Figure7:17 (University of Brighton) Food was essential for long hours of study

Figure7:18 (JUST University) ECO Terrace

Figure7:19 (JUST University) ECO Terrace

Figure7:20 (JUST University) ECO Terrace

Figure7:21 (JUST University) Students using the corridor as ILS in between their lectures

Figure7:22 (JUST University) Students using the Stairs as ILS in between their lectures

Figure7:23 (JUST University) Students using the balconies as ILS in between their lectures

Figure7:24 (JUST University) Students sitting on the floor and benches as ILS in between their lectures

# Appendix: I

## Nvivo for Analysis

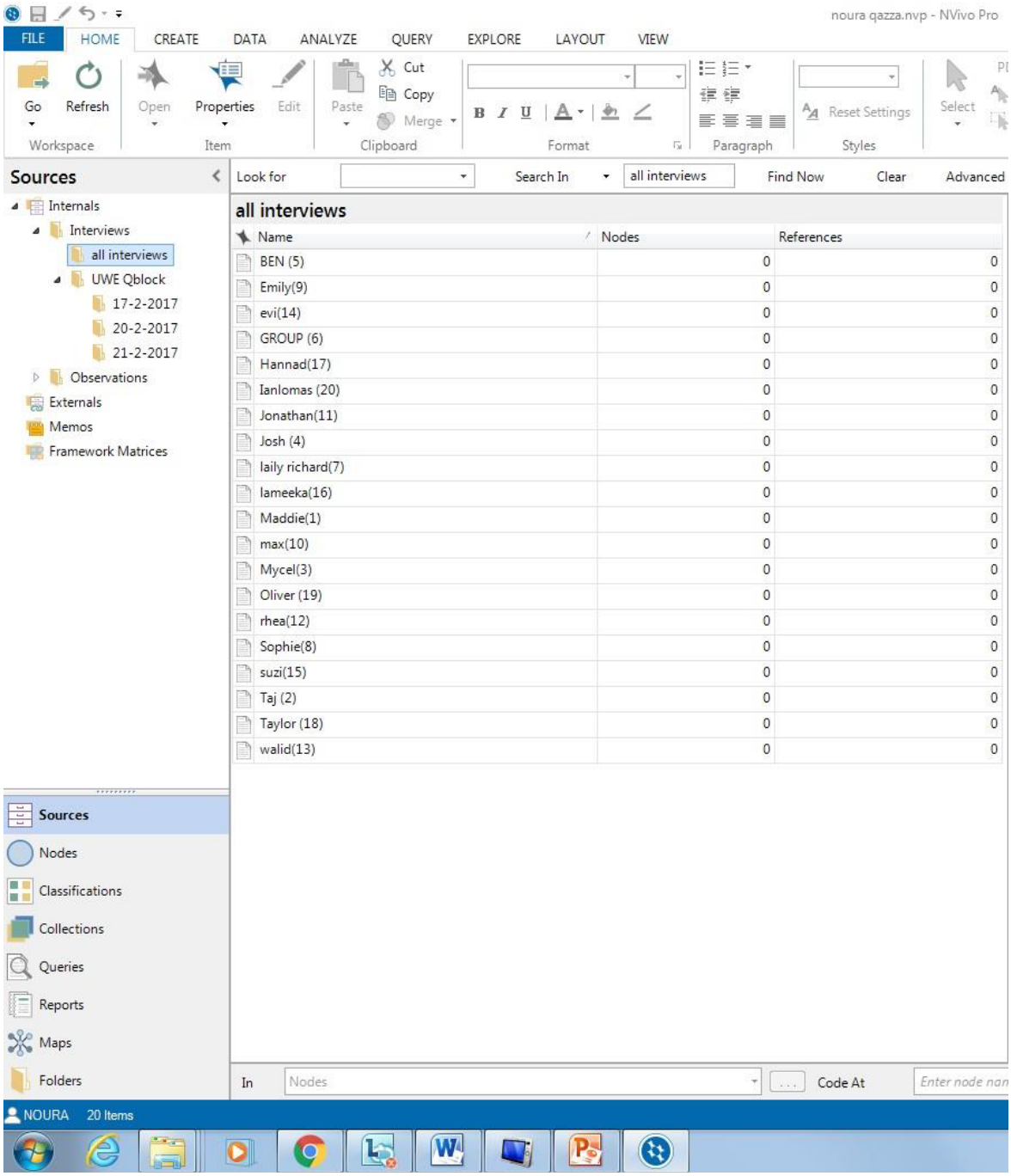


Figure7:29 All the Interviews as recources at NVIVO

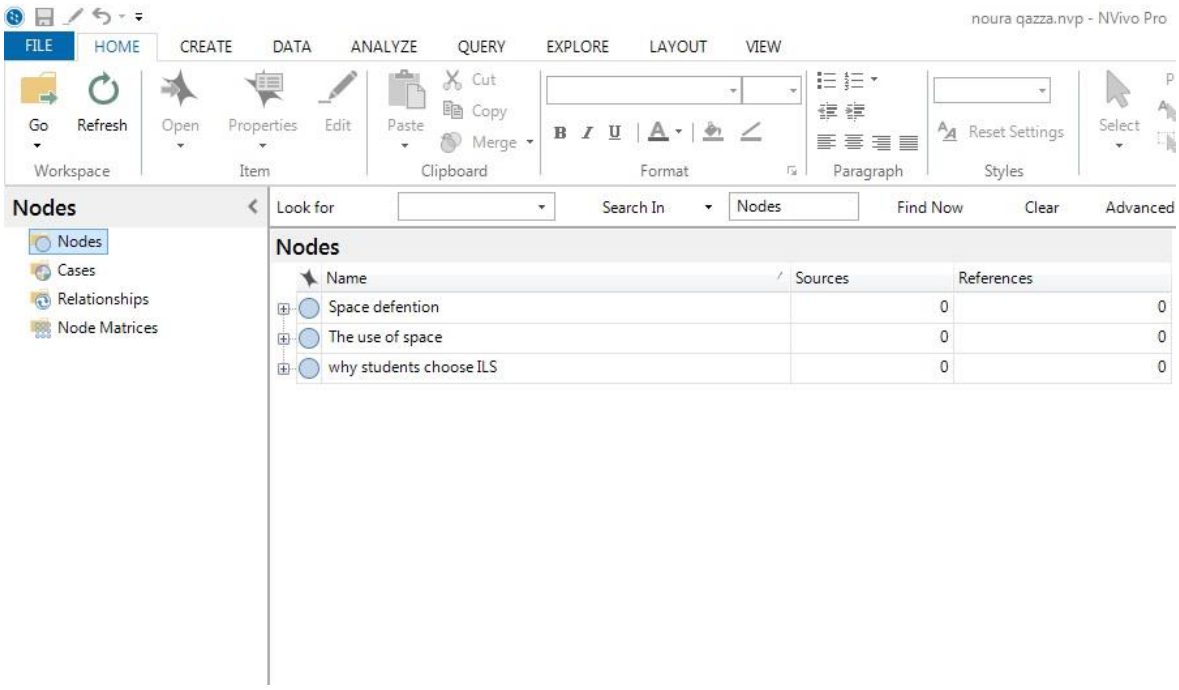


Figure7:30 Themes classification on NVIVO

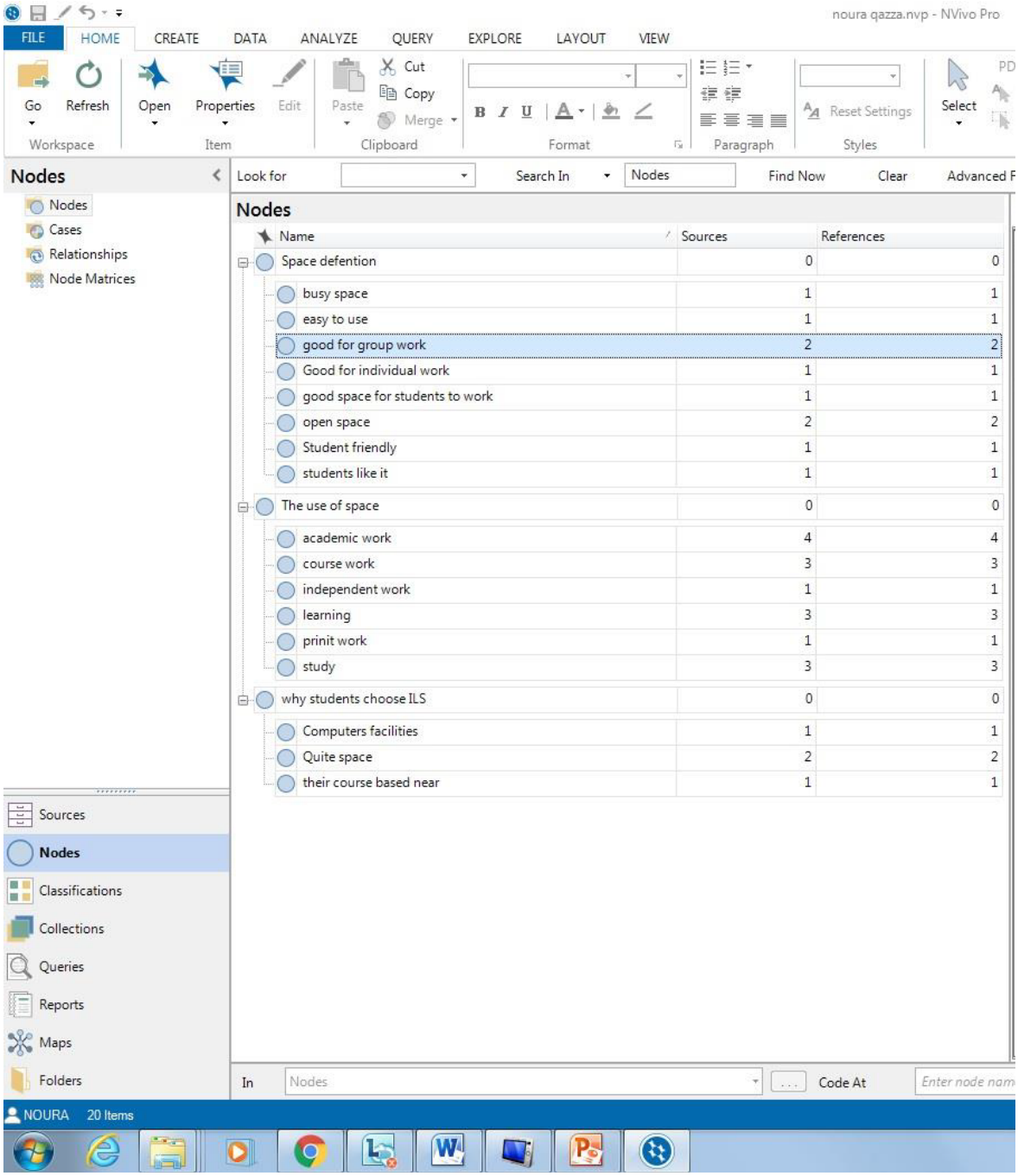

Figure7:31 Coding using NVIVO

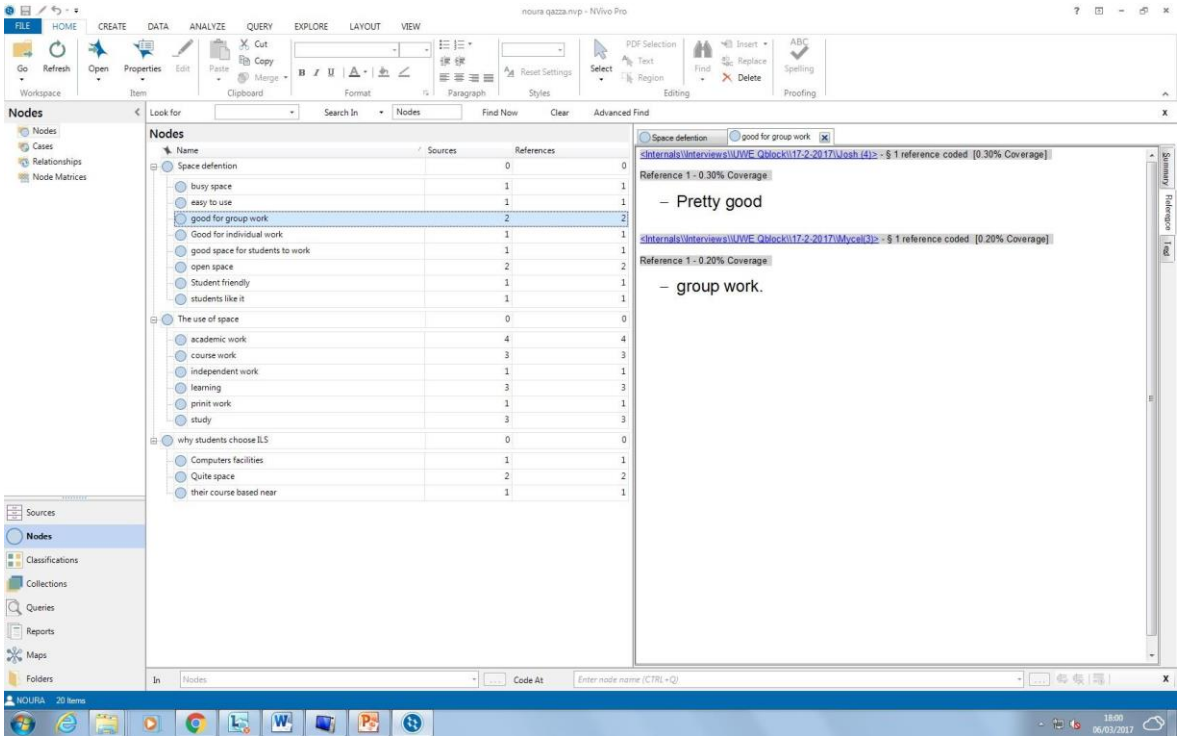


Figure7:32 Showing the refrences from the interview for each codeing

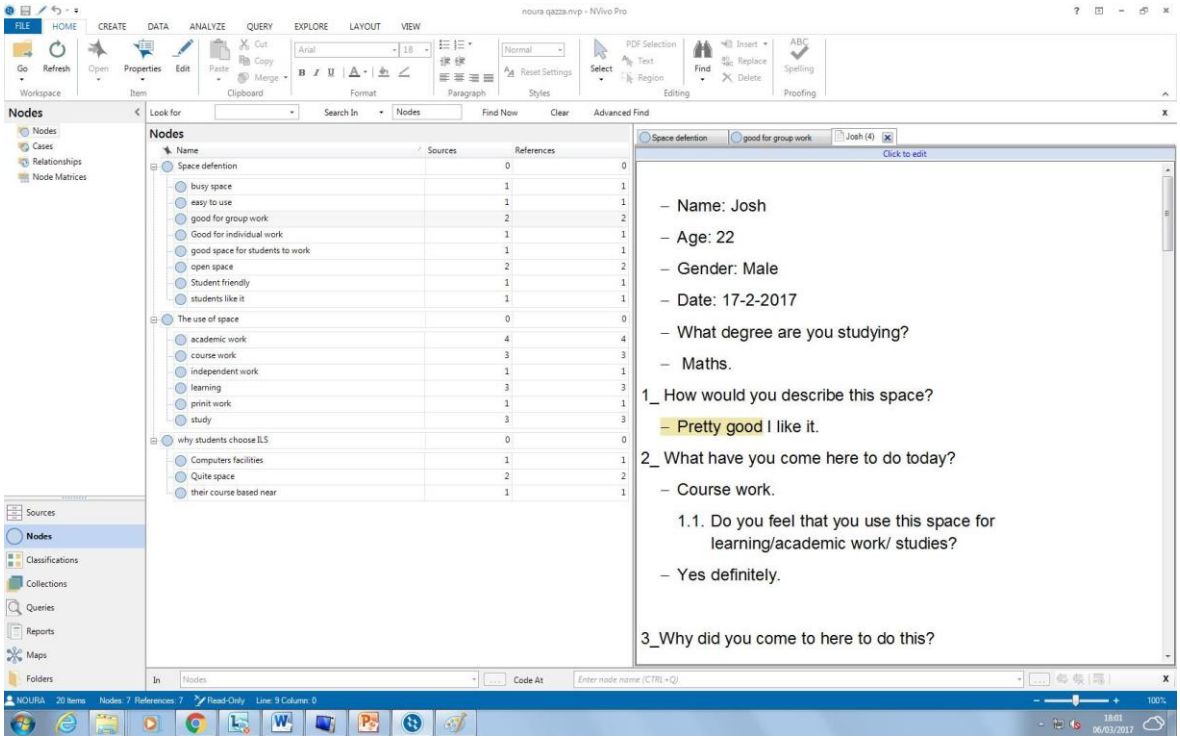


Figure7:33 This is how codes been found from the interviews transcript

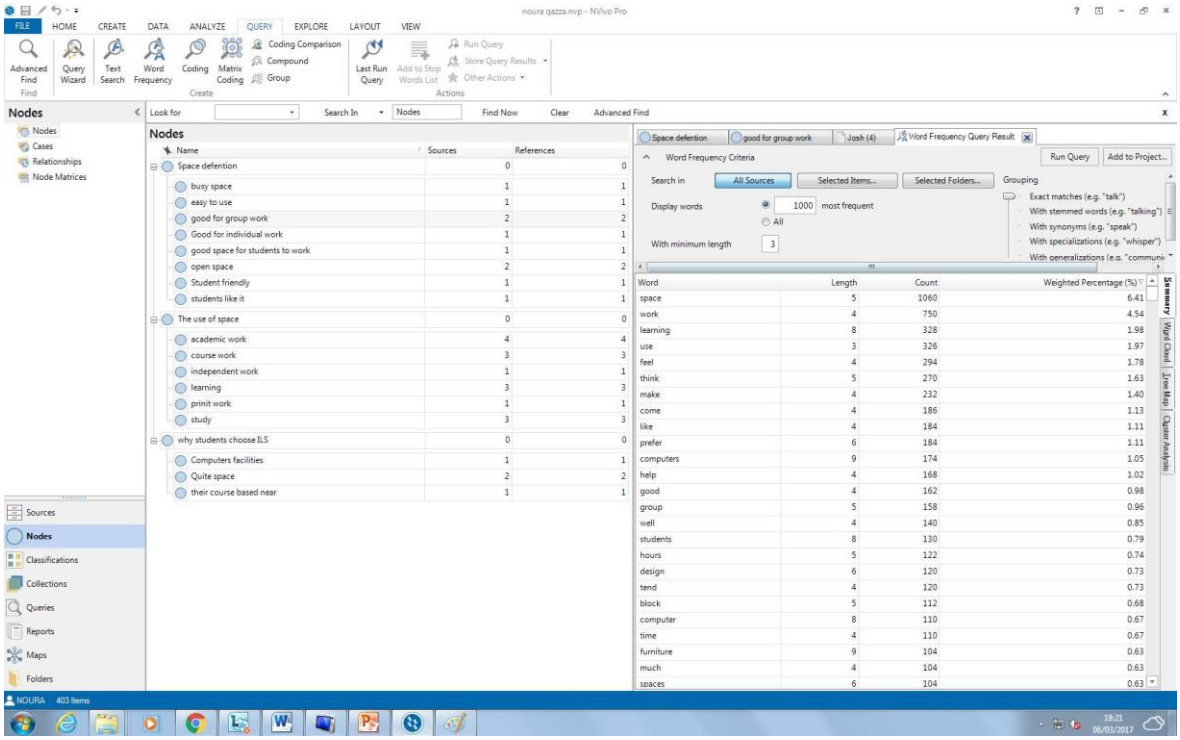


Figure7:34 The count of the frequent words in the transcripts which was useful for coding