KEN WOODMAN

3. RE-PLACING FLEXIBILITY

Introduction

The need for flexible solutions in school design is almost a mantra in the history of education. Burke and Grosvenor (2008)

Architecture and education are entwined. The recent resurgence of constructivist, student-centred learning has driven a renewed desire for flexible learning spaces. However, a clear and concise understanding of the meaning and aim of flexibility is elusive, both within and between the educational and architectural professions. The term flexibility is, simply put, flexible. This chapter summarises the dissertation that aimed to unravel the knot that is flexibility and to answer the primary question: How does flexibility in learning spaces affect learning?

Learning

Over the past two decades there has been a move in education away from traditional, teacher-directed, instructionist teaching toward progressive, student-centred, constructivist learning (Duffy & Tobias, 2009). Constructivism is founded in the works of educational thinkers such as Rousseau (1762/1962), Dewey (1916), Piaget (1963), Vygotsky (1935/1994), Bruner (1961), Montessori (1966), and Freire (1970). Constructivists are not bound by didactic “truths” and reject the notion of the teacher being the source of all knowledge, filling the empty student vessels.

In reviewing constructivism, Schunk (2008) noted that students are motivated through the process of learning by following their own interests, and that they assess their learning by setting their own targets, monitoring their own progress, and completing self-evaluations. Individual students are supported through this process by teachers, from across various disciplines, who provide a framework to assist students to go beyond blockage points in their learning.

A recent development in constructivist thinking has been referred to as “heutagogy” by the educationalists Hase and Kenyon (2000, 2007). These authors suggested that in a pedagogic relationship the teacher decides what the student is going to learn and how the learning is to be undertaken. Even in progressive pedagogies, this relationship only allows students to be self-directed in their

K. Fisher (Ed.), The Translational Design of Schools, 51–79.
© 2016 Sense Publishers. All rights reserved.
learning as they still follow a path established by the teacher. Hase and Kenyon developed the term heutagogy, with “heuta” meaning self in Greek, to describe a self-determined learning based on ideas generated through an interaction with the environment.

In their view student-determined learning creates capable rather than competent individuals who can reflectively respond to new stimuli in new situations rather than being restricted to linear rote reactions to stock situations. Hase and Kenyon promote an action research approach to learning that develops self-efficacy in new learning challenges. They argue that modern workplaces are constantly evolving and require capable individuals who can adapt to changing situations.

Constructivism has its roots in the relationship between the learners and their environment. The place of learning, the surrounding, the setting, the situation, and the social all interact with the learner to produce constructions of understandings. Dewey (1938–1939) suggested that learning ideally occurs in locations where the environment challenges pre-constructed understandings. He promoted learning through activity based “situations”:

The conceptions of situation and of interaction are inseparable from each other. An experience is always what it is because of a transaction taking place between an individual and what, at the time, constitutes his environment. (Dewey, 1938–1939, p. lw. 13.25, author’s italics)

For Vygotsky (1935/1994) the environment was the basis for, and cause of, all human cognitive growth. He wrote that, “… environment is the source of development and not its setting” (p. 349). However, Vygotsky saw the environment not as “something absolutely hardened, inflexible, and unchanged” (1926/1997, p. 53) but as a plastic arrangement of elements that could be manipulated by the learner. He believed that the environment was “very nearly the most flexible of all tools of education” (p. 54).

As well as arguing for situated constructivist learning, Dewey (1938–1939) suggested that the learner physical movement was a prerequisite for learning. He promoted learner freedom as a combination of both external and internal activities. External activity refers to physical activity where “…freedom of outward action is a means to freedom of judgement and of power to carry deliberately chosen ends into execution” (p. lw. 13.41). Where, internal activity relates to thinking, motivation, and desires. External activity cannot be achieved without internal activity such that the mind and body transact.

Similar to Dewey’s notion of freedom, Montessori (1966) believed that movement provided opportunities for contact with external reality which, in turn, provides for the creation of abstract ideas: “Physical activity connects the spirit with the world, but spirit has need of action in a twofold sense, to acquire concepts and to express itself exteriorly” (p. 97). Movement for Montessori was guided by the student’s inner reason based on reflection and self-control. This purposeful movement provides opportunities for focus and fascination in learning.
The word classroom, or “class-room”, relates directly to the traditional pedagogy of teacher-directed teaching of a social “class” of children (Beare, 2001). New terminology has developed to reflect more student-directed environments with “learning spaces” becoming the preferred term turning the focus onto learning rather than teaching. The moving debates on space and, by association, place (see for example Cresswell, 2004; Dovey, 2010; Lefebvre, 1974; Massey, 2005) may influence the understanding of learning spaces.

The notion of space was explored by the German existential phenomenologist Heidegger (1969, 1971). For him, humans are essentially spatial beings and space is where we exist or dwell. Inherent to human beings as dwellers, space is a location with boundaries that is created rather than limited through the removal of place. This is a notion of space that is vacant, an empty vessel or supporting structure within which life provides attachments by making boundaries around places (Sharr, 2007).

However, space is no longer considered an empty vessel awaiting filling but “a (social) product” (Lefebvre, 1974, p. 26). This approach has similarities to traditional pedagogies described earlier where students are considered empty vessels awaiting filling with knowledge by teachers. Lefebvre’s understanding of space reveals a means of control and power. The renaming of classrooms to learning spaces may invite the transfer of power from teaching to learning, from teachers to students.

This understanding of space has been developed further by Massey (2005), who described space as a “production of interrelations” as a “sphere in which distinct trajectories coexist” and always “under construction” (all Massey, 2005, p. 9). The similarities of these propositions with those of educational constructivism are clear. Massey portrayed trajectories in terms of a process of change and movement, which have strong connections with flexibility. Trajectories hold a role in Massey’s understanding of place as an “ever-shifting constellation of trajectories” (2005, p. 151).

For her, place is temporarily created and maintained as a result of the paths of the passing actors. Taking a different approach to the notion of place, Dovey (2010) preferred to base his work on the Deleuzian (1987) concepts of becoming, desire, and assemblages, arguing that “all places are assemblages” (2010, p. 16). Using de Landa’s (2006) examination of assemblage theory, Dovey described places as always in development, dynamic, a reflection of constant changes in desire, and a “state of affairs” (2010, p. 16). The theoretical space and place tools of social construction and assemblage can be brought to bear on learning spaces to reveal power relations, interrelations, and the flows of desire.

Like Lefebvre, Foucault (1979, 1997) linked space both to the social and to power, writing that: “Space is fundamental in any form of communal life; space is fundamental in any exercise of power” (1997, p. 376). A short time after Lefebvre’s work on the social production of space, Foucault published his work Discipline and punish (1979). This work focused on the birth of prisons, but more generally reveals
the effects of power on space. Foucault noted that discipline started in secondary schools and spread to other institutions such as primary schools, hospitals, and the military. For him, discipline created regimented, docile bodies with little will that “proceeds from the distribution of individuals in space” (1979, p. 141).

He suggested that discipline requires the enclosure not of just space, but of a uniform, repetitive, monotonous space. Further, the disciplining of space relied on the physical isolation of individuals within the space which is traditionally undertaken through creating individual cells. Student use of these disciplined school spaces was defined and restricted with a rigid ranking system.

This framework was set within the limit of compartmentalised time framed in a school timetable. The architecture that produced this form of discipline, according to Foucault, was not confining and closed, but transparent and open where surveillance provided control over the students. Control was not limited to the architecture, with a system of student monitors providing a hierarchical method of surveillance back to the schoolmasters.

Focussing on the architecture of surveillance, Foucault considered the penitentiary panopticon designed by Bentham as an ideal model. By using a darkened observation tower in the centre of a surrounding ring of backlit cells the guards had implicit surveillance over the inmates regardless of the guards’ actual presence, thus assuring “the automatic functioning of power” (p. 201). Foucault saw this idealised form of discipline surveillance as having spread throughout society and particularly within schools which he noted resembles prison.

Foucault (1979) described classrooms as places of power, discipline, control, and as a “pedagogical machine” (p. 172) where surveillance enforces student study. For him,

Surveillance, defined and regulated, is inscribed at the heart of the practice of teaching, not as an additional or adjacent part, but as a mechanism that is inherent to it. (Foucault, 1979, p. 176)

Foucaultian practices of spatial organisation and control may be preventing progressive pedagogies from taking hold in the classroom. Flexibility may play a part in the mediation of power and the expression of desire when assembling a learning place.

In conjunction to the theories of space and place the relationship between human behaviour and the environment was explored within the field of environmental psychology. This relationship was considered a transactional one where each affects the other (Fisher, Bell, & Baum, 1984, p. 6). Several theories of the human-environment transaction are presented below to provide a range of tools with which to subsequently analyse learning spaces and the transaction with students or teachers.

First, is the notion of behaviour settings developed by Barker (1968). He established that groups of people were triggered by cultural cues to behave in similar ways in similar physical settings. Although the behaviours were not completely uniform across each setting, they were sufficiently similar to suggest a pattern within
each distinct setting. Behaviour settings do not exist as a result of the environment alone, but require the interaction of the participants within the environment.

So, if the participants are absent from the setting only the physical milieu would remain. Further, without sufficient physical cues the behaviour setting could become confusing. Fisher, Bell, and Baum (1984), for example, noted that open-plan classrooms can often create confused behaviour due to a lack of physical boundaries between settings.

The notion of affordances was developed by Gibson (1977) and is some ways similar to Barker’s behaviour settings. Gibson proposed that the environment offers opportunities for use by humans and that these opportunities, or affordances, vary depending on how people perceive the environment as a result of their needs. He noted that usually an individual does not perceive the properties of the environment but what it can afford. Also, if an object becomes moveable there is a significant increase in the variety of affordances available to the individual.

The notion of adaptation was presented by Ittelson, Proshansky, Rivlin, and Winkel (1974) who noted that generally people take familiar physical surroundings for granted and, as a result, have little desire to change them. However, interestingly and counter to the social view of space, Ittelson et al. noted that: “Environments are typically neutral. We are most aware of their characteristics when change is introduced or when we encounter an unfamiliar setting” (p. 96).

This would reinforce the notion that it is the active transaction between the learner and the learning spaces that supports learning. Further, when the environment is changed or an unfamiliar setting is encountered there is a heightened awareness of the setting and its possibilities.

Following an extensive exploration of the new environment, individuals are able to manipulate or adapt it to suit their needs. Meaning and significance can be applied to a place through the adaptation of an environment to satisfy the specific needs. This is referred to as appropriation (Werner, Altman, & Oxley, 1985). During appropriation an individual may identify with, take control over, care for, feel some belonging to, or apply some meaning to an environment and in some way become attached to the place.

During adaptation and subsequent appropriation of the environment there is a transactional effect on the person that changes the attitude of that person towards the environment. This suggests a sense of some ownership and value that further implies notions of territorial control and acts of privacy. Different from the Deleuzian assemblage concept of territorialisation, Altman (1975) introduced the environmental psychology concepts of territoriality and privacy. Territoriality implies a temporary or permanent ownership of a space by an individual or group. The space may be occupied or not, but the territory is likely to be marked with explicit or implicit signs and symbols.

The territory is generally defended, but at times may be ceded to a more powerful entity. The notion of privacy refers to the culturally accepted level of access to individuals or groups. It is not a set measurement, but varies across different
groupings with the extent of private space often being marked through territories. The level of privacy is controlled by power and status and is regulated verbally, nonverbally, physically, and culturally.

FLEXIBILITY

Flexible: able to bend without breaking; pliable; pliant; easily led: manageable; docile; adaptable; versatile; variable. (Oxford University Press, 1995)

The diverse needs of constructivist learning have resulted in the recent, constant and widespread call for flexible learning spaces (see for example British Council of School Environments, 2006; Commission for Architecture and the Built Environment, 2002; Council of Educational Facility Planners International, 2009; Futurelab, 2006; JISC, 2007; OECD The Programme on Educational Building, 2001; Victorian State Government, 2008). The spatial responses to these calls for flexibility have been varied, broad and rarely catalogued.

Flexibility has developed to incorporate a range of solutions including operable walls and sliding doors, moveable furniture and transformable fittings, open fluid spaces and purposeful settings, learning streets, and multi-functional areas (see for example Burke & Grosvenor, 2008; Commission for Architecture and the Built Environment, 2006; Dudek, 2000; OECD The Programme on Educational Building, 2006). This has been accompanied by an equally wide and varied understanding of the term flexibility.

A review of the literature provided a broad and extensive view of flexibility. It is not a term that is clearly defined and succinct. Thus, the homogeneous, cover-all term of flexibility required disassembling. To clarify the term of flexibility I have produced the diagrammatic representation shown in Figure 1. A range of facets of flexibility can be established from the terms in the literature associated with flexibility. From a review of the definitions and use of the term, flexibility can then be divided into four main categories of change: time, space, use, and movement as follows:

- **Time flexibility** relates to the ability of a structure to change over an extended period of time to satisfy significant changes in need.
- **Space flexibility** relates to the manipulation of elements to create different spatial arrangements and could be described as a transformational type of change.
- **Use flexibility** relates to changing the use of a space without altering the space itself. This change could be to permit different pedagogical activities to be undertaken within the same space.
- **Movement flexibility** relates to the movement of students, teachers, and others within and around the learning space.

A flexibility taxonomy can be created when the four categories of time, space, use, and movement are applied over the facets of flexibility. Figure 1 presents this
taxonomy and demonstrates how each of the facets can be allocated to one or several of the categories.

**Figure 1. Taxonomy of flexibility**

**METHODOLOGY**

The theoretical positioning of this study was based on constructionist ontology with an interpretivist perspective (Bryman, 2004). From within this approach part of the study was undertaken from a critical social science position (Neuman, 2007).

The study has a qualitative research strategy (Denzin & Lincoln, 2000) with inductive and iterative approaches (Lather, 1986; Walter, 2006). Finally,
actor-network theory (Callon, 1986; Latour, 2005; Law, 1992) is employed as a theoretical tool for studying the complex relationship between the individual and the environment.

The basic premise of Actor-network theory, referred to as ANT, is that the “social” is not a domain among others such as economics, geography, and psychology, but it comprises the connections between domains. In ANT, the actors in society are considered to be both human and non-human entities. Both these entities have the potential for agency and act upon each other creating and recreating groupings. Through this view, space can be considered as having an influence.

A single case of a secondary school in regional Victoria, Australia, was selected to provide an in depth, rich study into flexibility. A range of variables were studied in the school with age groupings from Years 7 to 11, learning spaces from traditional classrooms to open spaces, and different teachers employing various pedagogies within those spaces. The observations were grouped into pedagogical approaches with a traditional teacher directed pedagogical method observed in three spaces, a progressive blend of teacher and student-directed pedagogical method in a three other spaces, and a student-determined heutagogical method in one further space. A non-random strategy of sampling was used to select teachers through volunteer, deliberative, and snowball selection.

A multi-method approach was adopted (Hunter & Brewer, 2003) that included semi-structured interviews of students and teachers (Zeisel, 1981), spatial mapping of the learning spaces (Horne, 1999), a participatory action research process (Kemmis & McTaggart, 2000) with Year 9 students, and reflective interviews with the teachers.

The spatial mapping involved observing the same learning space for 100 minutes periodically over six months and visually tracking the human movements and the spatial changes on a computer. In line with the categories of flexibility established above this tracked changes over time during the six months. The spatial changes that had occurred between observations within the space were recorded. During the 100 minutes sessions the movement of furniture and any other spatial item was recorded. Scott-Weber (2004) determined and defined activities within a classroom as delivering, creating, applying, communicating or decision making. The activity and location within the space was recorded at five minute intervals during the session. Finally, the movement paths were recorded of the teacher and two randomly selected students. The paths were observed and manually recorded on the computer on the learning space floor plan. The teacher was recorded in magenta, the male student in blue, and the female in red (these colours can only be seen in the eBook version). A circle represents a stationary person with the size of the circle directly related to the length of time the person remains in that location.

Further, interviews on the theme of flexibility were undertaken with seven selected teachers, ten students selected by the class teachers, four school architects, and three government and non-government providers of facilities including those involved in the case study school design, all individually selected.
Finally, a Participatory Action Research process was undertaken with Year 9 students in their learning spaces separate from the rest of the school. This heutagogically based learning resulted in the students planning and executing project work within the community. The author worked with six self-selected students to discuss, plan, and physically implement changes in their learning settings. Then, these changes and their effect were reflected on during interviews with the students and teacher.

The analysis of the findings was organised into pedagogical approaches that reflect year groupings. These are the traditional pedagogic approach with the senior Years 10 and 11; the progressive pedagogy with the middle Years 7 and 8; and the heutagogical approach, or student-determined learning, with Year 9.

**RE-PLACING FLEXIBILITY**

*Between Meaning and Meanings*

Flexibility is a term that has a meaning that is neither static nor fixed. Although dictionaries provide definitions for flexibility that relate to things that are pliable and bendable without breaking, a review of the literature provided a wide and varied range of understandings. The confusion in the literature mirrors a confused understanding about flexibility in the fields of education and architecture. There is no single clear meaning for the term, and it is being constructed and re-constructed.

The findings from interviews with facilities providers, architects, teachers, and students also revealed a range of meanings rather than one meaning. Using the categories of time, space, use, and movement, it became clear that the groups involved in the design and use of learning spaces had understandings that were not aligned but varied across the categories.

Figure 2 provides the pictorial representation of the meanings of flexibility. The shading within the interviewee bars is a representation of the main focus of the responses. The figure indicates the area of most responses with a darker area of shading. Thus, although there were some references to other categories, facilities providers’ main focus during the interviews was on time; architects’ on space; teachers’ on use; and students’ on movement.

This confusion has the potential to cause misunderstandings and misinterpretations among the participants as each of them construct their own meanings through their own experiences. Thus, one single meaning for the term flexibility is not sufficient in the literature and in practice. Flexibility has a multiplicity of meanings which, when used, require specific clarification through the question: “What do you mean when you say flexibility?”

This variety of meanings requires some “re-placing” of the term flexibility. The term as it stands is useful as a collective word, but some sub-categories of flexibility may assist for clarification. For the time related flexibility, the term adaptability may be used as low magnitude/high frequency architectural change. Where flexibility is related to space, the term transformability may be employed as the ability to change
a space from one form to another in a way that would require some effort. The use flexibility could be re-placed with polyvalent. This term, adopted from chemistry by the architect Hertzberger (2005), describes a space that can be pedagogically used in a variety of ways without the form itself having to change. Finally, for the movement flexibility the word fluidity may be appropriate for describing a space that supports the free movement of teachers and students within a learning space. These terms are not to remove the term flexibility but to “re-place” it with the support of more explicit terms that can eliminate the conflict that is arising from its sole and exclusive use.

For clarity, the findings from the empirical study have been incorporated into the discussion as below.

Between Rigid and Transformable

The body of theory and knowledge connects constructivist learning to the environment (for example see Dewey, 1938–1939; Vygotsky, 1935/1994). However, the literature indicated that the environment is not just a backdrop, a shell, or a simple enclosure. It is the interaction, transaction, and manipulation of the environment
that causes learning. When looking at the space mapping as a whole across all the observations undertaken it was apparent that the learning environments were not altered significantly during the learning sessions. There were some sessions where spatial movement did occur, such as the space used by a progressive pedagogical Year 7 group, as shown in Figure 3, but generally the spaces changed little during the 100 minutes sessions.

This lack of spatial change was regardless of the pedagogical approach of the teacher, as demonstrated by a student-determined heutagogical Year 9 space that changed little during the observation sessions. The student manipulation of the learning environment was not apparent with students making few changes to their spaces. The students did not interact with their environment by changing the space to suit their learning needs.

A transaction did not occur in terms of the students impacting on their learning space and the environment impacting on them. Actually, quite the reverse was
happening, as the rigid environment caused the individuals to alter their learning needs to accommodate less than satisfactory spatial arrangements. An example of this was demonstrated in the Year 10 sessions. The students attempted to work in groups and were hindered by the spatial arrangement of the horseshoe of tables as shown in the 75 to 85 minute period of Figure 4.

*Figure 4. Changes in use during a teacher-directed pedagogic Year 10 English session*
In the interviews some teachers expressed a desire to let students have some control over their space and over flexibility. However, that independent student manipulation of the learning space did not occur during the observed learning sessions. The observed spaces generally remained rigid and unchanged despite some of those spaces having been specifically designed to facilitate flexibility. As a result of this rigid internal layout, it was the students themselves who became masters of flexibility in that they were required to undertake a range of pedagogical activities without changing spatial arrangements. The rigid spaces created and were supported by flexible practices.

This was demonstrated in the use mapping where often a variety of pedagogical uses were undertaken within the same spatial arrangement. Again, the spaces impacted on the individuals rather than a transaction occurring. In this way the spaces did have polyvalent properties in that they permitted a range of activities without the spaces being changed. However, in these situations the spaces were succumbing to the different uses rather than supporting a range of learning processes and needs.

Thus, the current learning spaces at the case study school remained rigid and unchanging despite the opportunity for spatial reorganisation. The type of learning space did not make any difference to this rigidity as the lack of flexibility occurred in traditional classrooms, double portable spaces, open learning spaces, and in a new senior building designed with flexibility in mind.

The only observation sessions that were different to this were in Year 7 Engineering where the teacher created some limited spatial changes to satisfy her needs for a variety of activities. This study demonstrated that, despite the importance that the literature placed in an interaction or transaction between the learner and their environment, student spatial transformations of the learning environment did not generally occur in the case study school.

Between Static and Fluid

Writers in the literature argued that learning is supported by physical human movement (for example see Dewey, 1897; Montessori, 1966). They suggested that free, purposeful movement provided learning opportunities and a student focus. There are connections in the brain between cognition and movement (Jensen, 2000). A positive relationship was made between physical activity and academic achievement, while physical inactivity was negatively associated with brain activity.

The mapping in this study showed that there is a link between pedagogical approach and student movement. Students in traditional teacher-directed learning environments are typically static and immobile. Heutagogical student-determined learning took place in a highly fluid environment such as the Year 9 learning space with the exception of relatively static students who are engaged in their learning. Some students were extremely active and covered as much ground as their teacher during any session. In contrast to this, the Year 10 and 11 sessions were dominated
by traditional didactic teaching where, often, the teachers were extremely active and the students were inert for 100 minutes.

This situation was the result of the pedagogical approach rather than any restriction on space, as demonstrated by the lack of student movement in a Year 11 Physical Education sessions shown in Figure 5 where the magenta line is the path of the teacher, red is a female student, blue is a male student (these colours can only be seen in the version of eBook).

![Figure 5. Movement paths in a teacher-directed pedagogy session during 100 minutes of Year 11 physical education period](image)

The issue of movement is further highlighted when it was discussed with the students during the interviews. The students expressed an explicit desire to move during their learning. They saw movement not as an issue of behaviour but as an opportunity for learning. Social contact was important for them but, with an unknowing support for the social constructivism of Vygotsky (1935/1994), they saw the need to interact with their peers in developing their understandings and knowledge.

For the students, interaction was in part socialisation in that they wanted to interact with their friends, but they also noted the learning opportunities of looking
for inspiration, testing their own understandings, and challenging their propositions. They felt that the loss of concentration through movement during learning would be significantly less than the loss of concentration due to sitting in one seat and “zoning out”.

In addition, many of the teachers were unaware of the lack of student movement in their sessions. Once the movement mapping was presented to the teachers some were so concerned that they actively changed their future practice. However, the general blindness to the mobility of students meant that opportunities for student interaction were missed. This was articulated by a Year 9 student when he said that it was difficult to interact in a group when sitting in a horseshoe formation.

Movement in the learning space has traditionally been seen as a behavioural issue. Some teachers saw student movement in terms of a loss of control. In contrast, some of the interviewed students indicated that had they been offered the opportunity to be more mobile in their learning they would have respected and acted on that responsibility.

Clearly, there was a significant tension between the theories about learning and movement compared to the current practice in the case study school. Students in traditional teacher-directed space shown on Figure 5 and progressive student-directed learning environments shown on Figure 6 were not moving as much as students in heutagogical student-determined environments which can be seen later in this chapter in Figure 10. Without such movement, students are missing the opportunities to engage in socially interactive learning.

Between Territoriality and De-territorialisation

A variety of human-environment transactional theories including behaviour settings (Barker, 1968), affordances (Gibson, 1977), appropriation (Werner, Altman, & Oxley, 1985), privacy, and territory (Altman, 1975) are all useful when analysing the environmental psychology of learning spaces. The behaviour setting of the learning environment was clearly in place across the case study. The teacher-student-learning setting triangle was evident as all played their part as actors in the behaviour setting of a learning environment.

A traditional classroom behaviour setting was strong in the more traditional teacher-directed pedagogical situations. However, the traditional learning setting was challenged in some of the circumstances. The Year 8 learning space in Figure 6 was sufficiently large to create a range of different settings including areas for group tables, presentations, and individual learning. As a result, the behaviour settings of the traditional classroom were dispersed. This required the students to be more mobile or fluid to access the setting that suited their specific learning behaviour at any point.

The affordances that the Year 8 learning space created were wide and varied in comparison to the fixed arrangements of the Year 10 traditional classroom and the Year 11 single classroom space. The former provided a range of affordances that supported a range of pedagogical approaches including student-directed learning,
whereas the latter two spaces with their static, constricted arrangements afforded only one opportunity, that of teacher-directed didactic teaching.

The Year 8 teacher reinforced this notion when he suggested that the students direct not only their learning, but also their learning spaces.

When changes occur to spaces they become less taken for granted and more visible. This was seen during the Year 9 Participatory Action Research (PAR) process where the author worked with six students to recreate their learning spaces as seen in the original and final plan in Figure 7.

As a result of the PAR work with the students, they became more aware of their spaces and the learning opportunities. These changes brought with them an appropriation of the spaces, initially by the PAR students and then by other Year 9 students. During the PAR process the students took more control and more ownership over their learning spaces to such an extent that one of the teachers felt that she had no right to alter the settings that the students had created. However, the settings created by the PAR students did cause some conflict regarding the concept of privacy. Some of the new settings created levels of student privacy but limited levels of teacher supervision. This tension is discussed below under the heading: Between Control and Freedom.

 Territory was an important issue across the learning spaces. Typically, in the learning spaces the students tended to occupy the same desk surrounded by the same group of students every session. This territorial habit was maintained by students and teachers alike.

 Students commented that they generally sat in the same location in the learning space. Students liked this territorial approach as it provided them with some ownership over what they regarded as their personal space despite the remainder of the learning space being controlled by the teacher.
However, this form of territory can be detrimental to learning as was seen when some of the PAR group were occupying a new breakout space that they had created and another Year 9 student was prevented from using the space and retreated with the retort: “You built it, you can have it”.

This form of defensive territoriality contrasts with the more creative territorialisation/de-territorialisation dimension of assemblages (Deleuze & Guattari, 1987). The movement towards de-territorialisation was evident with the Year 10 students. These students maintained the robust repetitive practices of attending school and adhering to the lesson timetable. However, they felt no desire to remain in the traditional classroom space that they were taught in. The two interviewed Year 10 students held little attachment to the classroom despite some students’ work being displayed on the walls and the horseshoe layout maintained by the teachers to provide opportunities for collective group discussions.
Any feelings of territoriality stemmed not from the room as a whole, or from the occupants alone, but from the socio-spatial assemblage of small groups of friends repetitively sitting in the same location each session. This compares with the Year 8 and Year 9 students who also had the same rhythmic school practices but had some influence over the arrangement of their learning spaces. These students chose where to sit and were at liberty to reorganise the spaces to suit their learning needs, thus causing a social attachment to the place. In this way their territoriality was not only in the ability to sit in the same location if they desired, but bound by a collective ownership and responsibility for the space. Therefore, the desire to learn in that environment created a territorialisation of the place that, in turn, reinforced the desire to learn.

**Between Space and Place**

The discourse about space with the various concepts of space provided opportunities to view the case study learning spaces in different ways. With a Heidegger (1962) view of space, the small Year 11 Physical Education classroom, when empty of the class, is a bounded, clear, and free space awaiting new occupants. When the room is occupied classroom life is attached to the space in Heidegger’s sense of being-in-the-world.

*Figure 8. Photographs of portable classroom occupied by Year 7 humanities*
R \text{-} PLEXIBILITY

Lefebvre (1974) regarded space as socially produced, a means of production, and not found. He offered three concepts of space: spatial practice that was a perceived, coherent, and social space based in society; the dominant representation of space as a conceived, intellectual, and mental space based on language; and the dominated representational space that was a lived, inhabited, but hidden space based on images and symbols. If these are applied to the case study school, a space like the Year 7 Humanities room seen in the photographs of Figure 8 could be seen in each of the three ways.

As spatial practice it would be perceived as a socially constructed environment with the interactions among teachers and students creating a coherent space or a society of learning. In this situation the teacher was delivering a progressive pedagogy where the students had some control over their social interactions and their learning. The representations of space would be based on the language of the space.

This would be the way the teacher conceived of the space during her planning and practice or the way she thought about the space with pre-organised rearrangements such as rows, circle, groups, and the horseshoe arrangement of tables as seen in the third photograph. This creates a conceptual intellectual space and would be dominant over the other two concepts. Finally, the representational space would be the lived experience within the space that delivered the hidden meaning behind the classroom and describes the power structures of teacher, students, and school/educational authority.

The way the space was used and controlled by the teacher with only a little student independent movement or spatial manipulation, created a space with a reasonable level of inherently authoritarian control. This is borne out in the lack of connection between space and learning reported by the students during the interviews.

Massey (2005) regarded space as being a product of interrelations between heterogeneous trajectories in a sphere of constant change that was always under construction. With Massey’s understanding, the case study learning spaces could be seen only as social environments constructed through the interactions of the teacher and students disregarding any physical environment. Thus, if considering this concept of space, any change to the physical space should not make any difference to the social experience within the space. However, the case study demonstrated that teachers elected to change spaces to suit their teaching needs despite still having the same students within the space. Further, when the Year 9 PAR students created new learning settings the space changed for them despite the individuals within the space remaining the same. A Year 9 student commented: “It is amazing what a little bit of difference makes. Like this used to be just a classroom but now, with the [soft] seating area, it feels so different”.

In association with space is the notion of place. Heidegger (1971) regarded place as a human emotional attachment through experience to a location set within a space, whereas Massey (2005) considered place to be a process of trajectory collection not bound by location.
Dovey (2010) considered place to be between these views that had both spatiality and sociality. He saw places as being always in development, dynamic, and a reflection of constant changes in desires that had intensity and a “feel”. For the Year 10 students their traditional classroom was a space with limited emotional attachment, although it provided social contact with the teachers and some limited contact with their fellow students.

It satisfied the pedagogical requirements of the teacher with the horseshoe seating format and a row of computers, see Figure 4 above. However, for the students there was no desire to be in the space; it had no intensity, and no feel. The students were not connected to that space in any way and they could have been taught to the same extent in the adjacent classroom space. Similarly, the Year 9 PAR students felt no positive connection with their buildings originally. They spent the first meeting with me highlighting the bad things about their buildings. It was not until they assembled their own place through their own desire, social interactions, and transformation of the space that the space turned into a place for them.

Their connection to it, their respect for it, and even their acknowledgement of it were evident as the project continued. Their intensity and feel remained until they left the campus whereupon the place they had created became unstable and lost the repetitive practices that maintained them. The next set of students took on the challenge to develop their own learning place with desire, emotional connection, and territoriality with intensity and a “feel”.

The PAR students’ connection to both spatiality and sociality was evident as they manipulated spaces to suit their needs. Their desire to work on their learning spaces was apparent in their continued association with the volunteer process throughout the term and in defending those spaces when challenged. The pride they displayed in their spaces was clear in a wish to present their project to parents at the end of term.

Also, the social connection they made with each other and with me was obvious as they fully supported each other during the process. Further, the social connection with others at the campus was apparent in their willingness to undertake the project for all the Year 9 students, as displayed in one comment: “We have done it but we have done it for everyone. We haven’t done it for us. It is still there for them to use. That’s why we’ve done it”.

This raises a different understanding of the notion of ownership. For many of the teachers, ownership meant the personalisation of a space through the presentation of student displays. This may have some benefit and provide some connection, but for students the personalisation of a space though their own action appears to have created a much stronger bond with a place. The socio-spatial acts of transforming the learning spaces developed a sense of ownership in them. The Year 7 Humanities students felt little ownership over their space despite there being posters and their own work on the walls.

However, the Year 8 students did feel connected with their learning space as a result of being able to move within that space and change it physically. The Year 11 students...
students held a strong connection to their space even though there were no displays of their work on the walls. For them, their feeling of ownership developed from having most of their lessons in that space and some sense of control over it. Horne Martin (2002) suggested that student participation in the design and construction of a space increases a sense of ownership that improves management and maintenance issues while reducing vandalism and neglect.

The participatory process with the Year 9 students demonstrated that if students are part of the daily practices of considering and changing their learning spaces there is a powerful feeling of ownership and connection. The Year 9 PAR students reported that the intensity of the connection to place created positive attitudes towards learning. Thus, flexibility could be regarded as a catalytic socio-spatial assemblage that positively affects students’ attitudes towards learning.

Between Discourse and Practice

As discussed above the theoretical connection between learning and the environment found in the literature are described. The majority of the teachers interviewed indicated that space was important for learning. The only teacher who stated that space did not make much of a difference to learning changed his opinion during a reflection interview process.

The acknowledgement of space as an actor in learning was in line with actor-network theory which suggests that non-human elements have agency similar to humans (see Latour, 2005). The teachers’ discourse contrasted starkly with their practice because the mapping revealed a lack of spatial manipulation. Further, all teachers eventually linked flexibility to learning. The meanings of flexibility for teachers showed that, although they considered the transformation of space to be part of flexibility, their main focus was on being able to polyvalently use the space for a range of activities without changing it physically.

However, the mapping revealed only partial use of the learning spaces. Typically, the teachers with the progressive pedagogical or heutagogical approaches were the most enthusiastic about the relationship between space or flexibility and learning. They employed a range of uses across the whole of the learning space, see Figure 9.

In contrast, teachers who held less strong views about those relationships tended to employ one spatial arrangement and undertake most of their traditional pedagogic activities within that layout. Further, from the constructivist learning literature, it was expected that the differences between a traditional pedagogical and a heutagogical learning environment would be significant. The mapping demonstrated that some differences did occur, as with the increased fluid movement of students, however, there were only limited differences with the spatial transformation of the space.

When the students were asked about the importance of space on their learning, the level of appreciation of the importance increased with the age of the students.
The Year 7 students did not believe that there was any connection between space and learning but that gradually changed through the years, with the Year 11 students making a strong and positive connection between the two.

Once again, the mapping revealed a practice that contrasted with this belief because little spatial change occurred in any of the age groups. These beliefs on the relationship between space and learning were tested in practice during the participatory action research process where students made significant changes to their learning spaces. These changes engaged the students in their learning spaces and made them aware of the learning opportunities that they created.

As with space, the students’ connection between flexibility and learning grew through the age groups. Similar to the teachers’, the students’ understanding of the meanings of flexibility included some spatial transformation, and some polyvalent use, but the majority defined flexibility in terms of a fluid movement. With this lens, the inverse is highlighted. Thus, where the younger students did not connect learning
to fluid movement flexibility, they were the ones who moved more compared to the senior students.

The older students appreciated fluid movement flexibility but, as was shown in the movement mapping, were restricted in their mobility. The Year 9 students made a connection between flexibility and learning, and were fortunate enough to have fluid learning sessions as shown in Figure 10. Further, during the participatory action research process they ensured that their movement was purposeful by providing a range of learning settings as destinations within and outside of the original learning space.

The mapping of uses in the learning spaces showed that the pedagogical activity of “decision-making” occurred infrequently, for example see Figure 4. The Year 9 student-determined learning space was the only location where it occurred to a noticeable extent, refer Figure 9. When this issue was raised with the teachers, they explained that decision-making was a difficult and time-consuming activity to undertake with students.

This hole in the pedagogic activities is interesting especially when decision-making is a significant requirement of modern, everyday working life. Thus,
students are not being given the opportunity to learn and practise decision-making in a learning environment.

The flexible use of learning spaces could be seen as a way of providing decision-making opportunities that require collaborative and cooperative negotiations between students and teachers, and among students. Spatial decision-making opportunities for students could foster feelings of control over their learning spaces that would support motivation, self-esteem, responsibility, and a desire to learn.

Between Control and Freedom

The work on discipline by Foucault (1979) is useful in understanding the issues of control revealed in this research. The interviews revealed that most believed that teachers control space. This control was evident in the Year 10 teacher who maintained a U-shaped furniture arrangement, see Figure 4. The students had little say over their learning environment, with the space and associated social interactions between the students highly controlled by the teacher. This spatial control was disliked by the students who were fully aware of the power implications of the layout.

The senior students expressed a desire to engage with their learning spaces as much as did the junior students. However, the limitations of curriculum and examinations caused teachers to forego the opportunities for constructivist learning in favour of a teacher-directed approach. As a result, the importance of the learning space for teacher-directed learning was diminished.

The work with the Year 9 PAR group showed that students became thoroughly engaged when provided with the opportunity to manipulate their space. This engagement occurred not only in the development of their learning spaces but also with their learning. For these students manipulating their space provided an impetus to learn. Further, in a social constructivist sense, the social connections established through the act of spatial manipulation were deep and lasting.

This is evidenced by these students maintaining a positive social relationship with the author well beyond the confines of the one term PAR process and frequently providing updates of their learning when we met subsequently. Latour suggested that emancipation “does not mean ‘freed from bonds’ but well-attached” (2005, p. 217). In this sense the PAR students became “well-attached” to other students, to the researcher, and to their learning place, and thus felt some emancipation from traditional school practices.

Teacher levels of control extended from the spatial to the corporeal as the teachers actively limited the extent to which students were permitted to move as they learned. As discussed earlier, there is a positive relationship between movement and learning found in the literature. The interviews with students revealed that they wanted to be able to move to support their learning.

They understood that movement had some social component, permitting them to access their friends, but that such movement came with a responsibility to learn and...
not to disrupt. However, the mapping of the learning spaces at the case study school demonstrated that, with the exception of the Year 9 students, the majority of students were typically static during their learning. This showed that although the space had some influence on student movement, it was not the guiding factor. The students reported that the lack of movement was not due to the space but was due to teacher control.

The control over student movement by teachers could be viewed as comprising surveillance. During the PAR process, the Year 9 students were exploring the transformation of their learning space to support their learning, and on occasions teachers perceived a reduced level of supervision over the students. Two incidents demonstrated a level of covert surveillance, and thus power, over the students. In the first, the PAR students changed the location of the student access phone away from a noisy hallway, but also away from the staffroom.

In the second, the PAR students created several learning settings within the hallway, which limited a teacher’s view from her desk. The arrangements for both of these spaces were subsequently returned to their original layout restoring the teacher’s ability to engage in surveillance. A negative comment by the Year 9 lead teacher regarding the enclosed nature of a newly created breakout space to the rear of the large room similarly highlights the teacher’s need for supervision. These examples demonstrate the tension between the need for students to feel some level of privacy and the teachers’ need for supervision.

Dewey (1938–1939) advocated a freedom of mind based on a freedom of the body. This study revealed that the freedom of the body is controlled by some teachers for maintaining order and supervision. This control and lack of freedom for students was fully recognised by teachers and students alike. The freedom that the students could experience was explored in the participatory action research process with the results fully supporting the views of Dewey. However, some teachers were not willing to release their power over the students even if it would enhance learning opportunities.

The restrictive level of teacher control of space and movement encountered in the Year 10 classroom could be seen as a constrictor of learning. When the control of the space was transferred towards the students the learning space and movement became enablers, as was experienced with Year 8 and Year 9 students. The PAR project with the Year 9 students showed that if control of the learning space was transferred towards the students their attitudes towards space changed.

The “spatial silence” experienced by students, as described by Fisher (2002), was removed as the students actively and vocally engaged in their space. Their interest and commitment was evident. As a result, they and their teacher reflected that their approach to learning had markedly improved. Further, their teacher commented on the PAR students’ increased feeling of responsibility for both their learning space and their learning.

The responsibility for control and the retention of power did not rest solely with the teachers. There were other actors that impacted on space and flexibility. The timetable had a significant effect as an organiser of the educational, social, spatial, and temporal elements of the school. The timetable was constructed by the school.
leadership and was a controlling actor over teachers, students, and spaces alike. It was a rigid catalogue of allocation that traditionally placed one class with one teacher who was responsible for one subject in one room.

At the case study school the timetable was compiled using the subjects as the basis, then teachers were allocated to the subjects, and finally a room was designated. However, the timetable hampered ownership of subject, space, and time by teachers and students alike. It also restricted the manipulation of spaces. As a result, teachers felt distanced from, and frustrated with, their spaces and opportunities to change it. Students felt little connection with learning spaces that they only passed through.

Thus, instead of allocating specific subjects, teachers, and students to spaces a possible solution could be a more collaborative, negotiated approach to timetabling. Multiple teachers and students could be allocated to a range of spaces for an extended period of time and the actual apportionment of spaces, teachers, students, and learning could be undertaken on a negotiated basis at the time of need.

This may more closely satisfy the intent of student-centred learning that benefits from a variety of groups of students with an array of teachers undertaking a range of learning modalities in a multiplicity of learning settings. It would provide several teachers and a large number of students with opportunities to satisfy their teaching and learning needs in a supportive learning place.

Student-centred learning spaces could be seen in similar terms as student-centred learning. Teachers who practise student-centred pedagogy provide an overall learning framework within which students can organise their learning. In the same way, teachers could provide an overall spatial framework within which students can organise their own learning spaces to suit their learning.

The Year 8 teacher alluded to this when he said: “So the teachers may well set [the space] up initially, but if there is that ethos of flexibility, then I think students would say ‘oh well, I think it would be better this way’”. Thus, some of the control of the learning spaces could be transferred towards the students. This could be achieved by teachers providing a structure to the space through scaffolded learning spaces. Similar to scaffolded learning, teachers could provide an appropriate spatial framework within which the students could successfully explore their spatial needs.

At the point that the students’ learning moved beyond the current spatial supports, the teacher could extend the scaffolding to provide further opportunities for spatial exploration. Thus, the learning space would become a shared responsibility, with the teacher framing the space for the students to manipulate. Through this process, teachers and students could collaborate on their learning spaces in an equitable learning relationship.

CONCLUSION

‘Change life!’ ‘Change society!’ These precepts mean nothing without the production of an appropriate space … new social relationships call for a new space, and vice versa. (Lefebvre, 1974, p. 59)
RE-PLACING FLEXIBILITY

In reference to Lefebvre’s quotation above, this work describes how flexibility can affect the new social relationship of learning through a new space, and vice versa. Flexibility provides a multiplicity of opportunities for interactions, discussions, collaborations, conflicts, connections, and reconnections.

For learning, flexibility can be seen as necessity, spontaneity, equity, democracy, and empowerment. It breaks the teaching panopticon to create a learning place of ownership, respect, and responsibility. Through this study, flexibility has been replaced, not as a product of building, but as a process of learning.

REFERENCES


Ken Woodman

*University of Melbourne*