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A critical review of learning environment policy discourse in Aotearoa New Zealand

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Abstract

The Ministry of Education is funding a significant building programme for primary and secondary classrooms across Aotearoa, New Zealand. In New Zealand there is an expectation that new or refurbished classrooms will be innovative, modern or flexible learning environments. This paper reports findings from a critical policy analysis of the discourse within Ministry of Education documents focusing on the design of learning environments published 2010-2019. Using a ‘what’s the problem’ approach (Bacchi, 1999), we examine the representation of the ‘problems’ which the policy documents relating to modern learning environments intend to address. We use an eight-stage process of analysis of these documents in order to identify policy priorities, ideologies, assumptions and potential outcomes in order to see how these are used to justify authority and action. This analysis revealed two larger ‘problems’ and a number of subthemes underpinning these documents. We suggest that the construction of these problems has conflated many aspects of both space and teaching and learning and relied on unquestioned assumptions about ‘modern’ learning and collaborative teaching. We conclude by considering the implications of this policy direction for New Zealand’s education system.

Keywords: Learning environments, innovative, education policy, problem representation, classroom design

Introduction

Many New Zealand schools are currently involved in a significant programme of new or refurbished classroom development following many years of school building neglect. There is an expectation that these classrooms will be innovative, modern or flexible learning environments. The new or upgraded classrooms have been named as modern learning environments, innovative learning environments, flexible learning spaces (Benade, 2017) and quality learning environments. As Benade points out, these definitions have changed over time and denote both the physical spaces – which are intended to be ‘flexible’ – and the activities which happen within them (learning, teaching, content and resources) – which are anticipated to be ‘innovative’. The designs have caused controversy with some educators calling them ‘barns’ due to room size and number of students in a space (Benade, 2015). In this paper we use a poststructuralist methodology, developed by Carol Bacchi (Bacchi, 1999; Bacchi & Goodwin, 2016) and referred to as ‘what’s the problem represented to be’ to undertake a critical discourse analysis of the New Zealand government education policy texts published between 2010-2019 concerning the design of school classrooms. Our aim is to examine the representation of the ‘problems’ which policy documents relating to modern learning environments are hoping to address in order to critically evaluate the premises, assumptions and ideologies these policies are framed within.

The paper begins with an overview of the policy context within which these policies emerged and reviews international players (such as the OECD) and their contributions to these policy discourses as well as New Zealand’s experience. We then introduce the theoretical framework of Bacchi’s (2009) ‘what’s the problem’ approach and how this shaped our eight-stage process of data analysis of policy documents. Our analysis identified two significant ‘problems’ underpinning the policy discourse on learning environments and a number of subthemes. We examine the assumptions, priorities, and presuppositions embedded in these problem representations, arguing that how these have been constructed raises many questions for teaching, learning and the credibility of policy construction. We conclude with a reflection on the implications of these findings for policy and New Zealand’s education system.

Learning environments and international policy

Notions of modern or innovative learning environments have emerged within a particular policy context which has been shaped strongly by the OECD and other supra-national organisations (Benade, 2017). A focus on learning environments can be seen to be entangled

within wider discourses associated with 21st Century learning and the desire for education to ‘keep up’ with contemporary knowledge economies and societies. The logic of this shift centres on a binary notion of ‘traditional’ and ‘modern’ education. With this logic, ‘Industrial’ forms of education focus on developing obedient citizens who could consistently repeat a task and produce a product with precision, while ‘modern’ education is associated with the ‘new’ global knowledge economy associated with the digital age and requires learning which centres on ideas, innovation, creativity and critical thinking to ensure future economic competitiveness (Kennedy, 2008). While these polarising positions fail to reflect the reality of schools and overstate the case for wholesale change, an OECD publication, *The Knowledge-based Economy* (1996), was influential in progressing the idea of the knowledge economy within education (Bullen et al., 2006) and countries such as New Zealand began to develop educational policy in response to the proposed changes for a competitive global knowledge economy. The OECD argued that as economies transformed from “their traditional base to the knowledge era”, classrooms and pedagogy needed to be redesigned in order to make them effective learning environments for the future (OECD, 2008, p. 13). In time, these ideas of ‘modern’ learning moved into the realm of the physical design of classrooms, or learning environments, and with further OECD input (OECD, 2013), this has become part of these ensuing conversations.

Closely associated with the Millennium, ideas about ‘21st century learners’ began to influence New Zealand policy in the early 2000s such as the New Zealand Curriculum (Ministry of Education, 2007). There is no one agreed upon definition of 21st century learning, however, as a concept it includes a suite of ideas associated with information communication technology (ICT), digital technologies, skills and knowledge associated with a successful knowledge economy (Hirschman & Wood, 2019; Lurie, 2020). This concept underpins the reframing of classrooms as modern or innovative learning environments (OECD, 2017) and is closely associated with a raft of policies responding to the need to develop students who are able to meet the needs of a rapidly changing global economy (Wood, Thrupp & Wood, 2020).

The poor state of New Zealand school buildings can be attributed, at least in part, to several educational and housing policies in the past 30 years. The ‘Tomorrows schools’ neoliberal reforms of 1989 which had aimed to improve the education system by a competitive model of education, devolved the management of schools from the centralised Department of Education to individual schools governed by elected parents and the school principal (Wylie, 2012). The responsibility for managing property maintenance and development was given to individual

schools that competed for student enrolments. Between 1990 and 2010, the significant upgrade of classrooms was lower priority for property expenditure than projects which increased the marketability of schools, such as upgrading the main entrances and administration offices. During this time, most classrooms across New Zealand were not upgraded and few new schools were built due to limited demographic growth.

The poor quality of design and building products during these years also meant that schools that had undergone building projects faced issues with leaky buildings. In addition, earthquakes in 2010 and 2011 caused significant damage to school classrooms in Christchurch which required significant school changes and rebuilding as well as some ‘consolidation’ (Benade, 2017). Since 2011, the central government (Ministry of Education) has funded and driven significant building programmes to build or upgrade classrooms. The ten-year property plan (Ministry of Education, 2011) included an allocation of approximately \$500m annually to maintain and upgrade school property (Benade, 2017). In 2019 a further \$1,260m was allocated for the following ten years (Ministry of Education, 2019b). Against this backdrop of substandard building stock and the changes heralded by new 21st century innovations in education, New Zealand has entered a very busy period of school property policy development. Our interest in this paper was to examine the policy documents created during 2010-2019 and in the following section we outline our theoretical and methodological approach.

Theory and Methodology

Bacchi (1999) argues that any description of an issue or a problem involves interpretations, judgment and choices. In contrast to technical or political rationalist approaches to policy which assume that a problem can be easily identified and defined, or public choice theorists which aim to improve political processes for policy making, Bacchi argues that “we need to shift our analysis from policies as attempted ‘solutions’ to ‘problems’, to policies as constituting competing interpretations or representations of political issues” (Bacchi, 1999, pp. 1-2). This approach involves consideration of the construction of the issue that policies are trying to resolve, because, as Bacchi argues, how problems are constructed shape what solutions we are able to imagine. In other words, policies themselves “*produce* ‘problems’ as particular sorts of problems” (Bacchi & Goodwin, 2016, p. 16). Taking a poststructural approach such as this to the study of policy therefore involves interrogating the problematisation within policies (Bacchi & Goodwin, 2016).

Bacchi's (1999) theory also embodies a methodological approach that begins with the implied *problem* that is seen to be in need of fixing within specific policy proposals or plans of action, and tracing back to how this problem is represented in policy discourses (Bacchi & Goodwin, 2016). Bacchi (2009) outlines this as a series of six questions (Table 1).

Table 1. Questions to explore problem representation in policy documents.

<p>Q1. What's the 'problem' represented to be in a specific policy?</p> <p>Q2. What presuppositions or assumptions underlie this representation of the 'problem'?</p> <p>Q3. How has this representation of the 'problem' come about?</p> <p>Q4. What is left unproblematic in this problem representation? Where are the silences? Can the problem be thought about differently?</p> <p>Q5. What effects are produced by this representation of the 'problem'?</p> <p>Q6. How/ where has this representation of the 'problem' been produced disseminated and defended? How could it be questioned, disrupted and replaced? (Bacchi, 2009, p. 20)</p>

Our study used these six questions to guide us in eight stages of analysis of policy documents relating to school property design in New Zealand (2010-2019) (Figure 1). The first stage involved identifying policy texts to analyse. Such texts are prescriptive written records and can include a proposal or a guide to conduct (Bacchi and Goodwin, 2016). For our analysis of learning environment building policy in New Zealand, the texts were limited to 2010-2019 and identified through a search of documents available on the Ministry of Education (2020) website and contacting policymakers at the start of 2020. This process yielded 12 documents which informed our analysis and included one cabinet paper, one strategic document, one assessment tool, two reports, two factsheets, two sets of guidelines and three webpages and a PDF (see Appendix 1). For each text the intended audience was also identified (Appendix 1). There were four documents developed in 2007 by the Building Research Association of New Zealand (BRANZ) and the Ministry of Education that informed the design the environmental quality of classroom. The acoustic guidelines were later updated "to reflect current teaching practise and flexible learning spaces" (Ministry of Education, 2016a, p.2) and are included in this review. The remaining guidelines for heating and insulation, ventilation and indoor air quality, and lighting were not included as they have not been updated since 2007.

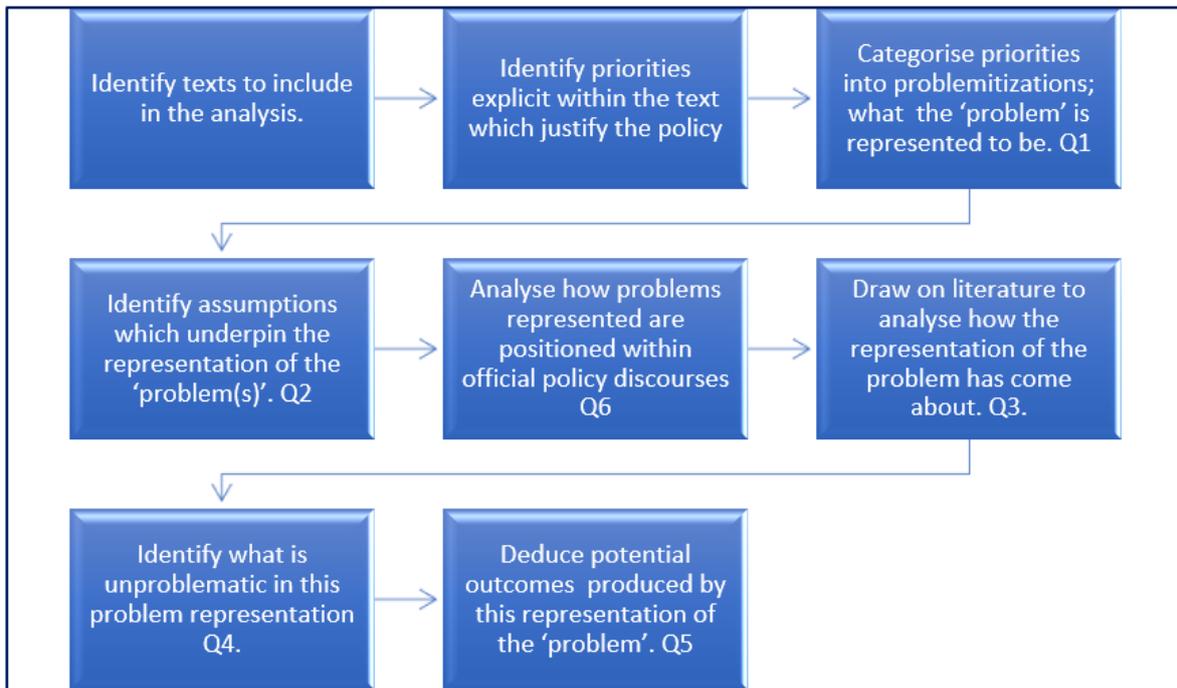


Figure 1. Research process to identify and analyse the problem represented in policy text with Bacchi's (2009) six questions.

The second stage of analysis was to identify priorities within the texts, which were related implicitly or explicitly to the justification of the policy. Each text was analysed independently by two researchers and agreement was reached about the problems and how they were represented. For stage three, the priorities were categorised into problematisations, to answer the first question: What is the problem represented to be? (Figure 1, Q1). The fourth stage of analysis involved examining the assumptions, presuppositions and concepts underlying the problem representation (Figure 1, Q2). This consisted of two phases; first we identified presuppositions, assumptions or ways of thinking that underpinned the problems represented in the text and secondly, we identified how the problem representation was constructed, and the concepts and binaries that existed which might indicate a particular policy rationality.

One further aspect of our analysis was to identify how the problems represented were positioned within the official policy discourses (Figure 1, Q6). For the fifth stage we analysed how the 'problem' had been produced, disseminated and defended. We also considered how the problems represented had been framed for the different audiences of the texts identified and how the representations may have changed over time. The goal in Question 3 and the sixth stage of analysis was to examine how the problem representation had come to be. This was not to outline the evolution of policy, rather to consider developments by mapping practices or beliefs that produce the identified problem representation. The 'what's the problem' (WPR)

approach uses texts as ‘levers’ to analyse the way that a particular problem is framed rather than a linguistic analysis (Bacchi and Goodwin, 2016). To understand this ‘lever’ requires the researchers to draw on literature associated with the represented problems. This process was carried out in parallel with the seventh stage of analysis, which was a critique to highlight issues and perspectives silenced within the framing of the problem in response to Question 4. This included considering contrasting problematisations derived from different assumptions, beliefs or framing (see Figure 1). The final stage of analysis focuses on the effects of identified problem representations (Figure 1, Q5), which aims to identify the varied effects that specific problem representations produce, so that they can be critically assessed. These included discursive effects (how the representation limits what can be said about an issue), subjectification effects (the way in which subjects and subjectification’s are constituted) and lived effects (how the effects translate into people’s lives). These processes guided our analysis of the documents leading to the following findings.

Findings

Our analysis identified one overarching problem which was represented across the analysed documents to be the need to have school buildings for a modern education system. Within this overarching problem we identified two problem representations. The first focused on the quality and aesthetic of buildings and the second on whether school buildings are fit for purpose for ‘modern’ ways of teaching and learning. This section will outline how these problems were represented or ‘problematised’ within the official discourse following a WPR approach (Bacchi & Goodwin, 2016).

Problem 1: The quality and aesthetic of school buildings

The government owns the state school buildings – valued at NZ\$30 billion (Hipkins, 2018) – and attended by 85% of New Zealand students, while a further 11% attend state integrated schools and 4% attend private schools. It was evident across all policy documents we analysed that these state-owned buildings were in poor shape with significant problems with two subthemes represented which were the health and safety of buildings, and their aesthetic and the environmental quality. The first subtheme was that buildings need to be rebuilt as they were leaky, earthquake damaged or earthquake prone (Hipkins, 2018; Ministry of Education, 2011b). For example, the *New Zealand School Property Strategy* (Ministry of Education, 2011b) outlines the significant issues facing schools that include:

...a defective building remediation programme, repairing the damage caused by the Canterbury earthquakes, modernising an aging property portfolio, managing increases in the primary school student population and increased levels of student retention at secondary level. (p. 1).

The extent of this problem includes an aging building stock (70% between 30-100 years old) as well as the health and safety of children and teachers which was identified as the first priority in the 10-year property plan (Ministry of Education, 2011a). In addition, demographic changes, especially in high growth population areas (such as Queenstown and Tauranga) and the need to address school buildings that “were not necessarily designed to support today’s flexible and technology-rich teaching and learning methods” (p. 3) are identified as reasons for a comprehensive reform of school property (Hipkins, 2018).

A second associated subtheme in our analysis of the policy documents related to costs and physical constraints of space. These documents outline guidelines on processes, size and costs. For example, all new school building project designs must be approved by the funding agency, the Ministry of Education, and undergo a ‘design review process’ applying policy guidelines from the Ministry of Education (Ministry of Education, 2015) including the *School Property Guide*. This guide sets out space entitlements of non-specialist learning spaces; 78m² for a primary classroom and 70m² for a secondary classroom (Ministry of Education, 2019a) which are closely tied to the funding formulas for new school buildings. Yet, these documents reveal some internal contradictions. For example, a quality learning environment recommendation in the documents is to allow 3-4m² per learner for better acoustic separation (Ministry of Education, 2016a). The current staff funding ratio allows for one teacher for up to 30 students, therefore, a quality learning environment with one teacher should be 90-120m², not the 70-78m². In addition, it is recommended that each classroom should have a breakout space of up to 40m² (Ministry of Education, 2015), yet this is not included in the space formulae for funding. There are obvious tensions between, for example, best practice for acoustics and recommended space entitlements. Ongoing attention to cost-effectiveness which underpins discussions in many documents (e.g., Ministry of Education, 2011a, 2011b; 2015) directly challenges the provision of recommended space allocations for students.

A third subtheme within this problem representation was the lack of a modern aesthetic of existing school buildings. Hipkins (2018) links aesthetics with school attendance and parental perceptions in his statement to Cabinet. In this he talks about “outdated and worn-out facilities that no longer meet their educational needs” (p. 1). Hipkins suggests that schools need to

provide learning environments that support educational success, but these also need to be a source of ‘pride’ for students, parents, whānau and communities in order to attract enrolments. Parents making choices about which school to send their children to consider the ‘feel’ of the school which includes the aesthetic of the buildings and facilities available (Ball et al. 1996). Hipkins (2018) concurs that dated or rundown classrooms influence parental and community perceptions of the education being offered which undermines confidence in the public schooling system. However, what is left unstated is just what this (presumably modern) ‘look’ needs to be and the extent to which it needs to differ from traditional classrooms.

A significant priority across many documents is the fourth subtheme; environmental quality, including acoustics, heating and insulation, ventilation and indoor air quality, and lighting. The documents detail ideal levels of environmental aspects for classroom learning and guidelines to follow (Ministry of Education, 2015; 2016a) and build on 2007 guidelines. Meeting the environmental quality standards are attributed to higher student achievement (Ministry of Education, 2016b; Wall, 2016a), with general common-sense statements made about the value of good acoustics, lighting, heating, ventilation and light but with little direct evidence relating student achievement to physical design. This lack of evidence is not surprising, as a systematic review concluded that research evidence does not prove that ILEs are superior for student learning study (Byers, Mahat, Liu, Knock, & Imms, 2018). While the current buildings are not explicitly situated as being problematic and may have better acoustic separation than larger open plan spaces (Ministry of Education, 2016a), it is inferred in the documents that modern buildings will have higher environmental quality standards than those built at least 40 years ago.

Modern buildings are designed with consideration of the access and use of current and future technology. Schools have been criticised for not integrating technology into classrooms including when the technology was expensive and not designed for educational purposes (Cuban, 2009). This fifth subtheme is explicit in the property strategy which states:

a large number of New Zealand’s schools were built before computers and other useful technology was available. This means that many schools need to be upgraded to enable their use of these technologies, as without upgrades they will be unable to support modern styles of teaching and learning. (Ministry of Education, 2011b, p. 14)

Integrated technology is a feature of modern building design and the absence of this is therefore represented to be problematic in the policy documents. Interestingly this problem bridges the two main problems we identified as it conveys not just physical and material properties, but an

aspirational element of ‘future proofing’ buildings for not only remediation and repair, but also for the “prevention of further defects through the introduction of new design and building standards for school property” (Ministry of Education, 2011b, p. 14). We discuss this in greater depth in the following section.

Problem 2. Not fit for purpose; modern teaching and learning

The second category of problem represented in the policy documents is related to buildings being fit for purpose for modern teaching and learning. The last quote in the previous section links the modern pedagogical practices to the digital age where teachers and students have access to educational technology and Internet connections. The problem represented in the documents includes a range of subthemes including; flexibility, the New Zealand curriculum, student agency, inclusivity, and collaborative teaching.

Policy documents referred to the subtheme of a lack of flexibility which was seen to inhibit innovative or changing teaching practice in traditionally designed classrooms. The policy documents described innovative learning environments as the social, pedagogical and physical context in which learning is intended to occur that can evolve and change. Flexible spaces were defined as the spatial characteristics of an innovative learning environment (Ministry of Education, 2015). The 10-year property plan prioritises the development of flexible learning spaces after essential infrastructure and health and safety issues (Ministry of Education, 2011a). Flexible learning spaces have prescribed features such as breakout rooms, visual transparency, classrooms grouped around shared spaces and access to outdoor areas (Ministry of Education, 2010); they connect many groups of learners together in a variety of activities (Ministry of Education 2016a, p. 72). They typically have no ‘front of class’ with didactic teaching held to be one of many teaching practices used within the spaces (Ministry of Education, 2016a, p. 71).

However, the documents referring to aspects of modern or innovative learning spaces and learning (notably learning is featured more than teaching) include very few references to research to explain or justify changes needed, and instead justification rests loosely upon claims made about ‘21st century learners’, the NZC and rather circular arguments centred on the need for change. For example, in the *Designing Schools in New Zealand Guidelines* (Ministry of Education, 2015), the claim is made that “ongoing research into teaching and learning suggests that spaces for learning are important to successful learning outcomes and that effective

learning happens in many contexts” (p. 3) and therefore “the design of schools must recognise this reality [and] ...spaces for learning must support and enhance practice and be flexible enough to support future developments in pedagogy” (p. 31).

The documents draw heavily on notions of 21st century learning which rely on collaborative, inquiry-based and student-led learning. For example, modern teaching methods identified in the documents include:

Catering for diverse learning styles, personalised learning programmes and integrated curriculum learning, teachers are more often collaborating together and act as an activator for self-learning. They move around the learning spaces, working with individuals or groups, where the size of the groups can range from pairs to several class groups at a time (Ministry of Education, 2015, p 10).

A subtheme represented as a problem in the documents is that traditionally designed classrooms do not enable these types of learner-focused pedagogies such as self-directed learning, integrated studies, small group or individual learning.

A further subtheme is the justification of these proposed shifts through the NZC (Ministry of Education, 2007). The *Designing Schools in New Zealand Guidelines* (Ministry of Education, 2015) boldly links curricula, pedagogy and building design in a diagram that places arrows between the NZC and the (property) building code and compliance principles (p. 12). The guidelines argue that the curriculum “represents a clearly articulated shift from teacher-centric model of education to a learner-centric model” (Ministry of Education, 2015, p. 31), although this is not explicitly stated anywhere in the NZC. Aspects attributed to the curriculum are presented as justification for the design features inferring that these are not able to be present in traditional classroom design. These include a priority for the curriculum principles and underpinning values, a focus on being learner-centred rather than teacher-centred, and the need to promote inclusion, agency, evidence-based practice and teacher collaboration (Ministry of Education, 2015). The framing of inclusion, agency and teacher collaboration were subthemes identified in the analysis of the documents, serving to establish the ‘different’ nature of these modern learning environments.

Our analysis found that *inclusion* was framed in three ways and aligned with notions of student-centredness. The first form of inclusion considered diverse users who may have differing physical, emotional, or sensory conditions which require specific design features to enable them to access resources and learning within the classroom space (Ministry of Education, 2015; 2016c; Wall, 2016a). The second interpretation was inclusion of Māori and Pasifika learners

(Wall, 2016b) and the third referred to the inclusion of student learning preferences (Ministry of Education, 2015). This latter framing is aligned with the notion of agency, which is explained as giving students choice in where, what and how they learn and some control over their environment (Ministry of Education, 2015). While the policy documents do not say that there is a problem with existing classroom designs lacking inclusivity or agency, it is inferred that flexible learning spaces would do this better. For example, “Break out spaces allow small groups of students to work together which can encourage Māori and Pasifika students to support each other in this close setting. This can make students feel more comfortable asking or answering questions when they’re in front of a larger group” (Ministry of Education, 2016c). This assumption overlooked research that shows that positive relationships for learning and collaboration are more likely to be developed in classes with fewer students (Harfitt, 2013). Therefore, limiting the number of students in a space is an important consideration for inclusive classrooms, yet is not part of the policy document discourses.

One further subtheme in the documents since 2015 is that the design of traditional classrooms does not allow *for* collaborative teaching. Desirable modern collaborative teaching practice is framed as having multiple teachers teaching in the same space at the same time (Ministry of Education, 2016a). The importance of collaborative teaching is attributed to the New Zealand curriculum (Ministry of Education, 2015), and is reported as enabling multiple concurrent learning activities (Ministry of Education, 2016a) and leading to better academic outcomes for students (Ministry of Education, 2016c). For example, it is stated that to implement the New Zealand curriculum “requires teacher practice to include open and collaborative teaching – not simply collaborative planning” (Ministry of Education, 2015, p. 34); yet, this claim is neither evident in the curriculum or research. A factsheet states: “Spaces which have more than one teacher in the room at a time allow a range of subjects to be taught at the same time, which is linked to higher Māori student achievement” (Ministry of Education, 2016c), yet this includes no evidence for this culturally-essentialising claim. The documents instead rely on the NZC to justify such changes with no further research evidence.

Changes in discourse over time

Interestingly, when we examined how the ‘problem’ had been produced, disseminated and defended (Table 1, Q6), there was evidence that the discourse about modern pedagogy and classroom design had changed, even over the relatively short time frame of documents we analysed (2010-2019). The early documents did not advocate a policy of large teaching spaces

with collaborative teaching. For example, the modern/innovative learning environment assessment tool (Ministry of Education, 2010), asks “Does the classroom design allow teachers to work co-operatively with teachers from other classrooms or specialist disciplines?” (p. 1). The expectation in this document is that there are ‘classrooms’ grouped around shared spaces. This is the reverse of having a large flexible space ‘classroom’ in which collaborative teaching occurs, with access to smaller breakout spaces which is introduced in the later *Designing Schools* guidelines (Ministry of Education, 2015). This latter document states that “spaces that facilitate and encourage collaborative teaching are likely to lead to improved student outcomes” (p. 33). However, the cited research (Darling-Hammond, 2002; York-Barr et al. 2007) provides scant evidence to support a significant policy of introducing collaborative teaching in a large learning spaces. For example, Darling-Hammond (2002) discusses teacher collaboration rather than collaborative teaching, and York-Barr et al. (2007) examine the effect of having additional English language learning teachers collaborating in classrooms. Other aspects of advocated modern teaching practices were not justified through citing research. An explicit statement in this document that “evidence-based practice ...means providing spaces that support student-led learning, peer and collaborative learning, active problem-based learning, culturally-responsive pedagogies, and other emerging evidence-based practices” (p. 33) ironically includes no evidence-base.

A year after the 2015 design guidelines were published, two reports were released which were framed as reporting the research into the effect of classroom design on student achievement (Wall, 2016a, 2016b). Their aim was to use research to justify authority and action in the drive to have flexible learning spaces which reflect ‘modern’ education. However, these reports lack clarity and critique. For example, the *Māui whakakau, kura whakakau* report (Wall, 2016b) aimed to “reflect the current applied and academic knowledge in the area of physical design to support Māori and Pasifika students” (p. 11). It outlines a systematic review methodology but does not include the findings of the systematic review and there are no clear links between research methods, findings and recommendations. Two fact sheets for educators and parents which draw on the reports to “provide a quick overview of what the research says about the link between physical design and student outcomes” have a series of statements presented as facts which are not clearly derived from research and relate almost entirely to lighting and acoustics rather than student academic achievement (Ministry of Education, 2016b, 2016c). It appears that between 2011 and 2015, there was a change in written policy and guidelines from school-based decisions about pedagogy, curriculum and vision driving the design of learning

spaces, to specific teaching practices such as collaborative teaching being used as justification for particular design features of innovative learning environments (see also Benade, 2017). These teaching practices are tenuously reported as being derived from research and the New Zealand Curriculum (Ministry of Education, 2015) to defend the problem represented and the solution proposed.

Discussion

Our analysis of the policy documents relating to the design of New Zealand schools (2010-2019) has revealed that two main problems were represented in these documents to justify the proposed changes to property. The first problem we identified was the age and poor quality of the school building stock and their neglect through the years following Tomorrow's Schools. This was presented somewhat of a 'crisis' to education policy makers who needed to address the health, safety and environmental quality of buildings. There is no doubt that the need to repair, remediate and replace school property is a key reason for initiatives since 2010 to enhance school property. However, what is interesting about our analysis is the identification of our second problem representation which has emerged as a parallel set of discourses about the need to design classrooms which enable 'modern' teaching practices in order to embrace '21st century learning', a learner-centred curriculum and collaborative teaching. This has similarly been set up as a 'crisis' relating to rapidly changing notion of the teaching, learning and the global economy (see Hirschman & Wood, 2018). We suggest this second problem has been co-opted on to the first problem to justify the type of building designs that have emerged in recent years.

Figure 2 shows a visual representation of our analysis, identifying these two main problems under a wider represented problem of inadequate school buildings for the modern era of teaching and their subthemes beneath. Interestingly, there is an intersecting group of subthemes that sit between the two identified problems which illustrate how these problems became conflated in policy documents (see, for examples, discussion on digital connectivity and integration, and the modern aesthetic in Figure 2). The conflation of these problems reveals many assumptions, contradictions and presuppositions (See Table 1, Q2) that sit within these policy documents which we discuss in greater depth next.

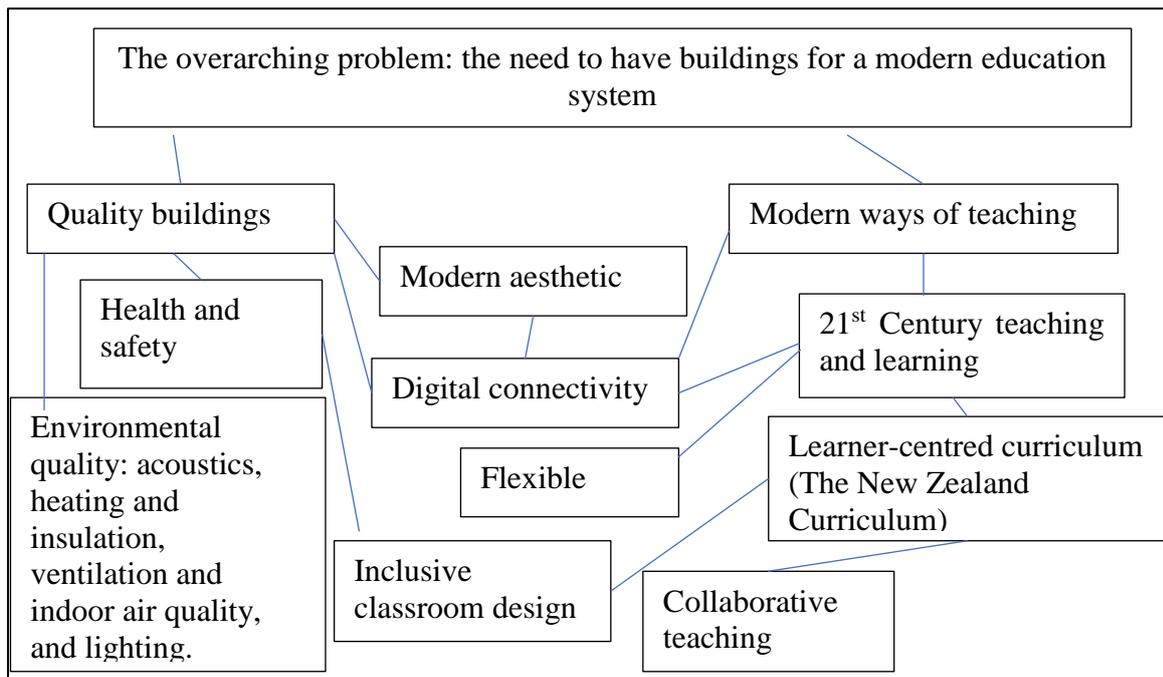


Figure 2: Identified problems and subthemes.

Assumptions

An implicit assumption within many of these documents is that physical space shapes learning outcomes. This assumption is shown in the interconnected nature of building design and ‘modern’ learning and teaching in Figure 2, which assumes these two problems are deeply interconnected. Indeed, the *Designing Schools guidelines* (Ministry of Education, 2015) illustrates this dramatically by their visual image that juxtaposes material building requirements and compliance guidelines directly alongside the New Zealand Curriculum (p. 12), thereby using these to produce the design principles. It is stated that the design guidelines “establishes the critical link between the National Curriculum and environments that will support the learning outcomes to which it aspires” (p. 31). As illustrated earlier, these assumptions are not clear in the curriculum document. The documents we analysed over-stated the change imperative of the NZC, and its focus on collaborative, student-centred learning and student agency which isn’t this explicit. No doubt other documents have advocated for such things, but the NZC alone does not provide justification for these significant shifts in pedagogy and building design.

The documents also rely on an unquestioned assumptions about ‘modern’ learning which is represented to be entirely different than ‘traditional’ learning. The different documents frame modern teaching and learning in different ways. The strategy document (Ministry of Education,

2011) and the Cabinet paper (Hipkins, 2018) do not specify what are considered modern teaching approaches but situate these as change needed due to the digital age. In addition, the representation of the problem of classrooms not being appropriate for modern teaching methods varies. The Strategic *School Property* document (Ministry of Education, 2011) stated that teaching and learning had changed, and classroom design should support these changes. This notion of the design supporting the pedagogy is reflected in the *Designing Schools* document that prioritises the school's vision, pedagogies and curriculum into design decisions (for example, Ministry of Education, 2015, p. 12). However, the documents also provide an interpretation of what modern teaching involves, including an emphasis on collaborative teaching with up to five teachers in one space (Ministry of Education, 2015, p. 38). The documents also assume that 'traditional' classrooms limit teaching practice to didactic teacher-centred approaches.

Silences

A question in the WPR methodology asks what silences exist in policy documents or how the problem can be thought of differently (Q4, Table 1). There are two aspects that could lead to reframing identified in this analysis. The first is the impact of student/teacher ratios on the ability to be student-centred. If the problem is that teachers need to be more student-centred, the solution may not be collaborative teaching. Research exploring effective student-centred practices does not identify collaborative teaching, but it does identify that a higher ratio of teachers to students is likely to enable increased student-centred interactions and practices (for example, Watson et al., 2013). Therefore, the problem could be reframed as the need for teachers to be teaching fewer students which doesn't feature anywhere in the policy documents.

The second aspect that is silent in the problem representation are the size and cost constraints. As discussed earlier, the documents outline quite strict guidelines for space constraints per student, even though their own guidelines contradict these for acoustic recommendations:

Traditional cellular classroom designs typically exhibit good acoustic separation. However, they can restrict opportunities to collaborate, which limits the range of learning activities and concurrent activities that can take place in the learning space. (Ministry of Education, 2016a, p22)

The size constraints and staffing ratios influence the innovative architectural solutions to create learning environments within the design guidelines. One compromise which many adopt to make the space/student ratios go further is to design large learning spaces with collaborative

teaching. To justify this compromise, the problem since 2015 has been represented as the need for collaborative teaching rather than the need for more space to enable flexibility – which would be more expensive to fund but may achieve better outcomes (Ministry of Education, 2016a).

The effects produced by this representation of the ‘problem’ (Table 1, Q5) creates a tension for those designing spaces as it is assumed all schools will adopt these new requirements for learning environment design if they require a new or refurbished building. This tension was illustrated in a recent ERO report that stated that the move to flexible learning spaces “facilitate, indeed necessitate, changes in the curriculum and pedagogy” (ERO, 2018). Yet the design “must support the school’s vision for teaching and learning” (Ministry of Education, nd., p. 1). Therefore, the specificity of the guidelines causes a tension when a school does not believe that open plan spaces and collaborative teaching are effective for their students or teachers. Rather than a school’s vision, curriculum and pedagogy driving the design of spaces, the design of spaces within constrained budgets are driving curriculum and pedagogy.

Conclusion

It is evident that New Zealand school property has warranted considerable attention after years of neglect. However, the imperative for new learning environments in New Zealand schools has not simply been about creating new physical buildings for a modern education system but has been caught up in a significant shift in teaching and learning practices (Benade, 2017). Our analysis through Bacchi’s (1999) WPR approach showed how the conflation between building quality classrooms and modern teaching has created a muddled justification for flexible learning spaces with a significant emphasis on ‘modern’ and collaborative ways of teaching which rest upon ideological notions of education in the 21st century and the NZC. Underpinning this problem representation is a binary between ‘traditional’ and ‘modern’ teaching and buildings – a binary which was set up by notions of the Knowledge Economy and of 21st Century learning which emerged around the Millennium. Our analysis has exposed how policy documents relating to modern learning environments in New Zealand have relied heavily on a sense of rapid change associated with digital technologies, the global economy, the future workplace (OECD, 2017) and the supposed changing nature of both teachers and learners. This has tended to overstate the value of things ‘modern’ and understate teaching and the role of teachers who are negatively associated with ‘traditional’ approaches (Biesta, 2016). While control and obedience are no longer the measure of effective teaching, other traditional

teaching practices such as direct instruction and class discussion are still effective (Hattie, 2012).

Building design has been caught up in these changes and our analysis has shown many simplistic justifications given for changes that fail to recognise the complexity of teaching and learning. In addition, the policy documents contain limited references to research to justify building design changes and instead rely on the New Zealand Curriculum and notions of collaborative teaching which do not in themselves represent evidence, and therefore stand open to overstated claims about the merits of large modern learning environments with collaborative teaching. Internal contradictions in the documents themselves about best practice for acoustics and classroom size and layout also highlight how these policy documents are likely to have been driven by a tension between a desire to construct ‘modern’ buildings within a constrained budget. A modern education system should include research informed effective teaching practices and these should not be restricted by the design of the learning space. Designing schools to deliberately change pedagogical practice from ‘traditional’ teaching may be throwing the baby out with the bathwater.

References

- Bacchi, C. (1999). *Women, policy and politics: The construction of policy problems*. LA: Sage.
- Bacchi, C., & Goodwin, S. (2016). *Poststructural policy analysis: A guide to practice*. New York: Palgrave MacMillan.
- Ball, S. J., Bowe, R., & Gewirtz, S. (1996). School choice, social class and distinction: the realization of social advantage in education. *Journal of education policy*, 11(1), 89-112.
- Benade, L. (2015). The transformative educative prospects of flexible learning environments. *New Zealand Journal of Teachers' Work*, 12(1), 9-13.
- Benade, L. (2017). The evolution of policy: A critical examination of school property under the National-led Government. *Waikato Journal of Education*, 22(1).
- Biesta, G. (2016). The Rediscovery of Teaching: On robot vacuum cleaners, non-egological education and the limits of the hermeneutical world view. *Educational Philosophy and Theory*, 48(4), 374-392.
- Bullen, E., Fahey, J., & Kenway, J. (2006). The knowledge economy and innovation: Certain uncertainty and the risk economy. *Discourse: Studies in the cultural politics of education*, 27(1), 53-86.
- Byers, T., Mahat, M., Liu, K., Knock, A., & Imms, W. (2018). *A systematic Review of the effects of learning environments on student outcomes*. https://minerva-access.unimelb.edu.au/bitstream/handle/11343/216293/iletc_Technical%20Report%204_2018.pdf?sequence=2&isAllowed=y

- Cuban, L. (2009). *Oversold and underused*. Harvard University Press.
- Darling-Hammond, L. (2002). Access to quality teaching: An analysis of inequality in California's public schools. *Santa Clara L. Rev.*, 43, 1045.
- Harfitt, G. J. (2013). Why 'small' can be better: An exploration of the relationships between class size and pedagogical practices. *Research Papers in Education*, 28(3), 330-345.
- Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. Routledge.
- Hipkins, C. (2018). *Towards a comprehensive reform of school property*. Proposal presented to the chair of the cabinet social wellbeing committee.
- Hirschman, K., & Wood, B. E. (2019). 21st century learners: Changing conceptions of knowledge, learning and the child. *New Zealand Annual Review of Education*, 23(2018), 20-35.
- Kennedy, K. (2008). Globalised economies and liberalised curriculum: New challenges for national citizenship education. In D. Grossman, W. On Lee, & K. Kennedy (Eds.), *Citizenship curriculum in Asia and the Pacific* (pp. 13-26). Hong Kong: Comparative Education Research Centre.
- Lourie, M. (2020). Recontextualising Twenty-first Century Learning in New Zealand Education Policy: The Reframing of Knowledge, Skills and Competencies. *New Zealand Journal of Educational Studies*, 55(1), 113-128. doi:10.1007/s40841-020-00158-0
- Ministry of Education. (2007). *The New Zealand curriculum*. Wellington: Learning Media Ltd.
- Ministry of Education (2010). Innovative learning environment assessment tool.
- Ministry of Education (2011a). *10 year property plan*. <https://education.govt.nz/school/property-and-transport/property-planning/10ypp/>
- Ministry of Education. (2011b). *The New Zealand school property strategy 2011–2021*. <http://www.education.govt.nz/assets/Documents/Primary-Secondary/Property/SchoolPropertyStrategy201121.pdf>
- Ministry of Education (2015). *Designing schools in New Zealand. Requirements and guidelines*. <https://www.education.govt.nz/assets/Documents/Primary-Secondary/Property/Design/Design-guidance/DSNZ-version-1-0-20151014.pdf>
- Ministry of Education (2016a). *Designing quality learning spaces: Acoustics*. <https://education.govt.nz/assets/Documents/Primary-Secondary/Property/Design/Flexible-learning-spaces/DQLSOverviewAcousticsV2-0.pdf>
- Ministry of Education. (2016b). *Flexible Learning Spaces: How the design of spaces can help student achievement*. Factsheet. <https://www.education.govt.nz/assets/Documents/Primary-Secondary/Property/Design/Flexible-learning-spaces/FLS-How-the-design-of-spaces-can-help-student-achievement.pdf>
- Ministry of Education (2016c). *Flexible Learning Spaces: Making spaces work for everyone* Factsheet. <https://www.education.govt.nz/assets/Documents/Primary-Secondary/Property/Design/Flexible-learning-spaces/FLS-Making-spaces-work-for-everyone.pdf>

- Ministry of Education (2019a). *Plan and build a new teaching space*. www.education.govt.nz/school/funding-and-financials/funding/teaching-space-funding/plan-and-build-a-new-teaching-space/
- Ministry of Education. (2020). Education.Govt.nz. Retrieved from <https://www.education.govt.nz/>
- Ministry of Education (2019b). *Summary of Education Portfolio Budget 2019 initiatives*. <https://www.education.govt.nz/our-work/publications/budget-2019/summary-of-education-portfolio-budget-2019-initiatives/>
- Ministry of Education (nd). *Building a school from start to finish*. <https://www.education.govt.nz/assets/Documents/Ministry/Budgets/Budget2019/NEGP/BuildingaSchool.pdf>
- OECD. (1996). *The Knowledge-based economy*. Paris: OECD
- OECD. (2008). *Innovating to learn: Learning to innovate*. Paris: OECD Publishing.
- OECD. (2013). *Innovative Learning Environments*. Educational Research and Innovation. Paris: OECD Publishing.
- OECD (2017). *The OECD Handbook for Innovative Learning Environments*. Paris: OECD Publishing.
- Wall, G. (2016a). *The impact of physical design on student outcomes*. Ministry of Education <http://www.educationcounts.edcentre.govt.nz/>.
- Wall, G. (2016b). Māui whakakau, kura whakakau: The impact of physical design on Māori and Pasifika student outcomes. Ministry of Education. <http://www.educationcounts.edcentre.govt.nz/>.
- Watson, K., Handal, B., Maher, M., & McGinty, E. (2013). Ministry of Education Globalising the class size debate: myths and realities. *Journal of International and Comparative Education (JICE)*, 72-85.
- Wood, B. E., Thrupp, M., & Barker, M. (2020). *Education policy: Changes and continuities since 1999*. In G. Hassall & G. Keracaoglu (Eds). *Social policy in Aotearoa*. (pp. 272-285). Palmerston North: Massey University Press.
- Wylie, C. (2012). *Vital connections: Why we need more than self-managing schools*. Wellington: NZCER press.
- York-Barr, J., Ghore, G., & Sommerness, J. (2007). Collaborative teaching to increase ELL student learning: A three-year urban elementary case study. *Journal of Education for Students Placed at Risk*, 12(3), 301-335.

Title of MOE document (2010-2019)	Type of document and intended audience.
The New Zealand school property strategy 2011-2021 (2011)	Strategy document for those implementing policy
10 year property plan (2011)	Webpage for Boards of Trustees
Innovative Learning Environment Assessment Tool Version 1.1 (2012)	Spreadsheet for Boards of Trustees/ property managers to evaluate existing stock
Designing schools in New Zealand: Requirements and Guidelines. (October 2015)	Guidelines for architects/engineers It sets out the Ministry's expectations for designing both learning spaces and the broader school environment
Māui whakakau, kura whakakau: The impact of physical design on Māori and Pasifika student outcomes (2016)	Report Policy makers
The impact of physical design on student outcomes (2016)	Report Policy makers
Designing Quality Learning Spaces – Acoustics (2016)	Guidelines for engineers/architects of spaces
Flexible learning spaces- design of space (2016)	Fact sheet. Teachers, parents and school communities
Flexible learning spaces- making space work for everyone (2016)	Fact sheet Teachers, parents and school communities
Towards a Comprehensive Reform of School Property (2018)	Cabinet paper for the social wellbeing committee
Plan and build a new teaching space (2019)	Webpage for Boards of Trustees
Building a school (nd)	PDF for school communities

Appendix 1: Selected documents relating to documents about learning environments and school property (2010-2019).