

New spaces – new pedagogies: Implementing personalised learning in primary school innovative learning environments

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Abstract

The New Zealand Ministry of Education is requiring that all primary school “new builds” and renovations be Innovative Learning Environments (ILEs), and within these spaces there is an expectation that personalised learning is to be implemented. This qualitative study involved an investigation of practice in three Auckland primary schools where an innovative learning environment existed and personalised learning was being implemented. In each setting, a school leader and a teacher were interviewed, and national and school level documents were analysed. A key finding was that leaders and teachers had confused and often disparate understandings of the term personalised learning. A further finding showed that both shallow and deep personalisation was evident. Yet another key finding revealed that all participants were challenged by the changes required. The study concludes that leaders must take certain actions to ensure the effective implementation of deep personalised learning including clarifying how personalised learning is understood and practised and sharing this with all stakeholders.

Keywords: *Personalised learning; innovative learning environments; definitions; implementation; challenges; primary schools*

Introduction

There is a general worldwide movement away from traditional classroom teaching where the teacher dictates all learning, to a collaborative approach where the student is an active participant in personalising their learning (Maharey, 2006; Organisation for Economic Cooperation and Development (OECD), 2015). These sweeping changes to the principles of teaching and learning in schools have both pedagogical and physical ramifications because if teaching approaches must change, so must the design of classrooms. The Ministry of Education in New Zealand is leading the change by focusing on updating traditional classrooms. All new classroom builds and renovations are required to be Innovative Learning Environments (ILE) (Bolstad, Gilbert, McDowall, Bull, Boyd, & Hipkins, 2012), where walls are opened up, break-out rooms are present and technology is available. Multiple teachers and classes operate in these spaces and the intention of the Ministry is that teaching pedagogy will also change and shift from a single-cell classroom teaching style to a collaborative teaching style which includes personalised learning. The Ministry states: “Traditional approaches to teaching and learning are no longer enough on their own to give children the best education to prepare them for life” (Ministry of Education, 2016a).

These changes are significant in themselves but also need to be examined in relation to associated retrospective innovations in education because the core ideas of open-plan teaching spaces and personalised learning are not new. Over 40 years ago, in the 1970s, governments of the time in New Zealand, England and America, implemented what was called “open-plan” classrooms (Cuban, 2004; Department of Education, 1977). Since then classrooms have reverted back to single-cell traditional classrooms. Recently the New Zealand government reintroduced the open-plan for technology-infused classrooms as modern learning environments (MLE). MLEs have since been renamed Innovative Learning Environments (ILE), reflecting the worldwide adoption of this term (Ministry of Education, 2016b; OECD, 2013). Plans to transform classroom spaces are

inextricably linked with plans to change pedagogy to enable student-centred and collaborative teaching styles. The Ministry of Education (2016b) acknowledges it has been influenced by international research that concludes: “Well-designed classrooms can boost learning progress in primary school pupils by up to 16% in a single year” (Barrett, Zhang, Davies, & Barrett, 2015, p. 1). The OECD (2015) research confirms that student learning is dependent on more than the environment alone; the human element and expertise of a teacher is vital, and states that an “innovative learning environment framework will have ... a rich mix and diversity of pedagogical practices with highly visible personalised approaches” (p. 13). Personalised learning moves away from teachers being imparters of knowledge, to showing students how to learn, creating the curiosity and thirst for what to do with knowledge (OECD, 2015).

The Ministry of Education (2015, 2016c) declare in their four-year plans, that education should be “learner-centred”. This extends the view of who can help with learning to include people from outside the classroom, such as parents and experts in the community or the wider world. The Ministry of Education have implemented Investing in Educational Success (IES) and Communities of Learning (COL), where local schools which include all levels of schooling, collaborate to improve student achievement.

New spaces, new technologies and new pedagogies

Primary schools in New Zealand are currently being challenged to move from a traditional single-cell classroom teaching environment to teaching and learning that takes place in open-plan, innovative modern spaces that enable a collaborative teaching and learning approach in which emphasis is placed on personalising learning to meet each student’s individual needs. To achieve this both the pedagogy and the design of classrooms must change. Dovey and Fisher’s (2014) research acknowledges the influence that the change in pedagogy is having on learning environments, and states, “a shift from teacher-centred to student-centred learning is accompanied by the move towards a more “open” plan with new spatial types, interconnections and modes of adaptation” (p. 1).

The new spaces are designed to enable technology-enriched teaching and learning. However OECD research (2015) acknowledges that even though there has been a significant increase in the use of technology in schools, technology has not revolutionised learning environments. The OECD (2015) study provides examples of why technology has not revolutionised learning environments ranging from an insufficient infrastructure that does not offer enough Wi-Fi speed, or a teacher’s pedagogy being inappropriate for a specific new technological environment. The Ministry of Education (2015) agree that without a change in teachers’ pedagogy in an innovative learning environment, the learning, motivation and engagement affecting student progress will not change. In these new spaces, it is imperative for teaching practice to change in order to provide a variety of pedagogical practices that make personalised approaches visible (OECD, 2015).

Personalised learning – the concept

In New Zealand, primary schools were created in the industrial era and have not moved too far from the model first set up where everything was standardised and taught to classes as a whole. This traditional model of schooling is described as “a teacher-centred pedagogy, framing a hierarchical relationship between teacher and students” (Dovey & Fisher, 2014, p. 43). Worldwide and national forces are putting pressure on schools to change (Ministry of Education, 2006; 2015; OECD, 2013; 2015). Bolstad et al., (2012) assert that the adoption of personalised learning pedagogy is at the heart of taking schools to the next level of change and state that, “learning has to be a personalised – not a standardised – experience” (p. 15).

The very term “personalised learning” is conflicted by its association with several meanings. Cavanagh (2014) states that “there is not yet a shared understanding of what it [personalised learning] means” (p. 52). It is a concept subsumed in the term “21st century learning practices” according to the Ministry of Education (2015) and

Bolstad et al. (2012) confirm that personalised learning is a key aspect of the Ministry of Education's 21st century learning practices. There are also other terms used in the literature that are similar to personalised learning. For example, Bray and McClaskey (2013) acknowledge that the terms personalised, individualised and differentiated learning are often confused. Zmuda, Ullman and Curtis (2015) enlarge on the confused meanings by asserting that, "the term personalized learning has been used perhaps too broadly to cover a whole host of strategies and values" (p. xi). Research into leaders', teachers' and students' perceptions of personalised learning in the United Kingdom, supports the notion that personalised learning is a confused term with no single shared understanding of personalised learning being evident (Underwood & Banyard, 2008). As a conclusion of their research Bolstad et al. (2012) confirm that the notion of personalised learning in New Zealand, "is poorly understood, and yet to be fully implemented" (p. 24). These authors describe personalised learning as a way of supporting every individual to reach their full potential, rather than having every individual aim for the same achievement goal.

Leadbeater (2006) makes a distinction between shallow and deep aspects of personalised learning. Shallow personalised learning is where the educator decides the activities and personalises them for the student, also called "mass-customisation". Deep personalisation is when the student gets to participate in the decisions and co-creates their personalised learning, called "mass-personalisation". Bolstad et al. (2012) clarify that shallow personalised learning can be viewed as superficial, whereas, deep personalisation reflects students' interests, choices and input. Shallow personalised learning is also called individualisation of learning. The distinct teacher and student roles can be seen in the difference between individualisation and personalisation described by Clarke (2013) who says that, "personalization is not the same as individualization. Personal learning requires the active direction of the student; individualization lets adults tailor the curriculum to scaled assessments of interest and abilities" (p. 23). Clarke's point of difference between the two styles of learning is defined by who has the control; the teacher or the students. Bray and McClaskey (2013) agree but add that differentiation (another form of making learning personal) is also teacher led.

Personalised learning differs from traditional learning in that it is student focused rather than teacher led (Cavanagh, 2014) and does not rely on the single-cell traditional classroom with a teacher directing learning. Instead schools have open learning spaces in an innovative learning environment with multiple teachers to enable both and student collaboration in learning activities (Bolstad et al., 2012). Personalised learning is adaptive, involves students setting their own goals and organising their own learning. It leads to assessment that includes the student to reflect and identify next steps in learning (Grant & Basye, 2014).

Implementing personalised learning

Generally, personalised learning is viewed as students being in control of their own learning, which raises student engagement due to students feeling ownership and pride in their learning. Where a teacher is in control of the learning it lessens the student's curiosity to learn. Teachers need to change from being imparters of knowledge, to showing students how to learn, by facilitating curiosity and thirst for knowledge (OECD, 2015). For students to be independent and self-managed, they need scaffolding to be able to fully personalise their learning. Toshalis and Nakkula (2012) explain that not all students have access to mentors who can model self-regulating strategies and so need to be taught how to do this. These authors highlight Zimmerman's (1998) theory of four development stages to create self-managed, independent personalised learners, which involve: observation, emulation, self-control and self-regulation.

An emerging platform for educators to use for implementing personalised learning is Universal Design for Learning (UDL). This is a research-based set of principles to guide the design of accessible and effective learning environments (Meyer, Rose, & Gordon, 2014). UDL started out as a tool for helping teachers to include children with special needs in their classrooms. However, they soon realised that UDL was a teaching approach that was helpful for all learners. The New Zealand Ministry of Education report about UDL supports this and

states, “UDL involves planning and delivering programmes with the needs of all students in mind. It applies to all facets of education: from curriculum, assessment and pedagogy to classroom and school design” (Mitchell, 2010, p. 163). UDL is built on three principles of learning that recognise that every child learns differently, eliminating learning labels. Therefore, the curriculum needs to be presented in different ways to provide multiple ways for students to engage in their learning. Through this learner-centred lens, goal setting is introduced, assessments are challenged and teachers who are able to adapt are created. Goals in UDL place an equal importance on goals that are aligned with academic standards and personal goals that relate to enthusiasm and ability to self-regulate their learning. In this way not only students but also teachers can reflect on progress. Meyer et al. (2014) describe in depth how UDL gives students choices and a voice in a collaborative environment which involves teachers, students, peer mentoring, flexible groupings, rather than fixed groupings, and opportunities for every student to lead in some way.

Challenges of managing the changes

Moving stakeholders such as teachers, parents and students to a new understanding and change in practice, requires leaders who understand how to lead change management and who have a deep knowledge of pedagogy. The OECD state that, “Having a theory of change is not enough as there needs to be an understanding and capacity to actually bring those changes about” (OECD, 2015, p. 21). Woolner, McCarter, Wall and Higgins (2012) in their research, and the Ministry of Education (2015) reinforce the idea that although school leaders might know what is required for pedagogical change in teaching and learning, they are not always able to produce the change in practice. This can be because change can be confusing and very unsettling for people (Bolman & Deal, 2008; Busher, 2006; Fullan, 2003; Grant & Basye, 2014). Hence, it is vital that leaders collaboratively develop a clear and shared vision about what personalised learning is and what it looks like in practice. Today’s schools operate in a digital age where technology is accessible and widely used and this technological shift is influencing the re-emergence of innovative open-plan spaces conducive to implementing personalised learning, but is also creating struggles for those adopting new pedagogies (Carneiro, Lefrere, Steffens, & Underwood, 2011).

Personalised learning, because it can be conceptualised in a variety of ways, is in danger of being reinterpreted within a school’s present teaching paradigm, resulting in teaching practices experiencing minimal change. Teachers might also resist changing their pedagogy if personalised learning is perceived as students getting complete freedom and control of their learning, rather than viewing learning as a shared responsibility or collaborative approach between students and teachers (Bolstad et al., 2012). The study reported in this paper was conducted to investigate the reality of such struggles in a small number of New Zealand primary schools.

Methodology

An interpretive approach (Cohen, Manion, & Morrison, 2011) was adopted for this research study that explored the perspectives of school leaders and teachers who were engaged in implementing pedagogical change in an environment of innovative learning practices. The study (Tolmie, 2016) was guided by the following research questions:

1. How is the concept of personalised learning understood and espoused by New Zealand primary school leaders and teachers in relation to teaching in innovative learning environments?
2. In what ways is personalised learning implemented in New Zealand primary schools?
3. What are the challenges encountered in primary schools when implementing personalised learning within innovative learning environments?

This was a small-scale study in which qualitative data (Merriam, 2009) were collected from three primary schools in the Auckland area where the school met the criteria of (1) having an environment that included innovative learning spaces and (2) being engaged in implementing personalised learning pedagogies. To find and recruit a sample of three primary schools (who had students in Years 1-8, or part thereof) in which to conduct the research,

62 school principals in the Upper Harbour and North Shore of Auckland were emailed by the researcher. This area was selected because of its close proximity to the researcher's place of residence. The schools were purposively selected from the New Zealand Education Counts Directory of Schools as at 3 March 2016. Only three schools that met both criteria responded; they had personalised learning pedagogies operating in innovative learning environments *and* wanted to participate. The principal in each school circulated an invitation from the researcher to all staff. From across the three schools, two deputy principals and one principal responded and the first three of seven teachers to respond were selected.

The qualitative method of semi-structured interviews (Lichtman, 2013) was chosen as the most appropriate way to gather the data from one school leader and one teacher from each school who agreed to participate in the study. All six participants were willing to be interviewed face-to-face and provided the researcher with pertinent documentation so that a secondary method of document analysis (Wellington, 2015) could also be employed. This allowed for methodological triangulation of the data to enrich the substance of the findings that could also be triangulated from two perspectives – those of teachers and of leaders – to strengthen the integrity of the findings.

Findings

The findings of this study are presented to reflect the main categories of data that were collected through the merging of two qualitative methods: the interviews with leaders and teachers and the analysis of documents related to national and school level accounts of personalised learning in innovative learning environments in the three research schools. In each broad category of findings, patterns were identified to create the following themes:

- Definitions of personalised learning: understandings and purposes
- Implementing personalised learning: organising resources and strategies
- Challenges: new spaces challenges, and new pedagogy challenges.

The three schools from which the responses are recorded are named A, B and C with the letter L used to indicate a leader's voice and the letter T used to indicate a teacher's voice.

Definitions of personalised learning

Understandings

It is significant that there were different understandings of the meaning of "personalised learning" between the schools, between participants and even between the teacher and leader perspectives in one school. In the documents analysed, the Education Review Office reports of these three schools since 2014 also reveal varied meanings attached to the term personalised learning. Only in School B's report is there explicit mention of personalised learning. The report for School C describes modern learning practices and the report for School A refers to 21st Century learners.

In School A, the teacher appeared to have only a vague understanding of the notion. When asked to define personalised learning Teacher A defined personalised learning as involving peer teaching as well as children having choices and skills through explicit teaching so students could make those choices. In terms of it happening, she said:

It's not totally, they (the students) can just do what they want to do. There is structure there. So it's not . . . if you're looking for the really open school, open learning, then we're not, we're not that far on that, we're probably on the continuum about half way. (A-T)

The leader in School A had quite a different definition of personalised learning which she described as individualised learning that was "self-directed, self-motivated learning, that will challenge the children and encourages them all

the time to look at where they're at and where their next learning is, personalising their goal" (L-A). There was not a clear school definition of personalised learning and what it should look like at their school.

The leader in School C also talked about individualising learning but linked their definition to their school vision "to grow learners and strive for excellence", extending their definition to include a few more elements of personalised learning by saying that their students:

. . . need to be effective thinkers, communicators, self-managers and citizens. It (personalised learning) should have peer learning. It should be focussed on self-direction, self-motivation, student agency and I'm talking voice and choice. It should have teachers as the activators and facilitators, not the people teaching. (L-C)

School B's leader explained that their definition was constantly evolving because of the challenges personalised learning presented and the complexity of relationships, stating "I don't think I will ever have one true definition. I think it will constantly change". Yet this leader was able to articulate the collaboration value and distinguish personalised learning from individualised learning, stating, "Personalised learning is very much about the individual but not individualised. It's not kids in isolation but kids working together; staff understanding their personal needs and acting upon them" (L-B). The teacher in School B reiterated that personalised learning was a teacher-student negotiation and her definition was markedly similar to the leader's definition in this school. The teacher commented:

Some people think personalised learning is just the students having choice and choosing, as opposed to student voice. But for me personalised learning is when you've actually designed it with that person in mind. So you're doing it together. There's an element of negotiation, there's an element of just being responsive as well. (T-B)

The teacher in this school is aware that not all educators see this form of teaching in the same way. She said, "I think it depends what you think personalised learning is. I think people see personalised learning quite differently" (T-B).

All leaders and teachers interviewed commented that they had formed these understandings of personalised learning from prior or present experience, visiting other schools in Australia and New Zealand, readings and for the teachers in Schools B and C, professional development provided by their leaders. The preparation that School C engaged in to decide what personalised learning was and how they were going to implement personalised learning in their new innovative learning environment was viewed as thorough and purposeful by both the teacher and the leader.

Purposes

Comments made about the purposes of personalised learning in innovative teaching spaces also revealed the way in which the participants understood the term and defined it. Making learning relevant and authentic so that students enjoyed learning and were engaged was voiced by all the teachers as the purpose of using personalised learning in innovative learning environments. The teacher in School C expressed it this way, "The purpose is to prepare them not just for the future but now. Now and the future. So it's engaging them" (T-C).

In School B both the leader and the teacher described the purpose of personalised learning as a change from traditional teaching "one size fits all" pedagogy where "everybody's doing the same thing, based around the same theme" (T-B). The leader in this school expressed the purpose of personalised learning as a move away from the traditional approach of individualised learning and differentiated learning or streaming.

All participants referred to the purpose of personalised learning as a style of learning that would change the way teachers taught from a directive, instructional style of learning to a collaborative venture between students and teachers. As the leader from School C stated, "It should have teachers as the activators and facilitators, not

the people teaching” (L-C). All three leaders agreed that the purpose of implementing personalised learning in an innovative learning environment was to raise student achievement. All teachers said the purpose of personalised learning was to make learning engaging, authentic, and relevant to their learners.

Implementing personalised learning

Organising resources

The schools varied in their organisation of learning and teaching in innovative spaces. School A and C leaders both stated that their innovative spaces were specifically designed for personalised learning and that a lot of research went into the build design. The leader of School B was involved in the design process of their innovative learning environment, but this leader was non-committal about whether their environment had been designed to implement personalised learning and asserted that personalised learning could be implemented in any environment. Within these environments Schools B and C implemented personalised learning in a shared collaborative style, but in different ways.

School B and School C were similar in that they had personalised learning occurring in all of their curriculum subjects. They had home classes where the teacher was responsible for pastoral care and communicating with home class parents. The teachers in both schools collaboratively taught the curriculum to all the students in their area. School B differed from School C in that they collaboratively taught all the children in their area, all of the time.

School A largely taught their own classes in their own assigned areas. The leader and the teacher in this school had differing opinions as to how much personalised learning was taking place. The leader stated that personalised learning was occurring in all curriculum subjects, conversely, the teacher thought it “was occurring in curriculum inquiry, a little bit in writing, but the worst was maths” (T-A).

Strategies

In two of the schools (B and C) two different practice models for organising personalised learning were found to be operating at a deep level of personalisation. School B’s model of personalised learning was where students planned their whole day or week enabling more than one curriculum subject to operate at one time. School C’s model of personalised learning occurred within set curriculum times. Both models shared the same key features of the Universal Design for Learning (UDL) web-based tool. For example, both personalised learning models had a scaffold to help students become independent learners. Students directed their own learning through selecting workshops, tracking programme involvement through technology and reflective discussions.

Across all three schools a common strategy for implementing personalised learning was the use of workshops in which students could experience personalisation of learning. Although all three schools claimed they employed workshops as part of their personalised programme, each school’s delivery was unique. All schools used formal assessments to help teachers decide which skills they needed to include in their workshops. In School A student selection for workshops was associated with formal assessments. The leader and teacher in this school also held differing opinions about their workshops. The leader described personalised learning as happening in all classes saying, “I would say personalised learning is right across the curriculum because all the time we’re workshoping” (L-A). Conversely, the teacher explained that for maths, reading and writing, teachers placed students according to ability in learning groups that attended workshops. This teacher found it quite difficult to explain exactly what they were doing, and sounded confused. The way in which School A practised personalised learning was not what this teacher believed it should be:

I think we were meant to be a bit more innovative with the way we group children and not get into that idea that all the children at a certain level should be in this group. (T-A)

Workshops at School B and C were described as a collaboration between teachers and students. The teacher in School B brainstormed with their students, each morning, when planning their day, saying, “We’ll probably generate a list of about five or six activities or ideas. And then from that they choose the thing that is relevant to them” (T-B). School B encouraged students to request workshops and learning activities. School C teachers decide at the beginning of each week which workshops they would offer, then make them available online.

Getting students to be accountable for their own learning was seen as an important aspect of workshop arrangements in Schools B and C where they had systems to help students be accountable with their learning, particularly for students who were not participating in their workshops or programmes. The teacher in School B explained that students used a plan format and had to have a teacher sign off the activities as they completed them, thus developing planning capability and self-management. School C used the Google sign-in sheet as their tracking document to show who attended the lesson and to make any relevant notes. School A did not have a system to track which students attended workshops.

Challenges

New spaces - challenges

All of the schools in this study had new learning spaces, purpose-built within the last three years to accommodate new pedagogies that enabled a technology-enhanced environment and new teaching styles that required collaboration in teaching and learning.

From the leaders’ perspectives, navigating the new spaces was seen as a positive and exciting challenge by all the participants, with one exception, related to managing an increase in noise levels. Managing a large number of students and setting up arrangements for easily distracted students were seen as minor challenges that could be overcome. It is worthy of note that none of the participants in this study contributed specific information about how these new spaces enabled the harnessing of technology tools and media other than two general references to a) students using Google to obtain information and b) making workshop bookings on-line.

The major challenge that the School A leader talked about was the noise level created when a large number of students congregated to learn with several teachers in the open-plan configuration. Leader A referred to this noise issue several times in relation to all children, but in particular related to her concerns that children with learning needs such as autism were negatively affected by a noisy environment, stating, “Some days it can be very noisy; noise level would have to be the big thing and reminding teachers to soften our voices in that big open space” (L-A) and confiding that parents also complained about the noise. The teacher in School A also mentioned the noise-level concern and thought that children on the learning disability spectrum may be finding personalised learning in this environment “very detrimental”, because of how loud the learning environment could get. She said:

I know some of the mothers come in and say it’s too noisy for their child and they shouldn’t be working here. (T-A)

Noise was a challenge for this teacher when implementing personalised learning in their innovative environment, especially if one teacher did something boisterous at a time another class was doing something quiet.

Allowing children who found the noise distracting to withdraw to quiet spaces was seen as a solution by the School C leader in this study. She did not see the noise issue as a challenge because the innovative spaces provided glassed quiet areas that allowed special needs students to thrive in this environment and said:

Actually we find the environment suits them a little bit better because they can go in to the glass rooms and they shut the doors and you can’t hear the noise. Where in a single cell classroom you can still hear everything. (L-C)

New pedagogy - challenges

From the school leaders' perspectives there were concerns about teachers' resistance to change as the key challenge for implementing personalised learning in their new innovative learning environments. In School A, the leader acknowledged that their teachers were at different stages with embracing the change in teaching pedagogy and shared her view of how uncomfortable the change could be for teachers moving from a "boss" mentality to a collaborative mentality as follows:

If you want to be the holder of all the knowledge and the holder of all the information and you're boss then this isn't going to work because you will see children leading the class. It's giving away your control, which can be very scary for some people. (L-A)

The School B leader said that when teachers were confronted with change or something new in teaching, there was always likely to be some resistance. School C's leader held similar views, explaining that a challenge for them initially was teacher resistance, which was why they gave their teachers the choice to opt in.

All of these leaders conveyed concerns about teachers' lack of knowledge also creating challenges to implementing personalised learning in their innovative environments. They stressed the importance of school leaders leading professional development so that all teachers had the same pedagogy, principles and a shared understanding of what personalised learning was and how personalised learning would be implemented. Leader C explains the process they went through:

That's why it's been so successful here because we went through a two-year process. It wasn't like we just got a brand new building and moved in and bought new furniture, it was a really rigorous learning approach as educators as to how is this going to work. (L-C)

Parents' lack of knowledge about personalised learning was also raised as an issue in one school. Keeping parents informed about how the new spaces were being used and particularly bringing parents on board with how teachers were personalising learning for children was another leadership challenge. The leader of School C felt that it was really important for parents to be supportive and that "parents' lack of understanding is a challenge and you need to be strategic in the way you take the parents on this journey" (L-C).

Teachers' perspectives on the changes to pedagogy appear to highlight more challenging aspects, perhaps because they are the actual implementers of the new practices in the new spaces. The challenge for the teacher in School A was that everyone had different ideas on what personalised learning was, making the implementation challenging. She had found working with other teachers in an open space difficult with regard to "fitting in with other people and allowing all their attributes to shine through as well. And also being able to make compromises and all those things, that can be challenging" (T-A). In School B the teacher also found working collaboratively with another teacher quite difficult at times, sharing that there was a need for effective communication and both teachers needed to be organised and prepared to meet deadlines.

The teacher in School C stressed the importance of making a commitment to a modern outlook and how this challenged the teacher's personal practice because the teaching environment needed to be used in new ways. She commented that:

When the building is being used for modern practice such as personalised learning, that's when it works. So you never have your old single cell mentality in this space because then it just doesn't work. So that's huge. The practice inside, that's important. (T-C)

In short, the new spaces would not work as intended for teachers and students if single-cell pedagogy and teaching continued to be used.

For the teachers in this study a considerable practical challenge was tracking what each child was doing in their personalised activities especially those children who were not self-motivated, or found the environment and learning challenging. As the teacher from School A explains:

For children who find learning difficult and find noise difficult and getting themselves organised difficult, you really have to still have them on your radar all the time, because in this big open space they just go, they're hiding. They stay under your radar. (T-A)

Working out how to track their students' programme participation and progress was a challenge in School C. The teacher said it was recognised as something they constantly worked through and were always refining. Part of the tracking challenge for the teacher in School B was keeping parents informed about all aspects of personalised learning and aspects such as self-management that contribute to student success.

Discussion

Progressing towards a goal

The New Zealand Government's goal (Ministry of Education, 2015; 2016c) is that all schools will embrace and apply new pedagogy in the new spaces for 21st Century learning. It is an expectation, not a choice for schools. The three schools in this study provide a very small sample of practices in primary schools allowing a glimpse into progress towards this goal. On a continuum that indicates at one extreme that a start has been made and at the other extreme that the goal has been successfully achieved, all of these schools could be ranged from the beginning to the middle of this continuum with School A at the starting end and Schools B and C located close together around the middle of the continuum.

At face value the educators' definitions of personalised learning in this study look like Leadbeater's (2006) example of deep personalisation, where teachers relinquish some control so that students get to participate in the creation of their learning. A consolidation of all the definitions offered included: student choice and voice, teachers being responsive to learner needs, peer learning and self-directed, self-managed learners being essential elements of personalised learning. These descriptors confirm the Bolstad et al. (2012) definition of personalised learning where "students are involved in the key aspects of decision making" (p. 20). Atkin (1994) explains that when personalised learning was employed, "the locus of control over the learning moved from being dominated by the teacher towards a partnership in which the student experienced a far greater sense of ownership of the learning" (p. 7). School B and C embrace Atkin's (1994) shared control of learning with the way that they implement personalised learning, such as giving students ownership with their learning through being active participants with their use of assessment and activities by using choice, voice, and reflection.

This goal of deep personalised learning described by Leadbeater (2006) is the ultimate goal for educators to reach. This author states that, "Personalised learning starts from the premise that learners should be actively, continually engaged in setting their own targets, devising their own learning plans and goals, choosing from among a range of different ways to learn" (p. 111). What separates deep personalisation from other forms of teaching, such as individualised learning and differentiated learning or shallow personalisation, is who has control, teachers or students. For example, if the teacher decides the groups, as in School A, then this is teacher-led or teacher-centred which is shallow personalised learning.

Applying Leadbeater's (2006) description of deep and shallow personalisation of learning to the schools in this study, School A seems to have the desire to use personalised learning in their innovative learning environment but appears to be giving lip service to implementing personalised learning at the moment. Instead School A is using differentiated learning where teachers organise students by determining which ability groups the students will learn in and select the activities the students should do. School A has demonstrated that they are

merely starting implementation with shallow personalisation evident, including goal setting and some teachers offering students choices about which activities they can do after a lesson.

Understandings of personalised learning

In Schools B and C, the congruence of understandings held about personalised learning were strong between the teacher and leader interviewed in each school. This congruence was weak in School A, where the leader and teacher not only diverged in views held of what the concept meant but also held to views about the nature of the pedagogy that aligned with shallow personalisation such as individualising and differentiating learning (Bray & McClaskey, 2013; Clarke, 2013). The varied meanings that participants applied to the notion of personalised learning in this study is not surprising. The literature confirms that meanings applied to personalised learning are many and varied and also span many years separating the operation of this pedagogy in traditional classrooms from its more modern application in innovative learning spaces (see for example, Underwood & Banyard, 2008). In this study, the teacher from School A displayed the greatest degree of confusion and insecurity in defining what she meant by the term personalised learning and what it meant to others with whom she was expected to collaborate.

Challenges of implementation

The schools in this small study all identified some significant challenges in relation to shifting teaching practices within the new spaces. Big changes were occurring and these had to be managed. School leaders play a significant role in leading change in this environment. As Burkhardt, Monsour, Valdez, Gunn, Dawson, Lemke, et al. (2003) assert, “school leaders need to drive change, taking on new, collaborative roles” (p. 11). The Organisation for Economic and Co-operative Development states that, “Learning environments and systems do not change by themselves but need strong design with vision and strategies” (OECD, 2015, p. 19). Schools B and C provided evidence to show their leaders had led, and are still leading, their teachers and students in a collaborative process to develop a shared vision about what personalised learning is and what it looks like in their school. School C especially demonstrated their process of change, as they moved from a single-cell environment and pedagogy, to a personalised learning approach in a new learning environment. To be able to implement personalised learning whereby teachers are co-constructing students’ learning, educators must examine power relationships and issues of control (Atkin, 1994; Frederick & Hummel, 2014; Hipkins, 2014; Bolstad et al., 2012). Schools B and C showed that the power relationships had been addressed somewhat by the personalised learning models they were using by moving to a learner-centred approach. Hipkins (2014) asserts that modern classrooms require a move from a teacher-centred approach to a learner-centred approach and suggest leaders acknowledge and address the teacher’s and learner’s roles; as well as power relationships, when implementing personalised learning. From what the teachers in Schools B and C said about their leaders, they did indeed lead by example and explored their own power relationships while they drove change through collaboration.

In this study School B demonstrated their acknowledgement of the importance of including parents, by informing parents about changes with transparent, open communication on their website, through publishing teachers’ planning and a plethora of online communication about why they teach the way they do and include the research behind it. To fully effect change Bolstad et al. (2012) and Grant and Basye (2014) stress the importance of bringing on board all stakeholders, which includes parents.

Managing the organisation of student learning and tracking of students engaged in personalised learning created some challenges for the teachers in this study. Noteworthy is the challenge of developing learner independence. The importance of teachers having a scaffold for students to become independent learners was raised by teachers in this study and this concern is echoed by Meyer et al. (2014) and Zimmerman (1998). The research data from this study showed that it was vital that teachers tracked students, but also had a system where

those students who were not participating fully in the programme were closely supported to become independent learners. For personalised learning to be implemented successfully, teachers need a system to help these students make good choices and become independent learners (Toshalis & Nakkula, 2012).

Noise was identified as a problem by School A – the school that this study reveals as sitting at an early stage of adopting personalised learning and where many single-cell teaching pedagogies were still in use. On the other hand, Schools B and C who provided evidence of deep personalised learning operating in their innovative learning environments did not see this as a problem. For example, the School C leader commented that one way students coped with the noise was to work in one of their small rooms within the larger innovative space. The need for withdrawal rooms for quiet or independent learning was something that the Department of Education (1977) *Open Plan Education* report recommended to reduce noise problems, showing that the Government have considered and responded to some of the past concerns to address challenges in 21st Century open plan learning environments.

Implications for practice

School leaders, teachers, students and parents are all involved in the changes and a major implication for practice that has been determined through this study is the importance of communication of meaning, intent and practice to all concerned. To achieve this, leaders need to take a leading role inside the school to reach a common understanding of the way in which personalised learning is understood in that school and then share this with all stakeholders. In particular, leaders and teachers must agree how it will be implemented in innovative learning environments. The first implication leads on to a second implication which is related to the means for arriving at a common understanding, implying that leaders are accountable for the level and depth of understanding and practice skills demonstrated by themselves and the teachers in the school. Consequently, the onus is on the leaders to organise professional learning that supports implementation of new pedagogical practices (once these have been clearly defined) in new environments. This leads to a third implication for leadership practices to focus on making not only personalised learning the preferred and practised pedagogy but also on making the most of the innovative learning environments in relation to their potential for learning innovations that go beyond personalising learning.

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