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# **A typology of agency in new generation learning environments: emerging relational, ecological and new material considerations.**

**Jennifer Charteris and Dianne Smardon**

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## **Abstract**

The impetus to move to new generation learning environments places a spotlight on the relational dynamics of classroom spaces. A key feature is the notion of learner agency. A complex notion, learner agency involves both compliance with and resistance to classroom norms and therefore is far more sophisticated than acquiescence with classroom norms and protocols. This article traces a taxonomy of agency in education settings. To date agency has been theorised extensively in a range of ways. Firstly there is agency of the sovereign self, an autonomous learner that has emerged from self-determination theory. Secondly, relational agency is produced through sociocultural influences and linked with the ‘relational turn’. Thirdly, we have ecological agency, a temporally embedded process of social engagement where young people shape their actions in response to their context. Finally, there is an emerging new material conception of agency that is starting to gain traction in Education research and is yet to be explicitly recognised as an important consideration for educational practice. Consideration is given to this typology in light of case study data from school leaders who comment regarding learner agency in the context of new generation learning environments.

Keywords: agency; learning environments; innovative learning environments

## **Introduction**

Over the last ten years there has been a learning environment renaissance. A de-territorialisation of schooling, that is, an erosion of the normal zone of order (Mulcahy 2016, 85), is occurring with the redesign of built environments that enable teachers and leaders opportunities to create new partnerships and imagine new pedagogical

possibilities (Blackmore et al. 2011a). Across Organisation for Economic Co-operation and Development (OECD) countries, rapid advancements in technology have aligned with a policy focus on school re-development to enhance student achievement.

However, in many schools across the OECD, teachers consider that their workspace is an “innovation hostile environment” (Istance 2015, 4). In many schools, learning environments may still be based on existing designs from the 19th and 20th centuries that reflect trends in Education that were in vogue at that time. With the reshaping of the 21st century workforce and neoliberal influences permeating education policy and practice, 21st Century learning environments are being reengineered to encompass engagements with new and emerging technologies and “support new knowledge production, learning and work practices” (Fisher 2016a, 3).

A range of factors contribute to the conceptualisation of learning environments as ‘innovative’ (Istance 2015) or ‘new generation’ (Imms, Cleveland and Fisher 2016). Digital technologies afford media rich environments and offer opportunities for polysynchronous learning where there can be a blend of face-to-face with asynchronous and synchronous online communication. Delgarno (2014) defines polysynchronous learning as “the integration of learner-learner, learner-content and learner-teacher interaction through a blending of multiple channels of face to face, asynchronous online and synchronous online communication” (p. 676). Mobile technologies can enable ‘authentic learning’ in classrooms (Royle, Stager, and Traxler 2014), where students undertake learning that can interconnect content and access a range of contexts beyond the classroom (horizontal connections) (Istance 2015).

With the confluence of innovatively designed learning environment spaces, the agility of mobile devices and assessment for learning pedagogical practices, learners can be provided with opportunities for participation in decision making about what, how and

where they learn. Assessment for learning as a practice that emphasises the importance of student participation, can be defined as “part of everyday practice by students, teachers and peers that seeks, reflects upon and responds to information from dialogue, demonstration and observation in ways that enhance ongoing learning” (Klenowski 2009, 2). Assessment for learning practices foreground both the importance of learners understanding what quality work looks like and their capacity to locate themselves in a curriculum progression. Assessment for learning involves feedback interchange based on co-constructed criteria. These pedagogical elements coupled with opportunities for polysynchronous learning, evoke a shift towards increased agency for learners.

Scope for learner agency, as an element of effective and innovative assessment for learning (Charteris and Thomas 2016), is a crucial element in the reimagining of schooling spaces. Recent developments to reconceptualise schooling environments through ‘unwalling’ (Deed and Lesko 2015), promise pedagogical flexibility and possibilities for shifts in teaching and teaching relations. With burgeoning interest in new generation schooling environments over the last decade, spatial and material relations of schooling have become increasingly foregrounded (Blackmore et al. 2011a). It follows that with this conjuncture, schooling spaces, the nature of relations, and particularly how educators conceptualise learner agency in schooling settings, is open for re-examination.

The article commences with a consideration of new generation learning environments, learner agency, and an account of research conducted with school leaders from Aotearoa/ New Zealand. A typology of agency is presented and links are made with school leaders’ comments on agency in new generation learning environment settings. An argument is proposed for a broad understanding of agency within new generation learning environments, how this understanding might prompt a rethinking of

learner agency and ultimately, enlarge learning possibilities. Inasmuch as learners are conceived of as acting agentially in these environments, Aotearoa/ New Zealand schools are evaluated on how they enable students to “take control of their learning, develop meta-cognitive skills, self-regulate, and develop self-efficacy and agency” (New Zealand Government 2016, 33). Therefore renewed attention to agency and how it might be thought is fitting.

### **The Aotearoa new generation learning environment context**

New generation learning environments as innovative learning spaces are “characterised by polycentric room designs, infused information and communication technologies, flexibility brought about by moveable walls and other agile interior elements, a variety of ‘student friendly’ furniture, and ready access to resources” (Imms, Cleveland, and Fisher 2016, 6). Schools are altering their architecture and spatial layouts to promote innovative and creative learning spaces. This brings with it an associated drive to promote sophisticated and personalised learning approaches, the embedding of ubiquitous technology, and the “excitement surrounding the many ways education can contribute to burgeoning ‘knowledge economies’” (Imms, Cleveland, and Fisher 2016, 3).

In the Aotearoa context, the Ministry of Education clearly articulates that “schools must design flexible learning spaces that work for everyone” (MoE 2016a, 1). Furthermore, learning spaces and other school facilities need to become more flexible and adaptable to meet all student needs, and to support the delivery of different teaching and learning programmes (MoE 2016b, 12). While ILE are described as “the complete physical, social and pedagogical context in which learning can occur” (MoE 2015a), Flexible Learning Spaces are the environmental element and are mandated by the Aotearoa government (MoE 2015b). These are linked with schools’ long term 10 Year

Property Plans and funded through schools' 5 Year Agreements. This funding is for upgrades that align with the MoE focus on ILE and is provided to modernise or replace existing school buildings.

However, legislating for ILE through the levers of funding and policy, does not necessarily imply a simple transmission of policy makers, and their government legislators' goals, into practice. Policy implementation is “situated, spatial, contextual, and material” (Webb and Gulson 2015 20), interpreted and enacted in different ways. “Policy enactment involves creative processes of interpretation and recontextualisation – that is, the translation through reading, writing and talking of text into action and the abstractions of policy ideas into contextualised practices” (Braun, Maguire, and Ball 2010, 549). The uptake or resistance to ILEs are no exception with policies set to shape, constitute, and enact schooling subjects (Webb and Gulson 2015). “Education policy spatialises and constitutes objects and subjects through emergent and adaptive policy arrangements that simultaneously influence how policy is sensed, embodied, and enacted” (Webb and Gulson 2015, p. 20).

In socio-spatial theory, space ‘shapes’ social relations and practices and therefore classroom spaces influence the social politics of the relational environment (Massey 2005). Attention to the affective –discursive dimension in assemblages of classroom relations can reveal micropolitics in new generation learning spaces (Mulcahy and Morrison 2017). In recent years, there has been increasing attention paid to “materialising processes such as architecture and facilities” (Mulcahy 2016, 81) and the interrelationships between discursive politics and affective, embodied experiences (McPherson and Saltmarsh 2016).

A socio-material perspective enables a broad conceptualisation of the relationality of classroom spaces. As Mulcahy, Cleveland and Aberton (2015) observe,

there is not necessarily a causal link between learning spaces and pedagogic change. Any “pedagogic change is encompassed within multiple sets of relations and multiple forms of practice” (Mulcahy, Cleveland, and Aberton 2015, 575). Nevertheless, teacher education is an important element in the remodelling of schooling spaces and therefore “new designs should be supported by extensive teacher professional development in new generation learning environments” (Fisher 2016b, 176). However, teachers are often expected to transition into new generation learning spaces with little support. Continuing professional development may be left up to individuals within schools and consequently “there may be little compunction for teachers to change the way that they practice” (Imms, Cleveland, and Fisher 2016, 13). There may be little consideration of the shifts in teaching practices that are required if learners are to act agentially in classrooms.

A crucial enabler for learner agency centres on teachers’ skills and knowledge of practices that enable distributed power in classroom relationships. Alongside the confluence of factors that constitute new generation environments, agency has become an important foregrounded concept. OECD writers emphasise that for new generation learning environments to have impact, broad systemic changes are required in the schooling sector (Istance 2015). Learner agency is a key indicator that conditions conducive for new generation learning practices are in place. “Prominent learner agency and voice: As the learning becomes more personalised, the active role of the learners becomes more evident. Learners are active in learning leadership teams right across systems” (Istance 2015, 35). Agency can be theorised in different ways, as the following typology indicates, and these differences have implications for schooling contexts.

## **Learner agency**

The main thesis of this article is that provision is needed for teacher education that amplifies learner agency in new generation learning environments. Primacy has been given in Education to individualised cognitive conceptions of motivation that are linked with self theories: e.g. where learners display self-efficacy (Bandura 1982) self-regulation (Schunk and Zimmerman 2007) and self-determination (Ryan and Deci 2000). Self-determination theory is a macro theory of human motivation that foregrounds issues associated with individual choice and human autonomy (Moller, Ryan, and Deci 2006). It privileges intrinsic motivation for learning that can be associated with humanist accounts of the sovereign self (Charteris 2014) which has long been a powerful currency in Education psychology (Wehmeyer et al. 2012), pre-service teacher education (Spittle, Jackson, and Casey 2009), and in-service teacher education (Roth, Assor, Kanat-Maymon, and Kaplan 2007). Agency, as a global term, has been linked with self-determination theory (Ryan and Deci 2000) and the development of a ‘growth mindset’ (Dweck 2006) or ‘learning orientation’ where academic success is attributed to one’s own efforts and self-regulatory and metacognitive strategies are used to develop substantive understanding (Dweck 1986).

The conception of the autonomous citizen child who can make decisions and have choice is a key neoliberal tenet that is favoured by policy makers (Davies and Bansel 2007). This position has been critiqued for its governmentality in its focus on the constitution of self-regulating neoliberal selves (Miller 2015). McPherson and Saltmarsh (2016) describe how “neoliberalism’s mythical narratives of individual autonomy and meritocratic success” is exemplified in the individualism of “‘learning contracts’ and ‘ individual learning plans’ and ‘agreed outcomes’” (6). They write “selves will (or at the very least can) realise fulfilment brought about by continual monitoring and measuring of their submission to what amounts to little more than



coercive operations of power” (6). There is thus an internalisation of dominant views of personhood that are based in “individuals’ freedom of expression, action and choice in the marketplace” where neoliberal selves are characterised as “activated, responsabilized, individualized , moralized , and/or freed” (Miller 2015, 350).

Consultation and voice have been significant themes emerging from the student agency agenda (Czerniawski 2012). Czerniawski points out two prominent and competing narratives prevail in relation to this agenda- the first relates to student “empowerment, democratic education and transformation” and the second positions student agency as a “policy technology” (131). When learners demonstrate agency, they have opportunities to adjust and control valued learning outcomes (Willis 2009). Therefore agentic learners may bring about change in their lives in a positive way (Yang 2014). Students may even refuse discourses and/or discourse positions (Charteris 2014). Thus when learners act agentially they negotiate a range of alternative positionings. Making explicit notions of learner agency in implementing new generation environments may strengthen and enhance students positioning in relation to their own learning.

Unsurprisingly, within new generation learning environment literature, student agency as sovereign ownership of learning is heavily promoted (Istance 2015). Frameworks are invoked that guide student independence, choice and responsabilisation (Davies 2006; Rose 1993). These frameworks convey a relatively simplistic conception of classroom power relations. St Pierre (2000) observes that humanist conceptions of education frame power as a product of agency with which individuals are naturally endowed. It exists outside ourselves, and it gives us the power to act in the public world. We possess power, can deploy it, give it away or take it back. Those concerned with social justice often try to give away some of their power to avoid

domination; they try to empower “those less fortunate than themselves” (St Pierre 2000, 488). In this view, teachers and students are unified rational subjects and agency is something that teachers can impart to their students, a form of empowerment.

Liberal humanist notions of student agency privilege ‘empowerment’, ‘student responsibility’ and ‘student choice’ (St Pierre 2000; Sykes 2001). However this, primarily humanist, focus where the both the capacity and responsibility for learning resides with the individual, does not sit well with poststructural and posthumanist theorists. A poststructural view suggests that learning is situated, contextual, discursively constituted, inherently linked with the politics of context (Charteris 2014) while a posthumanist view posits that ‘matter matters’ (Barad 2003). If matter matters, the spatial politics of schooling design is an important consideration for learning and learner agency. The relationships between the ontology of space and matter (Jones and Hoskins 2016), the human and non human intra-actions (Barad 2003), including those that evoke the agency of technologies, are influential factors in classroom spaces. The notion that agency is exclusively about empowered learners having opportunities to exercise choice and make decisions in the classroom can hide the complexity of both competing discourses in action and the materiality of schools and communities. Further, the notion of a willful self-determining subject (St Pierre 2000) can obscure the contextual, materially embedded nature of agency.

The typology depicted in Table 1 provides a range of different theoretical frameworks for the concept of agency. It details functional definitions, corresponding authors and related theories associated with agency. Authors are listed in chronological order. The typology spans sovereign, relational, ecological and new material conceptions. These conceptions of agency range along a spectrum, from a realist-humanist to relativist-posthumanist ontologies and are briefly described alongside the

data presented in the latter section of the article. This typology was generated through an engagement in the threshold of the theory/practice nexus.

Table 1. A typology of agency

<b>Agency</b>	<b>Authors</b>	<b>Functional definitions</b>	<b>Associated Theories</b>
Sovereign	Ryan and Deci 2000; Dweck 2006; Moller, Ryan, and Deci 2006	Individual students can be provided opportunities by teachers to exert agency. It is possible to possess it. It is enacted through choice. It is intrinsic.	Cognitivism, mindsets self-determination theory
Relational	Edwards 2005, 2010, 2011	Relational agency is co-produced in spaces between people. It is dialogic and socially produced and consequentially is a dynamic that resides in social environments. It is therefore situational; located in the dynamic between extrinsic and intrinsic elements.	Socio-cultural
Ecological	Biesta, Priestley, and Robinson 2015; Emirbayer and Mische 1998	Agency is a temporally embedded process of social engagement that is informed by the past, oriented to the future and enacted in the present. It is a quality of learner engagement with temporal-relational contexts-for-action.	Socio-cultural
New material	Bennett 2010; Jackson and Mazzei 2016	Agency is always in flux and flow and is generated through a range of elements within schooling assemblages. It is co-produced in relations between objects, between humans and objects, and between humans.	New material Theory Assemblage theory

Theory and practice are co-produced through “a state of in-between-ness” (Jackson and Mazzei 2013, 269). This non-binary theory/practice work “cannot be predicted or prescribed in advance, “ where data is fit into predetermined or even

emergent grounded theory type themes and patterns” (Jackson and Mazzei 2013, 269). In generating the typology in Figure 1., we used both agency theory to think with our data and used the data to think with theories of agency (Jackson and Mazzei 2012). The data presented below were selected through ‘working the threshold’. The quotations from school leaders on agency in new generation learning environments, are used to illustrate sovereign, relational ecological, and new material theories of agency.

### **The case study**

The case study research, described by Yin (2009) and used here, examined practices associated with assessment for learning in Aotearoa schools. The study design included a survey on school leader and teacher perceptions (n= 216) of new generation learning environments and semi-structured interviews with a subsample of 38 who agreed and provided contact details. The main question that guided the study investigated how school leaders conceptualised learner agency within new generation learning environments.

The study design comprised invitations sent to school principals to participate in the research, with a further invitation at their discretion to be sent on to their staff. Due to this structure, there were significantly more school leaders than teacher participants. For this reason and due to the influential position of principals, school leaders are the focus of this article. School leader interviews were recorded and the data transcribed. NVivo, a qualitative data analysis software program, was used to store and organise the data initially. It was analysed with a line-by-line analysis in Nvivo to initially identify references to agency. More fine-grained analysis was used afterward to make links with the typology (Table 1).

Data is drawn for this article from the interview comments of six Principals (pseudonyms provided). The comments were selected on two grounds. Firstly, the

interviewees were school leaders who reported that they were leaders in schools where new generation learning environments had been constructed with new buildings or refurbishments made to existing structures. Secondly, the comments provide the most succinct representations of the various interpretations of agency represented in the typology. These illustrative examples from school leaders are provided below to give consideration to the agency typology, with a view to flesh out the dimensions (sovereignty, relationality, ecologicality and new materialism).

### **Sovereign agency**

Sovereign agency was a conceptualisation of the autonomous, individual, who engages in self-determined learning (Ryan and Deci 2000). Typified by choice and voice, this was a dominant interpretation of agency across the 38 leaders and teachers interviewed. Raleigh was Principal of an urban state primary school with a roll of 450 students. Under his leadership, there had been a 2,000,000 dollar redesign of the school. In the comment below, he described the importance of children being informed about and participating in their own learning as individuals.

And so children we like to think are active participants in their own learning and we're really interested in notions of agency and engagement... Agency is having the ability and willingness to be an active participant in your own learning and to do that you need to be informed about your own learning and you need to understand your own learning.... I think one of the problems that I suspect we have in all schools, including this one, is we have children who believe that school is the place where you go to do what the teacher asks you. (Raleigh)

Raleigh, like many other educators framed agency as a cognitive disposition. He spoke about the application of Carol Dweck's (2006) research and the dichotomous notion of a fixed versus growth mindset.

Do you know Carol Dweck's research on mindset?... I think the agency is really very much around that open to change, that mindset which says, I can manage challenge, I'm interested in new things and I'm aware of the things I'm not sure about and I know a whole lot of things I can do about that. I know what to do and I don't know what to do, all that sort of notions are an agency I think these ideas set children up for a successful future in a very complicated world. (Raleigh)

Like Raleigh, Lane (Principal of a large regional primary school of approximately 750 students), highlighted a unidirectional power shift to challenge the linearity provided by teacher directed pedagogy. Lane conflated agency with voice and highlighted the teachers' role in supporting student initiative that transcends teacher defined choices.

So, students having choice and voice... I think it's about the shift in power as well. But it's not just about a choice that you can do this, or this and actually you have only got those two choices. It is around [the teacher] asking 'what do you think you need to do?' And the children actually are able to take those risks and make those choices. These don't sit within a normal sort of list of things that you can do. The things that they need to do rather than things that they have a choice from. (Lane)

While these comments appear empowering, they may underplay the teachers' and peers' roles in the relationship and the myriad of other social and cultural factors that may influence the child's capacity for making decisions about their learning at any one moment.

### **Relational agency**

Relational agency involves a capacity to work with peers to "strengthen purposeful responses to complex problems" (Edwards 2011, 34). It is a dynamic interaction between the capacity to engage with others' understandings and the integration of these perspectives into decision making. Children work with peers, recognising their motives and the resources that they bring to bear on a task. Then this socially gleaned

information is interpreted alongside, and reconciled with, their own responses to the information. This process leads to distributed and relational expertise (Edwards 2005, 2010, 2011).

Mark was Principal of a regional full-primary school with approximately 250 students. The school has seen a \$700,000 upgrade that has refurbished the single cell classrooms into learning hubs. Relational agency is a learning interaction where there is a flow of information within the school. Mark described how students provide feedback to staff, and lead parent teacher meetings where they facilitated a conversation about their learning and achievement at a “student led conference”, and provided written commentary on their own reports.

I guess for us the learner agency is letting them give us regular feedback. So, we know what they think about what we are doing or what they are doing. We’ve just finished our learning conferences midway through last term, which is a conference between the teacher, the parents and the child, with a very strong learner agency there where the child is actually leading the whole conference and is receiving feedback from mum and dad, and the teacher as to what the next steps might be, what the goals might be and that sort of thing. We also give them an opportunity within the report to write a learner self-evaluation so they can say what they think they are good at, what they think they need to be better at, what might be stopping them to ensure they are self-managing. They are very, very honest... and so it gives their voice a chance. (Mark)

In this instance, the student led conference was undertaken in such a way that ‘complex problems’ associated with learning were addressed collaboratively. There was responsabilisation in play here, with the conference serving as an accountability mechanism and ongoing process to support compliance, so that the child ‘self manages’.

## **Ecological agency**

An ecological conception of agency is situated and dynamic because it is embedded in “temporal-relational contexts-for-action” (Priestly, Biesta, and Robinson 2013, 18) as “something that occurs over time and is about the relations between actors and the environments in and through which they act” (Priestly, Biesta, and Robinson 2017, 40). This means that it builds on past achievements, understandings and patterns of action with both short and long term considerations. There are also cultural, structural and material affordances and constraints in particular social settings, at specific times (Charteris and Smardon 2015). Priestley, Edwards, Miller and Priestley (2012), writing specifically about teachers, argue that agency “varies from context to context based upon certain environmental conditions of possibility and constraint, and that an important factor in this lies in the beliefs, values and attributes that teachers mobilise in relation to particular situations” (2).

Magnus, a Principal of an urban primary school with approximately 430 students and remodelled teaching spaces, described a disjuncture between current teaching approaches and desired practice models. The pedagogical models that teachers used may not enable future focused spatialised practice in new generation environments or learner agency. Practice models can enable “conditions of possibility” (Priestley et al. 2012) for ecological agency. These pedagogical models, that included but are not limited to assessment for learning and the mapping of curriculum progression pathways with students, are important aspects of ILE that can lay a foundation for classroom practice.

We build ILE [new generation environments], but our practice models are not innovative practice models to fill the environment. Without the practice models there's no point in building the environments. So, all the work that we do, assessment for learning, learning pathways -all these models... form innovative



learning practice. Innovative learning practice is student agency really as students strive in their learning ... But this practice around teaching and learning and assessment still has to be there. (Magnus)

Magnus' following comment illustrated the practice model that exemplified an ecological agency that could support learning in ILE. Ecological agency was embedded in an "equal partnership" co-produced between the teaching staff, the whānau (family or carers) and the student. The production of artefacts and systemic processes supported the co-constitution of ecological agency.

Our learner maps are a tool to assist children to develop and show their agency using images rather than words. Because it's for priority learners. And so they were to describe themselves. They would describe who is important to them. They would describe how they learn and they would describe the tools that assist their learning and they would describe the challenge and what it is to them other than quantitative data. Actually what we found in the agency work was that it enabled us to create a practice analysis tool for teachers. So, the children often identified were 'priority learners' who were unable to concentrate in the classroom. They identified that the teacher talked too much. That said that they were not given assistance to explore using concrete materials themselves to deepen and embed their knowledge. And they didn't have the support at home -- where the parents actually knew what the challenge was. So the children with their learner maps were able to have a student-led conference, which is one of the most powerful tools for priority learners, with their parents to identify the challenge and what they would like assistance with at home. So, we took away from the parents a lot of the mechanics of trying to 'fix the problem as my child cannot read or write'. And put effort into developing social stories. These were different ways of meeting those challenges for the parents. Mostly to develop a 'switched on to learning' mindset in both parents and students. (Magnus)

Ecological agency was factored into teacher professional learning regarding Dweck's (2006) mindsets and used alongside inquiry to generatively find solutions to support learners. Rather than sinking into thinking which supported a sense of futility; producing self-fulfilling prophecies and deficit theorising about the child and or the

family (Bishop, Berryman, Cavanagh, and Teddy 2009), Magnus suggested that the teachers used a ‘practice analysis tool’ that leveraged student voice. The comment suggested that learner agency was mobilised through the use of this home grown heuristic that supported ‘environmental conditions of possibility’ (Priestley, Edwards, Miller, and Priestley 2012).

While the three previous examples of agency focused on the primacy of human experience, a new material conception of agency required a shift in thought to engage with the relationality between human and non-human.

### **New material agency**

New generation learning environments have the potential to support flexible pedagogy and prompt a rethinking of learner agency. The agency of the objects and structures in classroom environments may enable or prompt resistance to relational changes associated with flexible spaces. While sovereign, relational and ecological conceptions of agency centred and privileged the human actor, at the latter end of the spectrum agency is entangled assemblages of vibrant matter (Jackson and Mazzei 2016).

Matter both human and non-human, becomes vibrant in an assemblage, objects take on “thing power” (Bennett 2010, xvi). That is objects become things when they become energetic and make things happen. Agency in this assemblage, is spatially distributed among vibrant matter, rather than traced to a single source or marked off by a particular boundary. (Jackson and Mazzei 2016, 95)

Taking this ‘new material’ (Coole and Frost 2010) lens, on what has ostensibly been humanist ways of seeing learning and pedagogy in schooling practices, consideration of agency in new generation learning environment assemblages takes an onto-epistemological approach where “knowing is a distributed practice that includes

the larger material arrangement” (Barad 2007, 379). In new generation learning environments objects can influence both human and non-human relations, and the relationality between humans. “Thing-power gestures toward the strange ability of ordinary, man-made items to exceed their status as objects and to manifest traces of independence or aliveness, constituting the outside of our own experience” (Bennett 2010, xvi).

A new material mode of theorising socio-material relations differs to approaches that centre the experience of humans in relation to objects, as seen in sociocultural (Lantolf 2000) and cultural-historical activity theory (Engeström and Escalante 1996) references to mediated tools and artefacts. A fundamental difference between these ways of theorising materiality is in the agency of objects as entities which decentre the primacy of the human actor. Chandler (2013) illustrates how matter can exercise agency. “[A] new materialist deployment of a much broader, more connected, more social, understanding of causal ‘agency’ ... involves the appreciation of relationality, fluidity and creativity as opposed to the fixity of structures in either the social or the natural world” (517).

Agential matter can be traced through indigenous ontologies (Taylor 2016; Jones and Hoskins 2016). Rather than seeing matter as possessing an ontological existence that is devoid of agency, new materialism enables us to consider how humans and objects are entangled and therefore co-produce each other in schooling spaces. The following practitioner comments engender consideration of agency as an emergent co-produced phenomenon that can be seen in schools as a relational dynamic between students, teachers and non-human phenomena.

Gretel was Principal of a small, isolated rural school, located approximately 20 minutes drive from the next small town. In the school there were two classrooms with

41 students in total. Gretel's comment below indicated both the agency of objects in the room and spatial influences of the redesign on pedagogic relations. The 'openness' of the ILE influenced human interactions between students, and between principal and community. The spatial and material changes in ILE constituted human relations.

They moved from being very possessive about their chair and their space and their desk and their box, to they oh, this is all of ours, isn't it. We can go anywhere we want to in a room and we can -- and with their computers and laptops they became much more mobile and they could work in any other spaces. So, I was clear to see impact of changing the furniture had on the new learning environment. And it was pretty innovative in terms of what parents are used to because parents arrived at my school and said, "Where's my child's desk?" And I said, "That little cubby hole over there. It's all there; they don't need any more than that. (Gretel)

Gretel spoke about the influence of furniture. Although she described agency as human decision making, the objects were agentic in that they coproduced what was possible in the spaces and made learning in different parts of the classroom possible.

We opened up the library space, the art space and tried to keep some different levels going on for them. So, the boys quite enjoyed the high tables and working up there and the girls liked being on the couches, just that change of level and their ability to choose what they except for the agency that children are determining where they go into which spaces, all of that sort of thing because we don't need to have them all sitting in front of us. (Gretel)

The confluence of one to one digital devices and the mobility of furniture constituted agentic relational flows with opportunities for students' decision making about how they learn. Nathan was Principal of a small urban co-educational intermediate school (Year 7 and 8 students) with approximately 120 students. Like Gretel, he described student-initiated use of space and the influence of classroom furniture on the physical ways that students chose to engage in learning. These ICT devices and furniture could be seen as pedagogic objects.

We are going down the road of one-to-one devices and we have a Trust to support our school and the parents pay five dollars a week to own in our case a chrome book. And once we have set up a classroom for that we basically just chuck out the desks and buy new furniture... All the furniture can be moved around. It's all on wheels... What we've seen with our ILEs [new generation environments], is the change in the furniture. You've got children who like to work as a group, so they just move the tables around. You've got children who like to be alone so we've bean bags and they just go and sit there. There are children who prefer to stand, talking to their friends and working together. We've got high desk spaces. I was in a room the other day and there were two children underneath the benches. They were all on task all doing their work, but that's where they chose to work from. (Nathan)

The furniture with its wheels, flexibility and capacity for spatial reconfigurations influenced the human activity in the room and therefore, as agentic objects, interactively co-produced what the learners could do and be in the room.

Having illustrated the agency typology through the Principal interview data, consideration is now given to the implications of these different conceptions for practitioners and students in ILE.

## **Discussion**

There are references in the education literature to new generation learning environments and student motivation (Byers, Imms, and Hartnell-Young 2014), student engagement (Reeve 2013), student autonomy (Blackmore et al. 2011a), student-centred learning (Frith 2015), and self-regulated learners (Schuitema, Peetsma, and van der Veen 2012). However there are fewer references in the emerging fields of relational agency (Edwards 2011), where there is co-regulation (Heritage 2016); ecological agency, as the action that takes place in temporal and relational contexts (Biesta, Priestley, and Robinson 2017); or the agency of materiality occurring in the non-static

arrangements of classroom assemblages (Buchanan 2015). It is timely therefore to consider approaches to agency in new generation learning environments that recognise and engage with relational, ecological and new material forms of agency and how they influence learning. It is also important to understand the limitations of sovereign agency.

Although it is well established that “teachers and students are mutually constituted with the materiality of schooling, and have always been so” (McGregor 2004, 346), this was not apparent in the data across the 38 interviews. The comments that mostly reflected an emphasis on sovereign agency, were almost a disconnect with the materiality of classroom spaces. These findings point to the primacy of the responsabilised 21st century learner that is produced through the discursive politics of classrooms. Sovereign agency has long been critiqued for its premise “of a voluntarist subject who exists quite apart from the regulatory norms which she/he opposes” (Butler 1993, 15). Nevertheless, there is a strong corpus of literature that is underpinned by the tenet that agency is predominantly conceptualised as self-managed student ownership over the learning process (Ryan and Deci 2000; Dweck 2006; Moller, Ryan, and Deci 2006). This conception of learner agency seems to correspond with a focus on governmentality through self-technologies in new generation learning environments.

Agency, framed this way, prioritises individuality and competitiveness, with each student shaped as an economic unit and objectified to meet the demands of a market economy. Agency as responsabilisation (Davies 2006; Rose 2013) puts the onus on learners to make the decisions within learning frameworks that align with classroom governance. In this way, students are encouraged to accept responsibility for themselves and participate in acts of self-surveillance and control. Student choice can be conceived

as a 'forced choice,' since students' are positioned within particular schooling discourses that make the 'chosen' line of action the only possible action (Davies 2000).

Agency, where there may be only a limited role for students themselves to be significant stakeholders in the educative process, is a concern to be grappled with in the conceptualisation and implementation of new generation learning environments. For participants in the new generation learning environment imaginary, an engagement with a broad conception of agency prompts a discursive move beyond instrumental conceptions of managing one's own learning to the recognition of the production of learner selves is in relation to the material, temporal, relational and spatial dimensions of these environments. The possibilities for democratic participatory pedagogy and agency in new generation learning environments may be reduced to rhetoric if the production of sovereign selves is the primary focus.

Recognising the material assemblages of classroom spaces, and the agency of objects does not preclude judicious teacher moves based on expertise pertaining to pedagogical content knowledge (Shulman 1987). Rather, engagement with new material conceptions of agency highlights the need for teachers and students to curate flexible classroom spaces to maximise the affordances of new generation environments for various learning arrangements. The sociospatial micropolitics of new generation learning spaces (Mulcahy and Morrison 2017) that are enacted through the materialising processes (Mulcahy 2016) of curation, may enable pedagogies that evoke intra-active, affective and embodied experiences (McPherson and Saltmarsh 2016). The guidance and support of Principals, in thinking broadly about learner agency, is integral to pedagogical processes where the relational and material dynamics of learning environments are recognised and valued. Learning approaches in new generation learning environments are influenced by a plethora of factors. These include the disciplines being taught,

teachers' philosophies of what constitute quality pedagogy, the dynamics of groups of learners and cultural influences of their communities, the physical environments of classrooms, and the power relations between parents and teachers, parents/caregivers and their children, and, importantly teachers and pupils. An enlarged conception of agency that gives consideration to relational, ecological and new material forms of agency which encompass these dimensions provides a richer conception of pedagogy than one that focuses exclusively on learner responsabilisation.

Like Istance and Kools (2013), we caution against approaches that place excessive reliance on motivated individuals 'doing their own thing' or coming together spontaneously in learning groups as these are both "unsociological" and "de-politicised" conceptions of learning in new generation environments (48).

### **Limitations and further research**

Acknowledging that phenomenological use of data has been called into question in post-qualitative anti-humanist writing (St Pierre 2016), we recognise both a tension and limitation in privileging linguistic accounts in the discussion of posthuman agency. There is scope for further materialist engagement with the situated, partial and affective entanglements that produce agency through bodies and technologies, emotions and politics in new generation learning environments. There could be further investigation into the nuances of individualised, personalised learning that reflect the customisation of education in the current political milieu. Further research could scope the nature of relational learning that takes place with and through vibrant matter (Bennett 2010) in classroom assemblages. A sociomaterial interpretation of agency has important implications for the micropolitics of classrooms as McPherson and Saltmarsh (2016) point out.



[There are] multiple misrecognitions, oppressions and erasures of children's agency and subjectivities, even while the embodied child of new, 'modern learning environments' hides, sobs and refuses the rationalising and disciplinary institutional mechanisms whose purpose is to advance economic, rather than learning, agendas. (McPherson and Saltmarsh 2016, 9)

We envisage that the typology illustrated in this paper can enable practitioners to make explicit the nature of agency enacted in classroom settings, although further research is required in the particular pedagogical approaches that support these different agencies. Investigation is warranted into the discursive tension between teacher accountability, quality assurance of learning processes and the relinquishing of the micro-practices of power that are required to enable learners to take a more prominent role in classroom relationships. Furthermore, we suggest that there is merit in incorporating learners' engagement with these dimensions of agency- where the learners can understand how relational, ecological and new material forms of agency operate in their learning settings and how they influence their opportunities to learn. As there are no perspectives from learners to supplement the topology of agency generated here, we envisage that further research could be undertaken in this area.

## **Conclusion**

Within new generation spaces that afford polysynchronous learning, there is a growing and important impetus to focus on learner agency. Learning technologies, pedagogical elements associated with assessment for learning and the flexibility associated with the materiality of new generation environments, when taken in combination, offer possibilities for enhanced learner agency. The beliefs, values and attributes teachers mobilise in relation to particular situations (Priestley, Edwards, Miller and Priestley 2012), and the intra-action of human and non human entities (Barad

2003) that influence classroom relationality are considerations, if we believe agency is an important element in 21<sup>st</sup> century classrooms.

As demonstrated here, within new generation spaces there can be a range of interpretations of agency. The main contribution of this paper has been to foreground an agency typology. When educators allude to agency in new generation learning spaces they can be explicit about what ontologies are evoked and how pedagogical practices constrain, constitute or co-produce agency.

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