



Innovative Learning Environments

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About Leading Learning

Leading Learning is an educational consultancy based in Auckland, New Zealand. Our key areas of focus are innovative learning environments, future-focused teaching and learning, and change leadership. Leading Learning's consultants work with schools and school districts across New Zealand, Australia, the United Kingdom, Europe, Canada and the United States.

About the author

Mark Osborne is a Director of Leading Learning and has been a teacher, school leader and consultant for more than 20 years. He works nationally and internationally on future-focused education, innovative learning environments and educational leadership, helping schools build great places to learn and the capability to make the most of those spaces. Mark is also a doctoral researcher at the University of Melbourne currently exploring change leadership in innovative learning environments.



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“Ko te ahurei o te tamaiti arahia ō tātou mahi”
Let the uniqueness of the child guide what we do.

Introduction

Winston Churchill famously said that “We shape our buildings; thereafter they shape us.” When walking into a building, we often take our cues unconsciously from the physical environment. For instance, when walking into an auditorium, most people sit in the seats facing the front rather than on the stage facing out. When in a café, we mostly choose to sit and eat at tables rather than on the floor or leaning against a wall. In fact, as Heidegger said “Never underestimate architecture’s ability to shape behaviour. A bridge says ‘cross this river here’ and supplies a means to do so.”

Traditional classrooms ‘arranged into rows and columns of tables or chairs facing a blackboard with the teacher’s desk in front of the classroom’ (Sztejnberg & Finch, 2006) were originally designed to shape behaviour in ways that worked for traditional teacher-centred instruction. The uniqueness of each individual includes the different strengths and talents they bring to learning, and reminds us that the physical environment can play a role in unlocking and extending those strengths. When designing and implementing learning environments, research tells us that we should “accommodate variability among learners from the outset” (Gronneberg & Johnston, 2015).



Educators face a challenge then, given the majority of the school buildings in use in New Zealand were built closer to Churchill’s lifetime than the lifetimes of those currently inhabiting them (New Zealand Ministry of Education, 2011). The move to *Innovative Learning Environments* (or ‘ILEs’) is in part a response to the growing diversity in communities, the varied needs of our students, and a desire to provide physical environments that educators can use to meet these diverse needs.

Evidence-based learning environment design

A growing evidence base suggests that well-designed learning environments can enhance learning for students: “[there is] a very strong correlation between innovative learning environments, high levels of deep learning and high-quality teaching” (Imms et al. 2017). Similarly, Barrett et al. (2015) found that the physical characteristics of primary school environments “impact on pupils’ learning progress in reading, writing and mathematics,” suggesting that the design of learning environments explains up to 16% of the variation in the overall progress a student makes in a year.

If well-designed environments improve learning for students, what are the features of a 'well-designed' environment? Research suggests that when the following elements are in place, student learning is likely to accelerate:

- **Naturalness.** The closer heating, lighting, ventilation and acoustics are to a 'natural' environment, the more comfortable people are. These elements are known as 'the big four' and getting them wrong almost certainly means that learning will suffer (Soccio, 2017). Unnatural environments (dimly-lit; stuffy; uncomfortable; or lacking natural materials) can lead to the production of stress hormones including cortisol, which decrease the rate of learning (Samuels & Stephens, 1997).
- **Inclusive design.** Universal design for learning (UDL) acknowledges that everyone learns in different ways, but also that the environment may prevent people from learning in the way that works best for them: together or alone, quietly or in conversation, standing or sitting, passively or actively, with technology or without it, indoors or outdoors- or however students may prefer to learn (Gronneberg & Johnston, 2015). If traditional seating in rows dominate the environment, so do teacher-centred approaches (Sztejnberg & Finch, 2006).



- **A sense of belonging.** When students are provided with a degree of 'privacy and ownership' within a space, they feel an increased sense of belonging (Gifford, 2002). Privacy and ownership includes approaches such as providing space for students to store personal items as well as space and time to build relationships with others.
- **Language, culture and identity.** When students are surrounded by positive images of their culture and identity, their wellbeing, sense of belonging and academic achievement increases (New Zealand Ministry of Education, 2013). For example in order to support the learning of Maori and Pasifika learners (as well as many from other cultures) environments should facilitate approaches such as ako, whanaungatanga and wananga.
- **Collaborative learning.** "Co-operative group work, appropriately organised and structured, has demonstrated very clear benefits for achievement as well as for behavioural and affective outcomes. Co-operative methods work for all types of students because, done well, they push learners of all abilities." (Dumont, Istance, & Benavides, 2012). For these reasons, learning environments should be biased towards collaboration and group-based learning.
- **Variety and flexibility.** The most effective learning environments often have varied room shapes, are able to operate in a range of different modes, and have a variety of different learning zones and

breakout spaces (Barrett et al., 2015). Variety is essential to learning, with varied activities and environments closely linked to increased attention and recall of information (Briggs, 2013).

- **Effective acoustic design.** Varied learning activities carry with them varied acoustic requirements: both quiet and noisier activities may be appropriate within the same learning environment. Traditional classrooms try to accommodate all noise levels within a single zone, while most flexible learning environments aim to offer at least three acoustic zones: reflective/creative (quiet); creative/interactive (conversational); and interactive (noisier) (Fisher in Von Ahlefeld, 2009). In poorly designed acoustic environments, noise can interfere with learning, particularly for students with autism; young children; students learning English as a second language; and anyone with hearing, language or learning problems (Gifford, 2002; Eberhard, 2009).
- **Awareness of cognitive load.** An excessively noisy or distracting environment can increase the cognitive load on learners. Effective environments minimise load so cognitive effort can be directed into the learning itself (Sweller, 1988). 'Low stimulus zones' should be available for times when students need an absence of distraction to focus or to process information and experiences (Gifford 2002).
- **Physical movement and activity.** There is growing evidence of connections between physical movement, increased oxygen levels in blood, and memory and recall (Sousa, 2014). Researchers have found that strategies such as allowing students to use standing desks increase levels of engagement by up to an extra seven minutes per hour (Dornhecker et al. 2015). Similarly, the "foot-tapping, leg-swinging and chair-scooting movements of children with ADHD" appear to be vital for remembering information and working out complex cognitive tasks (Kofler et al., 2011).
- **Strong connections with the outdoors.** When students have views of nature and are able to easily access outdoor contexts for learning, benefits include improved cognition (greater knowledge and understanding); affective impacts (attitudes, values, beliefs and self-perceptions); interpersonal and social skills (communication, leadership and teamwork); and physical and behavioural outcomes (fitness, personal behaviours and social actions. Easy access to the outdoors and purposeful outdoor learning environments support these connections (Dillon et al., 2005).
- **Pro-social behaviour.** Gifford (2002) found that anti-social behaviour decreases when classroom environments are less 'dense' (fewer pieces of furniture and/or people per square meter). Hidden or 'unobserved' spaces often encourage antisocial behaviour and bullying which negatively impact on learning (New Zealand Ministry of Education, 2015, Alton-Lee & Nuthall, 1990). Sight lines and the use of internal glazing can minimise hidden corners within environments.
- **Learner agency.** When learners have the power to be active in making decisions about their learning, intrinsic motivation, creativity, higher-order thinking and overall achievement tend to increase (Toshalis & Nakkula, 2012). Environments should be designed in ways that allow students to develop their ability to make choices, access a range of environments and be active participants in their learning (Elmore, 2016).
- **Co-teaching and teacher collaboration.** Spaces that facilitate and encourage collaborative teaching are likely to lead to more effective teaching and improved student outcomes (Darling-Hammond, Aness, & Ort, 2002, York-Barr, Ghore, & Sommerness, 2007). Studies report increased teacher collaboration when spaces and curriculum are specifically designed for collaborative teaching and learning (Blatchford, Baines, Rubie-Davies, Bassett, & Chowne, 2006; Tolmie et al., 2010). Gislason (2009) found that physical design can facilitate collaborative, multidisciplinary teaching practices.
- **Celebration of learning.** Learners should also be able to see themselves, their progress and their achievement celebrated in the spaces around them (Killeen et al. 2003). Environments should offer large, accessible wall areas to provide "flexible opportunities for the display of information and of pupils' work," (Barrett et al., 2015) as well as gathering spaces where others may celebrate the achievements of students.

Implementation:

Even with all of these physical considerations accounted for in the design of a learning environment, it's important to remember "buildings on their own are not enough" (Blackmore et al., 2011). Throughout the process of planning, inhabiting and sustaining a new physical environment, communities must engage in what has come to be known as 'serial redesign' (Thomson & Blackmore, 2006). Serial redesign is the process of continuously, collaboratively reflecting on what is working well, what is not working well and ensuring the environment is meeting all users' needs.

To ensure all components of the ecosystem are working in harmony to raise outcomes for learners, three key areas need to be aligned: the vision of what an organisation is trying to achieve (purpose); the human skills and capabilities needed to achieve that vision (people); and physical environments that facilitate and encourage preferred ways of operating (place). Researchers such as Blackmore et al. (2011) conclude that when designing innovative learning environments, purpose, people and place need to be in alignment in order to achieve the best outcomes for learners.



Reflection:

- What is your organisation's vision for learning and how well does the environment support it?
- Who has been part of the design process? Who has not been part of it? How might they be?
- How have student learning needs been used to make choices in the design the environment?
- How well does the design enact the evidence-based principles outlined above?
- How are you evaluating the success of the environment? What metrics are you using?

Questions?

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