

(Re)Shaping spaces for learning: Experiences from Aotearoa New Zealand

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Schools and universities in Aotearoa New Zealand have been transitioning into new spatial configurations. These spaces are being carefully (re)designed to accommodate technology-rich activity, and to enable collaborative teaching and learning in ways that actively engage students in scaffolded inquiry. As teachers and students shift from traditional classroom layouts into flexible learning arrangements, educators are having to deeply rethink their own practices. In addition, the recent Covid-19 outbreak raised new questions in education about the role of technology in learning. This article argues that it is critical that Aotearoa educators understand (i) how to (re)design and (re)configure learning spaces in ways that support what they value in learning; and (ii) how they can tap on the digital to extend students experiences, both across and beyond schools and universities' physical settings. The article introduces a way of framing the design and analysis of complex learning situations and reports on qualitative findings from a recent survey, which explored educators' experiences of learning environments across Aotearoa New Zealand.

Keywords: design for learning, educational design, innovative learning environments, learning spaces

Introduction

For many years, the materiality of learning was a neglected aspect of the complex learning entanglement in education, appearing mostly as a backdrop for where the “real” action was to take place. More recently, however, a socio-materialist turn in education has been calling attention to the need to move away from an isolated focus on either entities or individuals, towards a nuanced understanding of material relationality in learning (Fenwick, 2015). Socio-materialism foregrounds knowledge, people, objects, and systems, as influenced by connections and activity, where performativity comes into existence through complex webs of relationships.

Accordingly, the understanding of the role of spaces, and the qualities of the materials in learning, have recently become the focus of global and local interest, in policy development and research studies (OECD, 2017; Benade & Jackson, 2020; Carvalho et al, 2020). Amongst those pioneering this trend was the OECD's international project on Innovative Learning Environments (ILE) set up to explore new ways of encouraging young people's learning. The OECD's intention has been to imbue contemporary education reform with forward-thinking insights, and to outline important guiding principles that could more effectively support educational innovation. Building on the notion of ILEs, the Learning Environments Evaluation Program (LEEP) frames learning environments as “the result of interactions between physical resources (i.e., learning spaces, material and technology), learners, educators, content, learning leadership, society and policy” (OECD, 2017, p. 12). Such policies have influenced an upsurge of multi-million dollars investment, in new infra-structure at many schools and universities across the world.

These investments and policies in combination with recent research are re-positioning the significance of materials in learning and sparking new debates about the critical role of digital technologies. As technology becomes more ubiquitous in our lives, the boundaries between material and digital are less clear cut, and so recent research on learning spaces is calling for ecological approaches to learning – or approaches that see learning activity as part of an ecosystem of elements, involving learners, educators, knowledge, digital and material tools (Carvalho et al, 2020). Understanding how these multiple elements might relate to one another and/or how an assemblage of elements might influence learning can be daunting. In addressing this complexity, Goodyear and Carvalho (2014) developed an architecturally inspired analytical framework to help researchers and educational designers (e.g., teachers, tutors, instructional designers, space planners, etc.) explore the subtleties of complex learning environments. As an analytical tool, the framework supports educational designers and researchers in situating how material, social, and conceptual structures of learning, might indirectly shape learning activity over time and space (Goodyear & Carvalho, 2014).

This paper draws on this analytical framework, and on qualitative data from a survey with 511 Aotearoa New Zealand educators to discuss experiences of transition into innovative learning environments.

Framing complex learning situations

The Activity Centred Analysis and Design (ACAD) framework (Goodyear & Carvalho, 2014) is an analytical tool that helps educators (teachers, educational designers) consider the different structural elements that come together to support learning activity. ACAD foregrounds that in any learning situation, there are three main “designable” components, and a fourth that is characterised as “emergent”:

- (i) *set design* – refers to the digital/material tools and resources made available at learntime (e.g., this dimension is about the choices made by a teacher about whether their students will work with a pen and paper, a smartphone, or whether a special configuration for the arrangement of furniture in a room will be used)
- (ii) *social design* – this dimension is about the social arrangements of learners, whether the teacher will use scripted roles, or suggest specific divisions of labour (e.g., working in dyads or groups, following scripts)
- (iii) *epistemic design* – refers to the proposed tasks, ways of knowing (e.g., the teacher will suggest something for learners to do, and consider the pacing and sequencing of information)
- (iv) *co-creation and co-configuration activity* – seen as emergent and not designable. This dimension accounts for learners’ agency to re-configure and co-create what has been proposed by a teacher

ACAD acknowledges learning as an epistemically, socially, and physically situated activity. In so doing, it allows researchers to simultaneously recognise the importance of material elements or flexible furniture, the spaces, and technologies, whilst also searching for connections to social and epistemic elements. ACAD allows us to ‘break down’ the complexity of learning situations so that we can then explore how an assemblage of elements (set, social and epistemic combined) is likely to influence emergent learning activity. The survey instrument (described in detail in the next section) was framed using the ACAD dimensions which allowed the thematic exploration of types of tasks (epistemic

design), forms of social organisation (social design), and learning spaces and resources available (set design) in Aotearoa New Zealand schools. The survey also investigated participants' experiences of teaching and learning practices enacted in these spaces (emergent activity).

The study: A national survey with Aotearoa New Zealand educators

This research explored educators' experiences of learning environments in Aotearoa New Zealand through a national survey, distributed to all schools listed in the Education Counts government database, via an email invitation to participate in the study. A total of 2557 emails were sent, and 511 survey responses received (primary teachers n=222, secondary teachers n=126; school leaders n=163).

There were three survey protocols, which were adapted from the OECD School User Survey: Improving Learning Spaces Together (OECD, 2018). The primary and secondary teachers' protocols comprised of eight sections:

- Section 1 included questions about the school, e.g., school region, type of community (i.e., rural, small town, large city), type of school, number of students
- Section 2 explored demographic data, e.g., gender, age, years of experience, type of employment
- Section 3 focused on the respondent's views of school leadership
- Section 4 explored the use of spaces, e.g., how learning spaces are used, how many teachers share a space, number of students, types of spaces available, how often the respondent used these spaces
- Section 5 asked about comfort, e.g., noise, temperature, light
- Section 6 included questions about spatial arrangements in learning spaces. This section used an image from the original OECD protocol for different possible layouts, e.g., layouts for presentation, group work etc.
- Section 7 explored respondents use of technology
- Section 8 was about overall satisfaction with learning spaces and views about their school as ILE (or not)

The school leaders' survey replicated Sections 1, 2, 3, 7 and 8, with minor changes. Sections were framed to explore "learning spaces" from the perspective of school management (e.g., allocation of learning spaces, school policy about bring your own device, etc.). Quantitative findings from the survey have been discussed by Carvalho and colleagues (2020) with detailed insights about the current Aotearoa New Zealand learning landscape. In this article, we explore some of the teachers' experiences of transition through a qualitative analysis of selected quotes extracted from the "comments" box in Section 8 in the survey. Overarching background findings are also included to situate the reader on the demographics of the survey participants.

General findings

Background information indicated that most survey participants were from State schools (83% primary teachers, 81% primary leaders; 88% secondary teachers; 86% secondary leaders), and most participants were from medium to large schools (between 201 and 1000 students) (69% primary teachers; 52% primary leaders; 80% secondary teachers; 67% secondary leaders).

One of the questions in Section 8 asked participants to read a quote about ILEs and reflect on whether they saw their own school as an innovative learning environment, as a traditional learning environment, as an environment that was in a period of transition, or whether their school had tried to be in an innovative learning environment but was now reverting to a traditional mode. The survey used a short description of ILEs by the New Zealand Ministry of Education (TKI, 2021), which states that ILEs include:

the physical, social, and pedagogical context in which learning occurs. An innovative environment supports strengths-based teaching and learning. It offers students and teachers flexibility, agency, ubiquity, and connectedness. Working in an innovative learning environment where teaching and learning is collaborative, reflections and inquiries are shared, and communities engaged leads to a more robust, continuously improving community of practice. (TKI, 2021)

Table 1 shows that primary teachers (31%) were more likely than secondary teachers (14%) to see their school as an ILE. Both groups of teachers showed similar results in relation to being in a period of transition (primary teachers 51%, secondary teachers 46%). A greater percentage of secondary teachers (38%) stated that their school was traditional or had moved back to traditional (primary teachers 17%).

Table 1

Percentage frequency about the different types of learning environments

Types of learning environment	Percentage Frequency			
	Primary		Secondary	
	Teachers	Leaders	Teachers	Leaders
Innovative learning environment	31	33	14	25
In transition	51	32	46	50
Traditional learning environment	15	32	35	20
Reverting to traditional environment	2	0	3	5

These and other quantitative findings from the survey have been discussed by Carvalho and colleagues (2020) with detailed insights about the current Aotearoa New Zealand learning landscape. In this article, we explore some of the teachers' experiences of transition through a thematic analysis of selected quotes extracted from Section 8 in the survey, where primary and secondary teachers, as well as primary and secondary school leaders had the opportunity to add their own comments about their experiences of ILEs. This thematic analysis followed six steps, as suggested by Braun and Clarke (2006), which included: (i) getting familiar with the data, (ii) generating initial codes, (iii) searching for common themes, (iv) reviewing themes, (v) defining and naming themes, and (vi) compiling a report with vivid examples.

Next, the three main themes which emerged from the thematic analysis are discussed: (i) space as a catalyst for change, (ii) the need to learn to collaborate and work in teams, and (iii) the need for choices.

Theme 1: Space as a catalyst for change

This theme highlights space as a catalyst for change. In the passages below, Participant 4 (a school leader) points out that the role of space in facilitating learning should not be seen in isolation – instead, physical elements should be considered alongside pedagogy and in relation to teachers’ orchestration of students’ interactions. Participant 4 refers to the flexibility of a learning space as an enabler to students’ learning:

We view space and the ability to modify as an enabler for student learning. Physical space does not determine outcomes, approaches to learning do. Space should serve the learning intentions - hence a move to more flexible and adaptable spaces. (Participant 4)

Similarly, Participant 5 (another school leader) highlights the importance of carefully crafted pedagogy and how transitioning into new environments should be embraced as an opportunity to be out of one’s comfort zone:

I absolutely agree that the environment has a large impact on student learning, but pedagogy must move with the change to ILE and school leaders and teachers need to take the blinkers off and look at what is possible as opposed to doing traditional things because it is comfortable for them. (Participant 5)

Overall, this theme reflects some of the school leaders’ perspectives about the importance of connections between different structural elements – physical elements (material and digital) (set design) are to be seen in conjunction with pedagogy (epistemic design) but also in relation to teachers’ role in orchestrating the social interactions (social design).

Theme 2: Learning to collaborate and work in teams

This theme connects experiences of transition to the need to learn how to collaborate and team-teach. Passages in this theme bring relational issues connected to team-teaching and working collaboratively – with similar remarks mentioned by some of the participants in the three groups: primary teachers, secondary teachers, and school leaders. Participant 1 (a primary teacher) speaks of perceived benefits in team-teaching, particularly for those beginning their careers – for novice teachers, team-teaching may help them feel supported and create opportunities to peer learning.

Some beginning teachers like teaching in ILE because they feel help is readily available, and they are not accountable alone to the children in the environment. (Participant 1)

Participant 2 (also a primary teacher) speaks about the positive aspects of ILEs, whilst reminding us that collaboration should not be forced and should build on people’s strengths:

In our setting we believe that modern learning spaces are about teacher innovation, and the ability to allow children the flexibility to learn in many ways. Technology has its place but is used judiciously in a blended learning manner. Always with authentic links to the learning in mind. We do not force collaborative teaching but allow it to

arise from teachers seeing an opportunity and capitalising on this. We work best from our strengths and the arts are often a vehicle for collaboration across teams. (Participant 2)

Similarly, Participant 3 (a school leader) warns us about the importance of having a shared philosophy and common expectations, particularly when sharing spaces and working closely alongside others:

Team teaching is wonderful if you have personalities that can work together, share the same philosophies on discipline, work expectations, sharing responsibilities but is hell for everyone, Principal, kids, parents, and staff if they don't. (Participant 3)

Passages in this theme suggest that the flexibility in spatial arrangements (set design) often invokes new pedagogical strategies (epistemic design), and the need for a nuanced understanding of how to develop successful collaborations and how to work in teams. Learning how to successfully work with others is crucial, when the role of teachers involves scaffolding their own students' collaborative work and skills (social design). Overall, this theme foregrounds that changes in set design often reverberate into other designable components – or in other words, transitioning to new spaces creates a need to learn new ways of teaching.

Theme 3: Students and teachers need choice: One size does not fit all

The third theme explores students and teachers' needs for choices – one size does not fit all. The three passages below (from primary teachers) emphasise the importance of providing choices, for teachers and learners:

Students coming from different cultures and learning backgrounds prefer different types of learning environment. One size doesn't fit all. Some students thrive well in noisy open plan ILE, whilst some like working independently in quieter spaces. We should cater for all students' needs. (Participant 6)

I don't think innovative learning spaces work for all students and teachers. It really depends on the school, the space, the teachers, and the students. Things can change all the time. (Participant 7)

I would not like to see 'Innovative Learning Environments' become the only way spaces are created in New Zealand schools. Although this may work effectively with some teachers, some students and in some schools, it really does come down to how an individual can cope within that environment. ... Having the option of both single cell (perhaps with breakout spaces) and innovative classes within a school would give the school the option of either, so that they could choose their spaces wisely depending on the make-up of teachers and students they have. (Participant 8)

At the secondary level, there are more specialised subjects, and the connection between space and learning activity brings other issues into the mix. As students start to attend labs or other specialised spaces (set design), it may not be so easy to quickly reconfigure furniture to suit specialised subject-related needs (epistemic design). Secondary

participants refer to types of tasks requiring a specific space, for example, for safety of students.

For subjects which require specialist spaces and equipment, it's hard to move the equipment around ... [but] many people are innovative in the space they have to use the specialist equipment they have, e.g., dance (to prevent injury) requires specialist floors – I can't move students to other spaces because that would expose them to injury. ... This is one of the many considerations we have in choosing the space in which we teach and being 'stuck' or 'restricted' to stay in those spaces. (Participant 9)

Overall, the flexibility to customise the space – e.g., having options that accommodate single cell (with breakout spaces) and open spaces (set design) – was noted by primary and secondary teachers. Here customisation should support/respond to teachers' and students' specific needs, acknowledging individual differences which may lead to different preferences.

Conclusion

As schools and universities in Aotearoa New Zealand continue to transition into flexible configurations, it is critical that educators understand how to best (re)design and (re)configure learning spaces in ways that support what is valued in learning. During the recent Covid-19 outbreak, complexities associated with the re-design of learning environments became even more evident, as constraints associated with lockdown restrictions required all educators to quickly learn how to tap on the digital to extend students' experiences, both across and beyond schools and universities physical settings. An ecological framework such as ACAD may help educators render connections between multiple designable elements and emerging activity more visible.

As the survey quotes illustrate, some Aotearoa New Zealand educators are considering the potential of flexible spaces as catalysts for positive change. Their reflections about experiences of transition to ILEs suggest that it is important to find optimal ways of working in teams, and to acknowledge that students and teachers need choices – one size does not always fit all. Most survey participants reported an overall sense of being in transition, raising questions for government and policymakers about ways to support Aotearoa New Zealand educators through these processes of transformation.

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