An architecture of ownership

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Introduction

This project set out to explore how completely new schools, occupying completely new classroom spaces, create themselves as schools. At its inception, a new school has only its buildings; everything else must be developed. In particular, the school must develop its vision for learners, and how this is reflected through school culture, routines, values, practices, and interpretations of curriculum and assessment. We wanted to know what the experience was like for both teachers and students as they found their way and developed their identities as members of the school. To that end, the project examined how teachers and students at Hamilton's Rototuna High School (RHS), an innovative learning environment (ILE), developed agentic identities while defining their sense of self as a foundation community.

RHS contains two schools: Rototuna Junior High School (Years 7–10) and Rototuna Senior High School (Years 11–13). The junior high school began in 2016 with cohorts of students at each of Years 7, 8, 9, and 10. The complexity of this simultaneous enrolment, a requirement of the Minister promoting this school's development, has proved to be an interesting contrast with the senior high school, which has taken on one new year level at a time, beginning in 2017 with Year 11.

The two schools have borrowed from the educational vision and practices implemented at Hobsonville Point Secondary School (HPSS) (see Wright, 2018). The key ideas adapted from HPSS for Rototuna High School include:

- team teaching and curriculum combinations
- modular learning
- students tracking their own learning
- learning coach/learning advisory system
- passion projects where students explore interests over time
- large blocks of learning time
- emphasis on NCEA Level 2 over 2 years for 'quality credits' (i.e. aimed at Merit or Excellence), rather than Level 1 and Level 2 credits.

This focus is framed by the concept of *The Architecture of Ownership*, borrowed from Fletcher's (2008) focus on how students in US schools can exert ownership of their learning. We wanted to know if the concept could be used to explore what this is like in a new school, while also applying the concept their teachers.

Our Research Questions (RQs) follow. The RQs explore a poorly understood context of education: namely, how completely new schools, occupying completely new classroom spaces, create themselves as schools. We wanted to know how culture, practices, and pedagogical routines develop that support and enhance learning for a wide group of learners. We also wanted to know what teachers, students, and school leaders learned as they found their way.

Research questions

What features characterise agentic identities that teachers and students form in a new ILE school, that represent an architecture of ownership?

1. How do teachers and students describe, apply, and demonstrate understandings of their own agency in an innovative learning environment (ILE) and do these understandings illustrate principles of an architecture of ownership?
2. In what ways do teachers and students make sense of the various architectures of an ILE (relational, pedagogical, physical, curriculum, or social), and to what extent do the meanings they ascribe to these architectures influence the development of student and teacher agentic identities?

3. In what ways do participants make links between their identities as students or teachers and their engagement in classroom life, and what do these links look like?
4. How do understandings and actions regarding agentic identity formation inform or impact on the ways in which the participant students and teachers practise, experience, and express *The New Zealand Curriculum* (*NZC*) key competencies?

Research design, methods, analysis

To undertake this project, we drew on Fletcher's (2008) architecture of ownership framework, supplemented by Phillips' (1990) categories of agentic behaviour—control, bonding, and meaning. We created simpler synonyms for Phillips' categories: decision-making (control), belonging (bonding), and meaning-making (meaning). As part of the research, we asked participants to create digital artefacts that they could categorise according to the categories. This was in preparation for interviews, so the focus could be on how the images reflected an aspect of their life. By using these categories, we could help participants frame ways of talking about their experiences and sharing the images they took. As they talked to us about their images and their meaning to them, we asked questions about relationships, practices, and values, and what it was like working in such big open spaces. These questions helped us examine data in relation to how participants exercised their own decision-making as either learners or teachers (agentic identities). Also, the categories helped us explore the architectures relating to the relational, pedagogic, cultural, and physical, so that we could reach some conclusions about the concept of an architecture of ownership.

The "architecture of ownership" concept

The architecture of ownership is the conceptual framework that helped us understand how a newly built school environment (spaces, practices, routines, and expectations) might support student and teacher agentic identities. The architecture of ownership focuses on how "schools build a climate that takes students beyond mere engagement and into ownership of their learning" (Fletcher, 2008, paragraph 1). Key tenets of this concept relate to the extent to which students are connected with, and engage with, issues that reflect their interests while they are at school. And school is a time in which, as teens, students are developing and forging their identities.

Fletcher's architecture of ownership, although developed from school settings in the US, aligns with the vision of *The New Zealand Curriculum* (*NZC*), which sees students as being "confident, connected, actively involved, lifelong learners" (Ministry of Education, 2007, p. 7). Agency, identity formation, and culture are key aspects central to the architecture of ownership, and link to conditions needed to enact the *NZC* vision. Developing these abilities and dispositions can be a key focus for secondary schools. New schools, like RHS and Hobsonville Point Secondary School, appear to take the *NZC* vision seriously, for they have been offering activities within the curriculum, leadership, or extracurricular programmes to support this enactment.

Kilpatrick, McCartan, McAlister and McKeown (2007) examined processes that might foster research partnerships with students, the benefits of which have been explored by Cook-Sather (2006), Hamilton (2006), and Mitra (2003). Hamilton (2006), for example, asserts that when students feel respected enough to express their own perspectives about how they work in shared learning spaces, they are better able to manage their learning. Bolstad et al. (2012) note that when learners are supported and provided with opportunities to shape their learning, they are better equipped to:

> describe in their own words what they have come to learn about their strengths, weaknesses, motivations and interests as learners, and how this relates to other contexts of their lives, including their ideas about how they see themselves in the future. (p. 19)

When students can "describe in their own words" their experiences, hopes, and needs, they not only articulate what they know of themselves, but also locate themselves in relation to others. Together, these ideas reflect the architecture of ownership in action.

Phillips (1990) developed a conceptual model of adolescent development and identity formation, which complements Fletchers' architectures. As stated previously, Phillips' categories related to adolescent/youth development inspired our category labels (belonging, meaning-making, decision-making) to frame our data collection/generation methods and analysis. Phillips' model helped us apply Fletcher's whole-school focus to a more modest scale.

To address student voice, we were inspired by Nelson and Christensen's (2009) use of images to capture students' "beliefs, needs and world" (p. 36). This occurred through group or individual semi-structured interviews, in which students and teachers (separately) could elaborate on the "meaning and significance of their images as well as their thinking and perspectives" (pp. 36–37). We took Nelson and Christensen's (2009) idea and reimagined it, while also being mindful of the purpose. As Woolhouse (2019, p. 5) suggests, using tools such as self-generated digital images helps to "explore what individuals think and feel about a topic, issue or experience". Woolhouse suggests that such a method can make it easier to "elicit personal views and provide a route for accessing different types of data, such as the emotional responses of individuals to situations" (2019, p. 5).

We took the view that participant students were agentic. We took heed of Cook-Sather's (2006) view that by using social constructivism, we could avoid viewing students as potentially passive recipients of learning. Instead, we wished to engage them as "participants and social actors in constructing their own meanings" (Bokhorst-Heng & Keating Marshall, 2019, p. 150) out of their experiences. By offering students the opportunity to collect and select the images they wished to focus on, they could address what mattered. Thus, interviews were very much shaped by students, for, as Charteris and Smardon (2018, p. 93) assert, "student voice is a powerful lever for the engagement of students in their own learning." The same principle of allowing student participants to make choices about what was shared was applied to teacher participants.

Over the project lifespan and membership, some students moved away from the project while new ones joined it. At the same time, teachers joined and left, mostly because they changed schools. During the 2 years of the project, we liaised with two senior staff, who helped us with times and spaces in which we could work with our research participants: 10 staff (six Junior High; four senior) and 25 students (Years 7–12, made up of 14 junior high students; 11 senior), plus two principals.

We invited students and teachers to collect images that illustrated belonging, meaning-making, or decision-making for them. When we interviewed participants individually or in focus groups of various sizes, we asked about their image choices and what these signified. Interview data were transcribed, coded, and categorised. Word clouds also initially helped identify the frequency of particular terms. Themes, categorised as belonging, meaning-making, and decision-making, underpinned the theory-making in relation to agentic identity formation and its relationship to an architecture of ownership.

In the coding process, we categorised students as follows: Junior High students as JS1–14, Senior High students as SS1–11, and teachers similarly: JT (Junior High) or ST (Senior High) with a number to identify each person.

The next section (Findings) identifies areas of leadership, plus teachers' and students' experiences of belonging, ownership and agency in constructing their identities at school.

Findings

Leadership architecture

Educational leaders of ILEs are tasked with leading in ways which encourage collaboration and inquiry, both for learners and teachers (Education Review Office, 2018). Coming to know and practise leadership in these contexts can be significantly different to past experiences of leading in traditional educational contexts. This section focuses on the leadership practices of the two educational leaders tasked with growing two schools in different ways. We interviewed these leaders as a focus group. Key ideas that underpin this section include:

- stepping beyond the physical architectures to examine the relational architectures, to show the intricate relationships that exist, evolve, and reform over time
- reflecting on traditional leadership theory and ascertaining its usefulness and application to these contexts
- examining what we can learn about leadership in ILEs, and understanding how we might leverage traditional theory (or not) to support educational leaders in these contexts.

Junior high school leadership context

Foundation principal Fraser Hill leads the formation of Rototuna Junior High School (RJHS). He brings over 20 years of education sector experience. RJHS opened in 2016, enrolling students at Years 7–10 simultaneously. This multi-level enrolment differed from the establishment of many other ILEs where single cohorts enrolled on a yearly basis, which offers staff time to develop and review systems, processes, and curriculum interpretations. Fraser acknowledged that having all four cohorts at once brought many challenges, placing pressure on resources, staff, and planning and review processes.

Fraser learned quickly that developing a school vision and philosophy could not be rushed. He believed his leadership was most successful when clear lines of communication led to ease in sharing information and generating open conversations about "where to next". A key task initially was making strategic appointments to staff. He then spent time disrupting traditional views of what it meant to lead and be a leader.

Senior high school leadership context

Natasha Hemara, Rototuna Senior High School's (RSHS) foundation principal, opened the school to Year 11 students in 2017. Sharing the site with RJHS, this Years 11–13 school will eventually have the capacity for up to 800 students. As a first-time principal, Natasha draws on her experiences of senior leadership as Deputy Director of Southern Cross Campus College in Mangere. While there, she supported teachers to transition to more open classroom spaces.

Moving to Rototuna as principal was her next professional challenge. Her initial RSHS tasks involved collaborating with the construction team and the Ministry of Education, recruiting staff, and conceptualising the school's vision and curriculum prior to its January 2017 opening. She is actively building and growing community connections and relationships with local iwi, Ngāti Wairere.

It is important to note that the two schools have combined as Rototuna High School (RHS) but maintain separate identities as senior and junior schools.

Leadership practices across two contexts

Our findings about leadership in these two ILE schools complement existing understandings about teacher stories. Through the project, we capture some of the more hidden stories about the nature of leading learning in Aotearoa. A focus on hidden teacher stories (Clandinin & Connelly, 2000) surfaces what is often difficult to reach: deeply personal and professional interconnections. Clandinin and Connelly's landmark work described how educators shared some stories about their professional lives, but kept others hidden and private. Our participant interviews became occasions for teachers to share what they chose. At times, this made "the implicit explicit, the hidden seen, the unformed formed, and the confusing clear" (Atkinson, 1998, p. 7). This section attempts to honour Atkinson's view.

Distributed leadership theory focuses attention on *how* leadership is enacted as an activity across social and situational contexts of schools (Spillane, Halverson, & Diamond, 2001). This centres attention on task allocation, line management, and role fulfilment. Using a distributed lens drew our attention to what was being "distributed" in this new school, which starkly contrasts with traditional school settings. In RHS, distributed leadership involved more than the allocation of portfolios and tasks. Instead, it was practised through the growing and sharing of skills, knowledge, and power; the formation of leadership "presence"; and the creation of leadership identities, agency, and ownership.

In RHS, distributed leadership manifested as a search for wholeness to broaden leadership skills and capabilities. The principals acknowledged how important leadership position appointments and teaching staff were, to cover the range of skills and abilities needed. Natasha created a diverse leadership team to grow and enact the school vision and philosophy, deliberately appointing people to share leading tasks. This strategic action highlighted the skills and experiences she perceived were needed to lead a brand-new school. This indicated an ability to openly and honestly reflect on what was missing in the leadership landscape in relation to her own skills, abilities, and experiences to develop the school as a whole. Distributed leadership actions thus created spaces for others to lead and exercise agency.

The schools' leadership practices are spread further than the immediate team. The principals expected the leadership team to interpret and implement decisions according to their responsibilities, visibly exercising their leadership capabilities. They encouraged others to express situated and/or nuanced leadership, extend creative thinking, and grow pedagogical practices. This expectation demonstrated faith in their team to make things happen using collaborative, relational, and pedagogical leadership architectures. Trusting other people to lead indicates a more cohesive theorising about leadership than is currently noticeable in research literature. Examples included timing the pace of change, plus addressing and interrogating the concept of "integration" in relation to meaningful student learning (Wright, 2018). This involves risk and professional discomfort, recognised as common to all staff.

Leadership in this school is very much characterised by "doing" within collaborative, relational, and pedagogical leadership architectures. Natasha and Fraser have few opportunities to "be". The research interview became an occasion for peer reflection and talking about "being" as leaders. This talking highlighted collaborative leadership practices, manifested as participating in decision making, within a "power-sharing" context (Telford, 1996, p. 123). Other examples of power-sharing include working together in open plan offices, encouraging cross-talk, collaboration, and adaptive help-seeking.

In relational leadership terms, Natasha and Fraser acknowledged and embraced risk-taking, plus constantly evolving practices, resources, and staff combinations, particularly when creating learning modules. Creating spaces for teachers and learners to find their place in establishing their identities ("to be" and "being") is an important aim and links closely with pedagogical leadership to support and include diverse learners and learning purposes.

Student architectures: Voice, agency, belonging

Voice, agency, and belonging are key research frames and link to both Phillips' (1990) research and Fletcher's (2008) architecture ideas.

Junior high students

Junior high students understood the relationships they were forming, and the ways they were expected to learn in this new school. Having 400 Year 7–10 students begin together created challenges of curriculum, routines, structures, and relations for everyone. To that end, a prevalent sense of forgiveness pervaded students' comments during interviews. Participant students were keenly aware that teachers were learning how things worked in the school—just like they were—noticing that problems and mistakes occurred and needed unravelling. At the same time, students suggested that because of this uncertainty, teachers forgave them too.

This acceptance of a state of constant flux appears to be significant for the junior high students. However, students in the senior school did not make much mention of this, or of the importance of being foundation students. This omission may relate to the way in which the senior school was established by having one cohort added per year, rather than all levels at once. This graduated admission process has possibly made their transition into school much less complex than that of the junior high students.
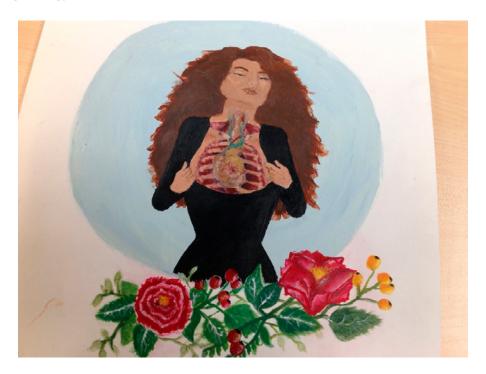
Junior school curriculum architecture

Junior high school participants felt that when teachers ran subject lessons in parallel rather than being integrated, and they had not made sufficient connection between subjects to make their learning satisfying. This phenomenon was mentioned by senior students too. In these instances, students were unable to make conceptual connections of their own. A similar disconnect was experienced by foundation students interviewed at Hobsonville Point Secondary School (Wright, 2018). Junior high students revealed that they appreciated learning when subjects complemented each other. This is not possible in traditionally organised subject timetables, where students study single subjects in parallel all year. A subject timetable can therefore, it seems, hinder or help meaning-making for students.

Junior high students were keen to please and this was evident in what they told us and how they told it to us. They appreciated learning concepts and content in connected ways, for this facilitated meaning-making, decision-making, and belonging. When links between subjects worked well, students could more readily transfer learning from one context to another.

One student's painting illustrates subject connection (Figure 1). She had taken a module combining art and biology. Her artwork shows how biology knowledge made it easier for her to create her own anatomically accurate artwork, inspired by an artist's model.

Figure 1: Using biology to inform art

Senior high school students

Senior high school student participants (Years 11 and 12 in 2018) acted in more agentic and self-assured ways. Whether interviewed in threes, pairs, or alone, they shared information about their place in the school, their feelings and perceptions about their academic achievement, and their relationships with staff.

Their perceived place in the school connected with how they fostered peer and staff relationships. Most of the interviewed seniors (n=7) mentioned addressing staff on a first-name basis, reducing relational distances. The first-name basis made it "easier to see them [the teachers] as people" (S4). Senior students appreciated, as did their junior high peers, having more than one classroom teacher to seek help from during their integrated modules.

As in other schools, RHS students study towards achievement standards. Students are focused on achieving high quality Level 2 credits over 2 years. One student, a Year 11 boy, admitted that he had become frustrated and turned off by his previous middle school learning. He said he had been very bored and consequently did little schoolwork, also admitting to being disruptive and underachieving. At RHS he expressed pride in achieving achievement standard credits, but remarked "I only get Achieved, not Merit or anything" (S6). He said he looked forward to coming to school, enjoying learning through combined subjects. He suggested that learning at RHS suited him: it was "satisfying, achievable" (S6). This suggests that the modular, integrated learning structure connected with his zone of proximal development (Vygotsky, 1978) and also offered challenge.

Senior high school participants were passionate advocates for their opportunities to learn at RHS. At least two said that they chose to participate in the research because they really wanted to share such views. However, one student was diffident and a little discomforted by the big changes to learning compared with her previous school. Other participants were grateful to not be pressured to achieve too many achievement standards in one year, and appreciated the time to develop depth and quality in their learning.

Five students commented on the flexibility of the uniform to express individuality because of its multiple pieces, giving scope to dress according to the weather or their inclinations. They also appreciated the lack of fuss about dyed hair, nail polish, or makeup. Expressing individuality, even within the confines of a uniform, appears to connect with the ownership and relational architectures.

Choosing modules three times a year also meant learning to work with different peers, broadening their relational skills. Notwithstanding, this was exercising "bounded agency" within the "structures of schooling [which tend to] constrain their autonomy within school institutions" (Mazenod et al., 2019, p. 56).

Senior and junior school students—while sharing a school vision, uniform colours and symbols, and physical spaces—experience schooling in RHS differently. Perhaps this is a result of bounded agency at play, their levels of maturity, or both. We hope that they are "developing a positive independent learner identity at school [because it is] a process that can shape an individual's outlook on learning for life" (Mazenod et al., 2019, p. 56). Their lifelong learning trajectories depend, in part, on the foundations laid at school.

Relational spaces: Growing and forming new relationships, enhancing connections

Formal club structures supported the development, growth, and continuity of relationships between groups of students, and between students and staff. Three of these club structures are outlined below.

Barista Club

Members of the Barista Club learned coffee-making and customer-service skills, selling beverages to staff and other students. It became clear that the barista role was much more than a hot beverage transaction, in that providing coffee to staff opened spaces for students and staff to build relationships beyond classrooms. For example, one student, in a focus group of three, said proudly, "Yeah, there's [two staff named]. They always get a trim flat white with two sweeteners" (JS2). These students had the teachers' coffees ready for them without needing to be told what the order was. Through such "transactions", students learned about the value of service to others and gained a sense of belonging and relational satisfaction. It helped build a meaningful cultural ritual. Barista Club students considered themselves fortunate and privileged, saying it was "pretty cool, because not many people get to make coffee from a proper coffee machine, or learn how to. And it's real fun." (JS3) Another benefit was learning things about themselves, for instance that "I can work pretty well under pressure" (JS11). Students also felt they developed skills for themselves, and learned from others: "You learn some really valuable skills that you can use ... for your own benefit, [and] out in the community" (JS7).

LGBTQI Club

The LGBTQI Club, initiated by students, offered a space for specific students to form identities, build relationships, and get support safely together. The initiator noted that it has become "a space where we can just chill and not be worried about other people" (JS1, 2018 interview). JS1, a student leader, exercised leadership in

positive ways, applying it to both her other school responsibilities and the LGBTQI Club. The club had expanded to about eight students over 2 years, highlighting the need for such safe relational, belonging, and identity-forming spaces (see Figure 2). J1 sees the LGBTQI Club as a "tight community", developing its own life within the school.

Figure 2: LGBTQI student group

When they meet, students discuss issues such as homophobia; identity; and sexual, physical, and mental health. They access information online and from external speakers. Leadership of the club alternates between two students supplemented by outside speakers, alleviating any expectations that the student leaders are more "expert" than other members. A teacher also helps with topics or liaising with speakers. Such groups indicate that the school wants to provide spaces for the equitable treatment of diverse members of its school community, while offering opportunities for students to exercise leadership and develop ownership, belonging, and identity. In other words, as JS1 argues, it is about "holding your ideas lightly" and acting inclusively.

Kapa Haka Club

A student (JS6), in Year 8 at the time of the interviews, shared an image of a kapa haka performance as an example of belonging. He said that, "in kapa haka everyone will open out to you. Everyone will actually help you in your learning, guide you, show you the right things to do. What not to do. And I've been doing this for 2 years." He remarked that kapa haka links him to his mother's side of the family. Some adults come from outside to help the group: they "come from outside, and so it doesn't matter where they're from … anyone who tries to help you, they will make you feel welcome in that group … so, it actually boosts them, and teaches them to enjoy school. You know, and not end up in prison." This student also commented:

> I feel like everyone has to be respectful to others [in kapa haka] but … outside, some of them are a bit chaotic. Some are just telling you to shut up and go away … we go to loads of pōwhiri, and we take a lot of information in. And most of them … pay attention, and they actually pick up different strategies. And then you actually work together with them … so … when I get home, I'll recall it in my head.

When asked why he talked about the girls in the photo (Figure 3), JS6 said they were "really important" because they were more senior and had a calming effect on others in the kapa haka group:

> Sometimes people can get really annoyed [when you don't know the moves]. So, they say, "Come with us for a little bit." And then they'll take you out, they'll teach you it really slowly, they'll make sure you get it 100% correct. And when they feel like you've got it, or you almost have it, they'll just keep on watching you develop and stuff.

Figure 3: Kapa haka

These instances in which students discussed belonging, ownership, and identity implied that the school is making room for diverse interests and needs to flourish, while simultaneously serving the purpose (perhaps serendipitously) of providing opportunities for learning, personal growth, and decision-making. At the same time, relational architectures appear to thrive along with students' perceptions of ownership and belonging. While the clubs and groups might be counted as service to the school, they are nonetheless a service from the school to students, and thus have reciprocal benefits.

The outside community also plays a part in these clubs and groups. By inviting external people to share their expertise, they support the interests of students. In turn, the school maintains community links and connects students to life beyond school. Staff play a vital role in the functioning of these groups, by liaising with various external agencies on behalf of specific school groups. These support mechanisms build relational and ownership architectures across the school.

Advisory time

Students are assigned to an advisory group and teacher. The advisory group teacher advises them on academic and pastoral needs during their junior or senior schooling at RHS. All students appreciated having a teacher as a significant other and took their advice seriously. Teachers also highly valued the advisory role, seeing it as an important professional responsibility, and remarked that seeing students grow and succeed as learners was professionally satisfying. The advisory groups are intended to support students pastorally. To that end, teachers offer students individual coaching about their curriculum coverage and module options, offering opportunities for students to make decisions about their academic development. At the same time, students can develop a deeper connection with at least one staff member during their time in the junior or senior high school. Advisory time has dedicated timetabled spaces so that there is time to build relationships that support students' academic and pastoral trajectories.

Advisory time also has its challenges. Advisory groups (about 15–20 students per group) are connected in what schools call "communities". Each community contains over 100 students and their advisory group teachers. Communities often meet as a group, yet many participant students wished to do "some things in our advisory, instead of the whole community because it can get a bit crowded and stuff" (J4). Perhaps for the junior high students larger numbers can be overwhelming, and they prefer the greater intimacy afforded by the smaller groups.

Advisory time is part of the relational architecture for pastoral and academic support, sometimes involving one-to-one conferencing, or group activities to develop personal skills and attributes as learners. Sometimes, it is time for working on classwork, with the advisory teacher available to answer questions. Students thus have few excuses for being unable to complete tasks or meet deadlines.

Teacher architectures: Pedagogical and professional identity

This section focuses on the sense teachers make of the relational, pedagogical, physical, curriculum, and social architectures, especially as they apply to teachers' professional agentic identities. We begin with junior high school teachers' perspectives.

Junior high school teachers (Years 7–10)

The first tranche of junior high school teachers underwent a 6-week induction, while later tranches had less induction. It remains unclear what mentoring and coaching processes continue to support new appointments. On the first day with students, teachers were expected to be ready with lessons and systems to accommodate four year-levels simultaneously. This created levels of complexity that the school could probably have done without, since all systems were being established at once. It created a number of complications, including:

- initiating and building relationships between staff
- learning to collaborate across the curriculum and with unfamiliar colleagues
- building routines, practices, and vision
- learning to work in relatively unfamiliar ways.

Primary background teachers appeared to slot into the new school's emerging systems more easily than those from the secondary sector. While some secondary teachers encountered difficulties in knowing how to teach outside of their subject discipline norms, primary-trained teachers did not identify this as a challenge. Some primary teachers, however, did not have secure Years 9–10 content knowledge.

One secondary teacher remarked that her subject was "watered down" (ST6) by teaching in conjunction with other subjects. She expressed difficulty in "compromising" content time with another subject plus applying subject content to unfamiliar contexts. This perspective was voiced especially by science and mathematics-trained secondary teachers, particularly those teaching in the junior high school context, where broad subject knowledge is expected.

Perhaps this may relate to disciplinary practices and beliefs that secondary teachers bring with them. For example, RHS students are not grouped by ability. For some teachers, this runs counter to common practice. As Mazenod, et al. (2019) argue about traditional classroom organisation, "low-attaining students are constructed as learners who benefit from specific approaches to learning justified through discourses of nurturing and protection" (p. 53), contrasting with the independence and challenge often afforded "top" class students. When students are in mixed groups, uncertainty about being able to label students' perceived abilities may destabilise some teachers' understandings about how to teach and what to teach. This is especially so when teachers move from schools where ability groupings are the default. On the other hand, changing schools can be liberating, as one secondary school teacher new to the senior area at the start of 2018 noted: "I see myself as a teacher here, not as a [subject] teacher. Here my badge says 'teacher'. I like that." (ST5)

One conclusion from teachers' perceptions relates to whether they could view their teaching subject in holistic, applied ways that connected with students' zones of proximal development (Vygotsky, 1978). It may relate to how discipline knowledge is acquired, learned, and modelled in classrooms. To put it another way, Loughran (2006) has argued that the "very nature of teaching and learning to teach is dominated by … what that person sees and understands as important to his or her practice at the time" (p. 30). When the practice context changes, what is deemed as important also shifts, but old practices and understandings are hard to shake.

If teachers bring what they know with them from school to school (e.g., pedagogical experience, sector background, subject discipline knowledge), then some secondary teachers felt the disconnect more keenly, particularly the sciences compared with the humanities. Teachers in the latter group reported that they mostly enjoyed working with other teachers. They enjoyed the challenge of working out how to present subject knowledge content as contextualised to complement the other subject(s) they were linking with. On the other hand, all of the participant secondary-trained teachers in the junior high mentioned the challenges of teaching and assessing across subjects when they lacked confidence, relevant content knowledge, and

pedagogical experience. For example, one mathematics teacher noted how personally challenging it was to focus on developing students' literacy or science or social science knowledge. Primary-trained teachers seldom mentioned this as an issue.

We can conclude that teachers' existing professional identities linked either to professional confidence in this new school environment, or created crises of confidence. Teachers' professional belief systems thus shape their pedagogical practices, regardless of subject. These beliefs are built on, among other things, views of learners, learning, schooling, and knowledge (Handal & Herrington, 2003).

Learning advisory role

Interestingly, both primary and secondary teachers across the junior and senior high commented on the rewarding nature of the learning advisor role. They appeared to treasure the mentoring and supporting of a group of students as they progressed through the school. Teachers treated this role very seriously. In explaining the value of the learning advisory role, one teacher said, "The learning advisory structure is making it easier for me to take a positive and active interest in students' academic wellbeing, and to build relationships with parents. That is rewarding." (ST2). The role is significant for each teacher, bringing its own demands regarding supporting and mentoring learners through their school career. Even though each learning advisor has needed to learn this mentoring role, teachers value it as helping build deep and worthwhile relationships while developing agency and decision-making skills in students over time. This learning advisory section is the bridge between the focus on the two sets of teachers. It is now time to focus on senior high school teachers' experiences.

Senior high school teachers (Years 11–13)

Senior high school teachers focus on Years 11–13; that is, Levels 1–3 in the National Certificates of Educational Achievement (NCEA). The high school offers a 2-year path to quality NCEA Level 2 credits (student views on this are addressed elsewhere). Quality credits relates to aiming for Merit or Excellence levels of achievement. Instead of closing off options for learning, the school's pathways structure offers students flexible choices, as long as there is the required curriculum coverage over specific time spans.

To those outside the school, it may seem as if there is no structure to the way students study, for it avoids defined routes to traditional views of careers. The school's curriculum framing orientates students to broad areas, such as industry, manufacturing, agriculture, engineering, or other professions. A clear intention of this framing is for the school to be future-focused. In orientating itself to this view, the school acknowledges the fluidity of potential careers and the state of flux created by rapid technological changes. For example, Kiernan (2018) estimated that by 2030, 85% of the jobs existing by then will be new. And, he argued, over 30% of current New Zealand jobs are at high risk of automation within 20 years, particularly provincial and rural jobs. The total number of "at risk" occupations, as measured in 2015, is well over 500,000 and are largely comprised of lower-skilled occupations. Such predictions suggest the importance of schools considering how a curriculum can best serve current and future learners. Schools like RHS appear to heed forecasts about the nature of work and life as they adapt their curriculum provisions to focus on more than content knowledge for learners (Wright, 2018). This emphasis is, however, not without problems.

Senior school staff suggested that some teachers experienced tensions in designing curriculum and meeting assessment requirements for integrated modules. In balancing the needs of specific NCEA achievement standards (AS) with the nature of the school's modules, issues have emerged. For example, a music teacher noted that it has become challenging to meet specific music theory and composition AS requirements when musical breadth and depth is expected. When music is modularised and taught in conjunction with another subject, some of the assumptions built into AS show up, for example that they are predicated on subjects being taught as single continuous subjects over a full year. This expectation creates difficulties in managing the evidence students need to achieve well in such AS.

Similarly, a mathematics teacher lamented being unable to focus on specific mathematics content that did not easily complement other subjects. Language teachers also experienced issues with encouraging developmental language-learning competence, for longitudinal practice and development conflicts with modular structures.

Offering complementary content within overarching conceptual themes, for example, did not come easily to some teachers without considerable, and possibly uncomfortable, creative intellectual labour. Some teachers have difficulty conceptualising subjects differently from usual lesson design methods, especially without access to models or blueprints for inspiration. Instead, there is considerable trial and error in module design and implementation.

On the other hand, social sciences, English, and other arts/humanities-based subject teachers found it relatively easy to create cohesive modules. Technology teachers, while finding ways to combine synergistically with other subjects, admitted enjoying the luxury of "retreating to" designated learning spaces. Other subjects may also have designated spaces for safety or storage, including hard materials, food/fabric and digital technology, plus arts (such as sculpture, painting, photography) and some sciences. The luxury of "owning" spaces contrasts with teachers who regularly teach in various open spaces and who cannot lay claim to a specific teaching space. Teaching in non-specific learning spaces may result in unforeseen problems that contradict belonging. These include:

- difficulty in finding places for showcasing student work and spaces for relevant subject-discipline artefacts
- having to move or transport learning materials from space to space
- being unable to claim personal teacher-identity spaces.

Such issues indicate that in an ILE, an architecture of ownership may require alternative solutions to belonging. The difficulties and possibilities for belonging therefore exist in tension.

During school days, since most teachers (and students) move among different spaces, readjustments to furniture and display equipment may occur regularly, resulting in unwelcome extra effort. ILE teachers constantly reformulate what it means to teach in a secondary school, and rethink how teaching and learning happens and how the spaces and resources work alongside other subjects. Reformulation requires different perceptions of professional identity, belonging, and decision-making, ultimately shifting understandings of what pedagogy and achievement mean and look like. An architecture of ownership for ILE teachers will therefore be different from the architecture of ownership for teachers in traditional 20th-century classrooms.

An architecture of ownership in ILE-designed schools is therefore equivocal: more so when schools strive to interpret the *NZC*'s intentions regarding connected, creative, adaptive, independent, and ethical lifelong learners. Re-imagining concepts of learning and achievement disrupt pedagogy, resourcing, collegiality, and lines of responsibility. It can be destabilising for teachers.

While teachers in RHS reported deeper connections with students (perhaps through the advisory role) than previously experienced, other tensions about collaborating and teaching became noticeable. These included:

- tensions between achievement standard (AS) requirements and flexible, thematic learning opportunities
- how to manage the development of specific competence, and/or records of growth over time (art subjects, languages, technology projects, for example)
- the need to think beyond content to construct modules, by focusing on learning principles, concepts, and outcomes first
- how to develop relationships with staff when beginning module development—this was especially difficult when staff had not previously worked closely with each other
- subject boundaries
- forging connections with new groups of students three times a year in modules.

Tensions highlight the states of uncertainty RHS teachers reported. In traditional schools, teachers know they have the same classes for a full school year, unlike RHS. Teachers, like students, are constantly becoming and belonging (for example, becoming more comfortable with integrated learning structures, and belonging to the school and its values). Regular decision-making occurs. Students choose modules three times a year through advice from their learning advisor in relation to their academic progress and interests. Teachers and students combine differently in modules: teachers make decisions about how themes are unpacked in tandem with at

least one other teacher, while students decide where their interests and learning needs lie. This implicates learner/teacher agency.

Charteris and Smardon (2018, p. 52) argue that there is often a "confluence of innovatively designed learning environment spaces" in ILEs, coupled with ubiquitous Wi-Fi and opportunities for students' participation in decision-making in how and what they learn. These opportunities precipitate changed relations between students and teachers. Agency located in learners alters classroom dynamics—and is a lot for teachers to adjust to. The advisory system, coupled with module choices for students and learning to offer a variety of assessment modes and practices "foreground both the importance of learners understanding what quality work looks like and their capacity to locate themselves in a curriculum progression" (Charteris & Smardon, 2018, p. 52). Teachers find themselves in contexts where, paradoxically, they appear to have a much more intimate relationship with students, even when class groups change three times a year and are in large numbers. Teachers engage with students in "feedback interchanges" (Charteris & Smardon, 2018, p. 52), supporting greater student learning autonomy and, concomitantly, less teacher dominance.

The "unwalling" of classroom spaces that Charteris and Smardon (2018, p. 52) refer to, appears to have precipitated shifting relational, professional, and pedagogic positions. Awareness of these shifts appears to be a critical factor in why teachers apply for positions in newly built ILE schools. Benade's (2015) study, for example, highlighted awareness as an apparent precondition for staff appointment to an ILE. Principals Benade interviewed pointed out, however, that some "teachers are anxious because of the demand for data-driven practice … [and were] challenged by the shift to the learner-centred models required by the adoption of e-learning and digital technologies" (Benade, 2015, p. 51). In hindsight, this is unsurprising. The near ubiquity of broadband access in newly built schools has heavily influenced shifts towards greater flexibility in pedagogical thinking, lesson design, resource use, and how students are organised for learning. For some teachers, this confluence with digital technologies is destabilising enough, let alone having to rethink how to alter pedagogical and conceptual thinking in different learning spaces with other staff.

Major implications for practice

This section offers the wider education community conclusions that might be adapted for local contexts, whether the school is brand new or being refurbished. As both staff and students begin using new spaces, they bring with them what they already know. Sometimes it is uncomfortable to change or reflect on one's practices. Benade (2015), for example, suggested that rethinking what needs to be valued for learning is challenging. Changing practices to suit new demands can be even more demanding, especially if curriculum and pedagogical risk-taking is not valued or supported. This section examines the findings in relation to the research questions (RQs) and groups the conclusions according to teachers' and students' ownership and agency.

Teachers' agency and ownership

RQ 1 about teacher and student agency and whether it links to an architecture of ownership can be addressed by Benade's (2015) research. His work resonates with the trends evident in RHS's teachers' experiences. Benade's comment that "demands of twenty-first century learning are proving to be unsettling to many teachers" (2015, p. 53) is pertinent. Teachers applying for positions at RHS were aware that there was a strong likelihood of being "unsettled". The music teacher at RHS embraced this possibility, saying that teaching at this school helps him be a "whole person", even though he felt "discomfort [and was both] terrified and excited" in learning to teach and connect with students in different ways. He also remarked, "[In RHS] I can work out how music fits, and what I want to music to become. I help make the rules, not fit myself into a box someone else constructed." Most participant teachers shared what it was like to adapt their pedagogical, agentic, and relational practices to cope with more fluid learning contexts. This greater fluidity appears closely linked with the demands of teaching in unwalled spaces while being digitally connected. Such changes were, Benade notes, a "fact of [professional] life" according to teachers (2015, p. 53).

RQ2, about examining teachers' and students' understandings and practices, sought to understand how teachers connected with their professional identities. These identities (such as relational, pedagogic, physical, agentic, academic, or social) developed as teachers found their professional feet at RHS. And while the teachers themselves did not use these terms, the findings connected with those categories.

Students' agency and ownership

Our findings demonstrate that student understandings of agency were shaped by their context. The shaping of agency was built on students' relationships with staff, on the opportunities they had to plan and actively participate in integrated learning encounters, and through making decisions about belonging. We refer here to RQ1. Students' ability to articulate opportunities for agency and how it felt to be agentic was, however, limited. This contrasted strongly with the highly agentic nature of foundation students at Hobsonville Point Secondary School (HPSS) (Wright, 2018). Perhaps this greater articulation of agency at HPSS occurred because those foundation students started when the school began, and were interviewed when they were in Year 12. It may be that if RHS students who were Year 7 students when the school first opened were interviewed at Year 13, their views may be more articulate about levels of agency.

On the other hand, when repositioned within architectures of decision-making and belonging, students made links to personal experiences and shared those through their visual artefacts. In essence, while students may not currently have the lexicon to fully describe these ideas, if we can offer appropriate research tools that are familiar to them, they can use those tools to help them articulate what they mean. We feel that the opportunity to collect images of their own making was one way that students had choices and could make decisions.

Active and overt practices precipitating pedagogical, conceptual, and relational shifts appear to be crucial for well-structured and conceptually sound module combinations of subjects. For students, this successful teacher collaboration is crucial: they picked when subjects did not facilitate conceptual or practical connections. They knew when teachers could not establish ways to make successful conceptual links between subjects. This finding connects with the architectures of curriculum, relationships, and pedagogy.

Students appreciated being treated well and especially liked being able to address teachers with first names. This, they felt, set the scene for being able to relate to them. They fully recognised that teachers were also learners, who didn't always get things right first time. This directly links to RQ3, regarding ways that participants make links between their identities as students or teachers and how they engage in classroom life.

New practices and key competencies

What we noticed was how language, symbols, and texts; thinking; participation; and managing self were demonstrated throughout the student interviews. This finding suggests that the ways that teachers organise learning has created spaces in which key competencies are practised and developed while students learn curriculum concepts and content. This links with RQ4.

Perhaps these findings suggest that key competencies may need reviewing in the light of the learning practices in new schools where modular, integrated learning is the norm. In RHS, there is deliberation in offering students choices for learning. Building agentic citizens in future-focused schools goes beyond the current key competencies. The emergence or recognition of new key competencies might better acknowledge new conceptions of teaching and learning relationships (McDowall & Hipkins, 2018).

Pace of change

For students and teachers, the pace of change had different trajectories. For teachers and leaders in the junior high school, growing the school from day one was rapid, with four levels of cohort at once. This fast evolution did not leave much room for reflection, review, or refinement. This contrasts with the slow evolution of the senior high: one cohort at a time appears to link to more incremental, steady, and deliberate growth in pedagogical practice and in the structural, relational, and cultural aspects of the school.

Leadership implications

The principals forged a leadership bond of mutual support and advice. They admit the leadership praxis has been difficult. Theorising practice or drawing on previous learning requires the ability to have distance and perspective—difficult when mired in the maelstrom of a school where everything is new. Leading new schools pivots on understanding and responding to intricate human relationships, and growing wisdom about how people connect and develop and sustain trust. Having spaces for professional risk-taking, and for reforming and aligning professional identities, is desirable. When faced with complexities related to developing and sustaining a personal leadership identity, the principals supported each other while forming cohesive leadership structures within a context of "unwalled" learning and teaching.

Finally, new educational contexts may require visionary and creative thinking. Findings from this study suggest that overt leadership practices that are collaborative, ethical, relational, distributed, and pedagogically focused are necessary. Overall, these findings might mean principal leadership preparation must also evolve to accommodate very different conceptions about leadership than have hitherto been documented.

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