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Leon Benade^a

^a School of Education, Auckland University of Technology

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Teachers' Critical Reflective Practice in the Context of Twenty-first Century Learning

LEON BENADE

School of Education, Auckland University of Technology

Abstract

In the twenty-first century, learning and teaching at school must prepare young people for engaging in a complex and dynamic world deeply influenced by globalisation and the revolution in digital technology. In addition to the use of digital technologies, is the development of flexible learning spaces. It is claimed that these developments demand, and lead to, enhanced reflective practice by teaching practitioners. This article is based on a project that has used multiple New Zealand case studies to engage teachers and leaders in interviews to explore their experiences at the futures–digital–reflective intersection. Critical theoretic and critical hermeneutic approaches inform the exploration of the relationships between reflective practice and twenty-first century learning by analysis and comparison of educational theoretical discourses with voices from a group of principals and ex-leaders on the one hand, and teachers, on the other hand.

Keywords: twenty-first century learning, reflective practice, modern learning environments

Introduction

This article explores briefly the concept of twenty-first century learning, followed by a consideration of teachers' reflective practice. It argues for six reflective practice principles. The research study on which this article is based is described and justified in terms of a case study strategy that is underpinned by a bricolage of critical theoretic and critical hermeneutic approaches. Participant voices are analysed in relation to the six principles of reflective practice.

The concept of twenty-first century learning reflects fluidity, unpredictability and complexity (Bolstad & Gilbert, 2012). In this article, it refers to teaching and learning that prepares young people for engaging in a complex and dynamic world deeply influenced by globalization and the revolution in digital technology (see, for example, Beetham & Sharpe, 2013; Loveless & Williamson, 2013). Schools and various places of learning are challenged to develop appropriate skill-sets in their students, such as key competencies,

which have shifted educational discourse from education to learning, with a focus on developing lifelong learning and employability (Bolstad & Gilbert, 2012; European Civil Society Platform on Lifelong Learning [EUCIS-LLL], 2012). The Organization for Economic Cooperation and Development (OECD, 2009) has suggested that the persistence of 'outmoded' transmission models of teaching in global compulsory education systems is a barrier to effective learning. As this article focuses on teachers, not students (or 'learners'), the interest of the OECD is significant, as it has considerable global educational power and influence (Meyer & Benavot, 2013).

The role and status of digital learning in the twenty-first century, by both students and teachers, has moved into the forefront of thinking about pedagogy (teachers' values, beliefs and assumptions about education generally), and classroom practice. The World Wide Web (WWW) and Internet have brought accessible resources to users, encouraging shared learning; but simultaneously also loosened the grip of schools and universities on knowledge and content. Whereas teachers have traditionally presented knowledge to students (Collins & Halverson, 2009), the WWW has been able to undermine the disciplinary knowledge presented by schools (Beetham & Sharpe, 2013; Bolstad & Gilbert, 2012). Shifts in pedagogy and classroom practice are therefore likely, as digital technology perturbs traditional classroom and educational approaches (Beetham & Sharpe, 2013).

A further physical manifestation of twenty-first century learning is the trend to building schools as modern learning environments (MLEs), or revitalizing existing schools with MLE spaces. Modern school building design effectively removes walls and thus dispenses with corridors and single-cell classrooms. Open design encourages flexibility in learning and teaching, allows collaborative, team teaching, and is coupled with flexible, ergonomically-designed furniture that is easily moved and re-arranged. Designers claim significant benefits to student learning (Fisher, 2005; Nair, 2011; Tanner, 2009). While wide-spread, international uptake of MLE construction is yet to be seen, it is now a policy of the New Zealand Ministry of Education, a commitment related to its 'quality teaching agenda', 'a package of interconnected initiatives designed to lift the quality of teaching and strengthen the teaching profession ... [including] ... exploring the nature of teaching in the 21st century' (Ministry of Education, 2013). The Ministry of Education has positioned itself as providing 'new modern learning environments [that] benefit from new teaching methods' (2014).

These methods may be associated with meeting the needs of twenty-first century learning, although some argue that these dramatic changes in building technology come with no support, leading teachers to conduct their own professional learning and development (New Zealand Post Primary Teachers Association [PPTA], 2014). It may be argued further that these changes will continue to take place, regardless of the wishes or desires of schools and their communities, as the MLE policy is embedded in the Ministry of Education 10 Year Property Plan (10YPP) process and Five Year Agreement (5YA) funding, both of which form part of the on-going contracts between the Ministry of Education and schools' boards of trustees (Ministry of Education, 2014). Clearly then, teachers and school leaders will increasingly find themselves challenged to become reflective about their core pedagogical values and beliefs. In relation to this evolving discourse, the meaning of terms such as 'education' and 'to be educated' is being reconstituted. Thus, a fundamental question to be asked must be whether there is a place for teachers (and

students, of course) to flourish as human beings beyond the narrow confines of economic imperatives. The notion, for example, that twenty-first century learning enhances reflective practice is significant, arguably because the disposition and ability to be critically reflective suggests precisely such flourishing. And, while the emphasis in this article is on teachers, they are role models to students of the critically reflective life.

Reflective Practice

Dewey defined reflective thought thus: '*Active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends*' (1910, p. 6, original emphasis). If Dewey was correct, reflective practice must assume a level of directed, proactive cognitive activity by an individual, who is disposed to such activity. Freidhoff (2008) has suggested that teachers' reflective activity—deep engagement with ones values, beliefs and assumptions (Bryan & Recesso, 2006; Larrivee, 2000)—is underpinned by two principles. These are that these practices be individually sustaining (the individual teacher will reflect on an on-going basis, even if not required to do so), and the practices must be collaborative, occurring in a community setting. Thinkers as disparate as Plato and Freire regarded the place and role of others as central to the mutual process of raising consciousness to new, critical levels—a position that is supported in the context of digitally-enabled reflective practice (Bryan & Recesso, 2006; Freidhoff, 2008; Khourey-Bowers, 2005).

To these principles, I would add a further four: that reflective activity have a temporal character and focus on practice, occurring before, during and after practice episodes; that it be intellectually unsettling; that reflective practice necessarily include an ethical dimension; and that the outcome of reflection must be changed practice, with a social justice focus. I will briefly consider each of these in turn.

Schön (1983) demonstrated that professional practitioners have considerable tacit knowledge and skill, which they exercise during various episodes of action. These episodes are part of professional practice, for teachers known as 'pedagogy'. This includes classroom strategies *and* beliefs about teaching and learning, contextualized in the wider socio-economic and political fabric of teaching. *Reflection-in-action* occurs when the teacher's self-awareness of this knowledge and skill are deployed to deal with puzzles and problems as they arise during teaching (Schön, 1983). This on-the-spot analysis informs the practitioner's next steps. Schön (1983) also acknowledged the scope for postmortem reflection, which he termed *reflection-on-action*. This reflection, argued Reid (2004), is more systematic, and can occur after or before action. Whereas reflection-in-action is immediate, and often split second (Schön, 1983), reflection-on-action takes more time, and involves looking at evidence, thinking about theories and alternatives. To these two, Reid (2004) adds *reflection-for-action*, the forward planning, based on preceding reflection. This form can and should be collaborative.

The activity must be unsettling, as evidenced by the slave released from Plato's cave, whose understanding of the world is radically perturbed by confronting the reality of duplicitous images, and by walking into the sunlight. While Plato's universalist conception of the Good may be problematic, we can understand the point that our perception and knowledge of the world may be multilayered, increasing in complexity as we come to

make more meaning and sense of that world. Freire (1985), for instance, believed strongly that people (such as teachers and students) must be liberated of the cultural myths that obscure their vision.

Freire (1998) frequently made the point that education is not neutral; indeed, he stipulated that teachers make a conscious set of choices (they 'opt'), and one of these choices is to be ethical in their thoughts and actions. Reflection must necessarily, therefore, be evidence of ethical thinking in action. Larrivee (2000) suggested that a critically reflective teacher is able to both self-reflect and inquire critically, and it is the latter that requires teachers to consider the morality of any situation that influences their practice, and to evolve ethical solutions for those puzzles and issues. Freire (2005) argued that teachers' words and actions must be consistent, and failure to be so is nothing short of an ethical failure.

What of the principle of changed practice? Argyris and Schön (1974), Brookfield (1995), Larrivee (2000), Senge (1990/1992) and Smyth (1992) each argued, in their own way, for practitioner reflection to lead to changed practice by confronting personal assumptions and values as a consequence of experiencing perturbations in practice. Larrivee (2000) referred to assumptions as the beliefs and values that are central to our being and identity: 'Becoming a reflective practitioner calls teachers to the task of facing deeply-rooted personal attitudes concerning human nature, human potential, and human learning. Reflective practitioners challenge assumptions and question existing practices' (p. 296). Argyris and Schön (1974) distinguished between espoused theories and theories in use, the latter telling us much regarding the assumptions of the individual practitioner. These theories are tacitly held, but by making them publicly explicit, the assumptions of the practitioner become apparent. There is, however, a broader context for reflective practice.

Brookfield (1995), following Freire, pointed out that critical reflection brings a teacher to the self-awareness that teaching is political, and that curriculum and curriculum policy is loaded and is not value-neutral. Freire (1998) noted that critical teachers must be disposed to change, must acknowledge their personal attitudes and be self-aware of the process of change. For teachers to change, they thus have to recognize the need for change and be willing to break with the past. Freire (1985) saw critical thinking as the culmination of a movement from ingenuous states of thought (such as common-sense) to critical levels. In the contexts he worked in (such as Brazil in the 1970s), this movement constituted the awakening of people to the oppressive nature of their current reality. Echoing Freire, Smyth's four-step model of 'describing, informing, confronting and reconstructing' (1992, pp. 295–300), regards reflection as being socio-politically contextualized, and focussed on action as an outcome.

The Research Study

Research Approach and Rationale

This article is informed by an on-going, university-funded, qualitative research programme which has this focussing question: What is the influence of the concept of 'twenty-first century learning' on the work of teachers and the strategic actions of leaders at a selection of New Zealand schools? The broader programme of study is informed by a developing approach of blending critical theory and critical hermeneutics.

This article reflects on the first stage of this programme, which is expected to continue and evolve for some three to five years. Correspondingly, it is expected that the developing research approach will evolve too. Despite some differences, there is a strong overlap between critical theory and critical hermeneutics.

Critical theory goes well beyond the phenomenological concern with lived experience. Steinberg and Kincheloe (2012) suggested five requirements of critical theoretic research: a rejection of positivistic rationality; making and keeping explicit the value position (social justice and democracy) of the researcher or practitioner in relation to the field of practice; making explicit the tacit cultural and professional understandings that shape the thinking of researchers and practitioners; exposing power structures that are dominant in society; and maintaining a conscious link to practice, with a view to improving its social justice and democratic potential.

Critical hermeneutics is closely linked to phenomenology, which has an interest in describing things as they are (their essences) in the taken-for-grantedness of daily life. Hermeneutics goes further, seeking to interpret that lived experience by exploring what people say and attempting to fathom their understanding of their own actions and thoughts (Dilthey, 1985, cited by van Manen, 1990/1997). Critical hermeneutics takes this interpretive activity further still, seeking to go beyond the visible ‘to the exposure of concealed motives that move events and shape everyday life’ (Steinberg with Kincheloe, 2010, p. 148). Ideology provides the grounds, argued Roberge (2011), for the complementary relationship between hermeneutics and critical theory. Ideology lends meaning to the lives of people, by providing ways of representing themselves to each other and the world—an ensemble of legitimating practices—and it is making sense of these meanings, for Roberge, which provides a place of intersection where hermeneutics and critical theory meet.

Drawing together this amalgam of approaches to research is consistent with the fuzziness of a world now dominated by hypertext, instant communication and uncertainty. Dewey (1910) promoted the idea that reflection is spurred on and encouraged by any challenge that ‘perplexes and challenges the mind so that it makes belief at all uncertain’ (p. 9). Steinberg with Kincheloe (2010) speak to precisely this uncertainty. They advocated a dialogue between critical theory and the bricolage of postmodern and poststructural theories. They went on to argue that hermeneutics, and particularly critical hermeneutics, with its interest in moral reasoning and action, provides the bridge between the bricolage of theories that reject boundary-setting and Cartesian rationality on the one hand, with critical theory on the other hand.

Research Design and Method

To date in the on-going study, three primary (elementary) schools and selected individuals were approached to participate in interviews. School A is ‘futures oriented’ (a MLE design). School B is a traditional single-cell school that has begun to adopt a futures orientation, including the creation of MLE, while School C is a traditional single-cell school. In addition, a small focus group was engaged in discussion. It consisted of three participants (ex-leaders who presently work independently of schools), of whom two have a secondary background. Participants (identified here by fictitious names) from

each school included the principal, the person with responsibility for e-learning or information and communication technology (ICT), a senior teacher of long experience of teaching, and a teacher new to the profession.

A case study design provides the opportunity to develop a deeper understanding of the way individuals operate in their context (Berg, 2007). Ary, Jacobs, Razavieh, and Sorensen (2006) regarded case study design as an opportunity to understand how and why individuals respond to changes in their environment. Case study approaches are most commonly applied where the phenomenon of interest is complex and highly contextualized (Yin, 2003) thus there may be multiple levels of analysis within a single study. In such cases, multiple sources of data become available (Ary *et al.*, 2006; Yin, 2003), deepening researcher understanding.

Stake (1978) warned that 'cases' are not single individuals or single organizations. Case study allows theory-building, though Stake preferred the potential of case study to deepen humanistic understanding. To achieve such understanding (and theory-building) requires the researcher to consider 'bounded' cases, which can be collectives of individuals (such as school leaders), and to keep the boundary in focus (Stake, 1978). Hyett, Kenny, and Dickson-Swift (2014), reflecting on Stake (1995, cited in Hyett *et al.*, 2014), note that a 'collective refers to an instrumental case which is studied as multiple, nested cases, observed in unison, parallel, or sequential order' (p. 2), where an 'instrumental' case is one which 'provides insight on an issue or is used to refine theory' (p. 2).

Several design approaches are possible therefore: the three schools as separate cases; or groupings of individuals as cases. For example, the school leaders can be a case cutting across the three schools. This enables the voices of the focus group to be heard, as it consisted of three former school leaders now no longer attached to any school in particular. A contrasting case consists of the teachers, regardless of their length of experience in education.

At all stages of the research process involving participants, relevant ethical authorizations were sought and obtained, thus allowing interviews to be recorded and transcribed. Participants were asked a range of questions relating to the focussing question of the bigger research programme. Relevant to this article, were those questions relating to teachers' reflective practice. As the interview and focus group were semi-structured, these questions varied slightly. In light of the view that twenty-first century learning requires teachers to make significant shifts to their practice and their thinking about the purposes of education, participants were asked to suggest the attributes of reflective teachers, and were asked to characterize the links they saw between reflective practice and the imperative to engage in twenty-first century learning.

NVivo software supported the close examination of the transcripts to establish themes. The approach used was what van Manen (1990/1997) called the 'selective or highlighting approach', where the researcher asks, '[w]hat statement(s) or phrases(s) seem particularly essential or revealing about the phenomenon or experience being described?' (p. 93, original emphasis). Themes enable the researcher to make sense not only of the transcribed data, but also to become open to engage with, and make sense of, the lived experience of the participants. Themes provide shape, and enable description (van Manen, 1990/1997). As a critical hermeneutic approach seeks to go beyond description, however, it is

important that the themes selected allow for interpretation. It is to a closer analysis of these findings to which this article will now turn.

Findings and Discussion

In presenting and discussing the findings, I will contrast the voices of the two cases, namely leaders/ex-leaders on the one hand, and teachers on the other hand, in relation to the criteria for reflective practice outlined earlier. The discussion will reflect an engagement with some of the key insights offered by the ‘bricolage’ of critical theory and critical hermeneutics outlined earlier. In particular, the task here is not simply to describe and understand how the participants engage with their world, but also to interpret and attempt to explain their actions and beliefs, or the prevailing ideologies that influence the participants. In particular, it is important to understand if the participants have experience of a deep engagement with their values, beliefs and assumptions.

Individually Sustaining Practices

Writing is an essential feature of reflective practice activity (Brookfield, 1995; Freidhoff, 2008; Larrivee, 2000; Reid, 2004), if it is to be persistent and habitual. The principals generally promoted the role of writing reflections or acknowledged writing as a characteristic of reflective activity. The purpose of these written reflections was, however, not shared evenly between the principals and the ex-leaders. On the one hand, are those who see writing as a way of making ideas public, such as Neil, (schools’ consultant), using digital tools, such as blogging. On the other hand, all three principals linked teachers’ written reflections to their targeted appraisal objectives. Harold (Principal, School C) encourages his teachers to write and share online reflections, which supports his view that teachers should make their ideas public and seek feedback, but he wants to use their reflections as evidence in their appraisals.

The teachers’ view, in contrast, placed their reflective writing in a particularly narrow range, specifically in relation to their forward planning, and their reflections on lessons already executed. Caroline (School B) saw some value in using Google Docs to produce shared planning. Bella (School B), who works in a MLE in her school, referred to a book in which she and her colleagues in the MLE noted any issues each day. Mohini (School C) and Susanna (School A) both affirmed the practice of making notes on their planning.

If written reflections serve to support narrow and extrinsic objectives of appraisal, then the wider intrinsic objectives intended by reflective activity, namely engagement with one’s values, beliefs and assumptions (Bryan & Recesso, 2006; Larrivee, 2000) are disadvantaged. An appraisal focus, characteristic of neoliberal managerial surveillance (Benade, 2012), severs reflective activity from what it should be focused on, namely bringing about sustained changes to pedagogical practice. Perhaps Neil (schools’ consultant) can advance an expansive vision of reflective writing as he is no longer bound by the empirical reality of the demands of the Ministry of Education and New Zealand Teachers’ Council that teachers be appraised.

Questionable too, is whether sustained pedagogical changes to practice will arise from simply making notes over one’s planning, as suggested by several teachers. Freidhoff’s

study (2008) assumed that, in addition to reflecting on teaching performance, reflective writing in and for a community of practitioners would serve the ends of reflective practice if it was autonomous, individually sustaining and focussed on sharing problems. Teacher work-loads may be an inhibiting factor, and Teresa (Principal, School B) noted teacher resistance to attempts to engage them in overt inquiry processes, which they saw as an 'add-on'.

Collaborative Practices

Most participants related collaboration as desirable, coinciding with an emergent understanding of the affordances of technology by both the ex-leaders and the principals. Google Docs are central to Teresa's on-going efforts to widen teachers' reflective activity at School B, while Harold (School C) has his staff connected to an online platform requiring teachers to write and share reflections. A second feature in the discourse of the principals is their emphasis on staff-wide reflective activity, such as teachers sharing thoughts in open meetings, and seeking feedback from others.

Several teacher participants mentioned Google Docs as a vehicle for shared planning (though not for sharing reflective thoughts or findings on practice), with several participants mentioning formal opportunities at their schools for teachers to share the findings of specified reflective activities ('inquiries') with colleagues. A further dimension of this public practice was the adjustment teachers were making to the MLE, which requires self-conscious and self-directed collaborative work.

Freire's (1998) notion of an ethical teacher was one who could collaborate with others in the pursuit of learning, achieving higher levels of critical consciousness. Argyris and Schön (1974), however, seeking to close the gap between espoused theories and theories-in-use, realized that the latter are informed by our tacit knowledge, values and assumptions, which are not readily articulated, nor easily observed. They recognized further that public sharing of personal professional issues is highly risky. It may thus be suggested that models of public reflection could be more difficult to accomplish consistently in practice, although the findings presented here suggest positive progress towards collaborative practice across both cases of principals/ex-leaders and teachers.

Temporality

Some participants articulated reflection as a present continuous activity, such as Caroline (School B), who said of reflective activity, 'I know it happens all day, every day'. Teresa (Principal, School B) requires her leaders to hold on-going reflective discussions with teachers about student progress. Similarly, teachers, such as Bella (School B), noted that the teachers in the MLE make the conscious choice to write their reflections about the day they have just had, reflect on these thoughts, and discuss changes they need to make going forward. Caroline also referred to the way she and her colleagues look back over what they have done with their students, while Susanna (School A) described reflection as beginning with teachers working together to reflect on the day just ended, and thinking about what needs to happen for specific children going forward.

Notable theorists have considered reflective activity as ‘active and persistent’ (Dewey, 1910); as ‘reflection-in-action’ (Schön, 1983); and as breaking with the past (Freire, 1998). From this perspective, there is a shared understanding among both cases of participants that reflective activity may occur at different times, though there was less evidence of participants recognizing their ‘in-action’ reflection. This finding is, however, unsurprising, given what Argyris and Schön (1974) and Schön (1983) said of the tacit knowledge of practitioners.

Reflection is Intellectually Unsettling

Principal and ex-leader comments suggested that deep engagement with one’s values, beliefs and assumptions is required in teaching, which may be associated with the purposes of reflection and the dispositions required. Harold (School C) believed that teachers must have the courage of their own convictions, be willing to make their ideas public, and get feedback on these ideas, a view shared by Neil (schools’ consultant). Teresa (School B) and Eric (School A), both believed MLE design was testing the fundamental beliefs teachers have about teaching and how it ought to happen, requiring teachers to be learners, and people who probe their own beliefs about teaching.

Teachers, like Caroline (School B), felt challenged by change, especially in relation to e-learning and MLE, yet she was willing to change her ideas about children having to sit at desks to be productive, recognizing this as a shift in her thinking. Susanna (School A) recognized that the general movement to learner-centredness had changed the way she and other teachers think about teaching. She characterized this as a systemic change, however, rather than a personal one. When asked to reflect on the differences between her current, futures-oriented school and her previous more traditional school, she suggested not all teachers could make the transition she has made, as they are ‘control freaks’. This resistance was evident in the sentiments of Mohini and Liz (School C), who flatly rejected the idea of working in a MLE, either because it meant losing control over one’s own class and space, or because MLE are modern version of open-plan learning, which Liz believed had not worked in the past.

Reflective Practices Necessarily Include an Ethical Dimension

Evidence that participants discerned an ethical dimension to reflective practice was minimal, though some pertinent comments were made by the principals and ex-leaders. Teresa (School B) does not want technology or design interfering with her basic commitment to children’s learning. Harold (School C) adheres to the classic Greek exhortation to ‘know thyself’, as he suggested that teachers must know themselves to be reflective and must be able to model this disposition to their students. Eric (School A) spoke of teachers having the ‘bravery of being open to [their] failures and open to [their] successes’.

Among the teachers too, was little ethical reference, though Caroline (School B) argued that teachers ought to make the required changes if these changes will benefit the children. Similarly, Susanna (School A) believed firmly that teachers collectively make the required changes to modernize their practices and those of their schools in the interests of children who have to learn to live in the twenty-first century. Notably, she also took the view that

children should not be denied access to technology because of their socio-economic circumstances.

The obsession in many Western education systems with global scales, such as the OECD Programme for International Student Assessment (PISA) test, may account for this scarcity of ethical comment, replaced by a focus on 'what works'. OECD measures narrow differences among countries to technical issues (Lauder, Young, Daniels, Balarin, & Lowe, 2012; Meyer & Benavot, 2013). Biesta (2007) has referred to this technical rationalist priority in current education discourse and practice, and has attempted to separate means-ends discourses from the moral imperative of schooling, which ought to be to focus on what is educationally desirable.

It is important that critical reflection necessarily be ethical in the context of a radically technologized twenty-first century. While digital technology and the online world provide significant opportunities to education and teachers' work, these same opportunities can be alienating, leading to a loss (or intentional abrogation) of identity, undermining notions of self and other. Face-to-face encounters are increasingly replaced by opportunities for encounters mediated by keyboards, keypads, monitors and screen. Ironically then, while opportunities such as blogging create possibilities for building community and collaboration, they also lead to losses of responsibility to the Other, dialogical community, and sense of solidarity. Levinas presented a compelling reason to think of 'the face' in our dealings with others: 'the face' symbolizes both the recognition of the Other, and the recognition of the 'interiority' and vulnerability of the Other (Kodelja, 2008). Freire (1998), while accepting technology as potentially beneficial in the liberation process, expressed his wariness of 'the excess of a rationality that now inundates our highly technologized world' (p. 38).

Changed Pedagogical Practice

The principal participants and ex-leaders in the focus group concurred that successful twenty-first century reflective teachers are disposed and committed to change. One of the changes Harold (School C) wants to bring about is for his teachers to free themselves from a narrow focus on test results, but he acknowledged that his teachers are challenged by that shift. His teachers (in his view) are anxious because of the demand for data-driven practice. Additionally, he expects his teachers to be challenged by the shift to the learner-centred models required by the adoption of e-learning and digital technologies.

The schools' consultants (Neil and Nicole) and principals of Schools A and B (Eric and Teresa), who are closer (than School C) to digital environments and MLEs, recognized and promoted the view that significant shifts in thinking by teachers about their work is required. Neil, who regarded technology as a change agent, believes it will not be used to best advantage if teachers do not change their practice, and thinking about their practice. Change does not come easily to teachers, however, according to Nicole, attributing this to a fear of risk-taking, though Neil went further, seeing teachers who 'push against anything that means change ... some people who simply resist anything'. This fear and resistance may be due to the imperatives of twenty-first century learning, such as MLE, which require teachers to release their power, and be willing to engage in transparent, deprivatized practice (Eric, School A). Neil and Nicole affirmed that the move into

open, transparent and collaborative teaching spaces was leading to, and demanding, the biggest shift in teachers' thinking.

The blended single cell and MLE option of School B must not be allowed to lead to a 'two school' approach to pedagogy, argued Teresa, so she encourages change across the entire school. For her team, the design process raised for them the challenge that teachers will 'keep reverting back to what's familiar and safe' if the 'open space ... can be shut off into ... three classroom spaces'. Thus they opted for wholly open MLE.

Some teachers recognized that technology and MLE are impacting on their thinking about their practice. Nevertheless, there was evidence of the resistance mentioned by Neil and Nicole. For example, Shibani (School C) cautiously suggested that she would first 'get her head around' any new technology she was using if she was to alter her pedagogy in response to the influence of digital technology. Caroline (School B) recognized that her teaching would have to change to accommodate the notion of the 'twenty-first century learner'. Still, she felt confronted by the term. Ashleigh (School B) did believe that her practice was changing because of more collaborative planning, including the use of Google Docs. Making such use of technology has brought her to think about ways to change her teaching. Moving into the MLE was, however, most significant, especially as it required working collaboratively with other teachers. She noted in particular, developing the habits of recording and reflecting her thoughts, and collaborative planning, led to significant change in practice.

Conclusion

An understanding of reflective activity as an imposed procedure that meets accountability demands is evident in the voices of the principals and ex-leaders. On the other hand, the teachers applied reflection narrowly, limiting it to their thoughts about planning, and to whether they are achieving outcomes for their students. It has been suggested here that these two findings may be attributed in part to the influence of an overriding ideology of global education governance obsessed with high-stakes testing, and in part to neoliberal managerialism, neither of which is acknowledged or commented on by any of the participants.

This article concludes by suggesting, on the evidence here, that individual reflection has little relevance beyond narrow workplace requirements; it is increasingly collaborative; and it has a temporal character. There seems little in the voices of the teachers (but more so in the voices of the principals and ex-leaders) to suggest that reflective practices are intellectually unsettling, although the demands of twenty-first century learning are proving to be unsettling to many teachers. There is little to suggest that in either case, the participants see reflective practices as ethical. Changed pedagogical practice is strongly related to the demands of twenty-first century learning, which includes technology use and adapting to work life in MLEs. In the case of the principals/ex-leaders, this change is articulated as a requirement to be a successful teacher in the twenty-first century. In the case of the teachers, this change was articulated as a 'fact of life', not wholly embraced by all. It is less clear that changed pedagogical practice is seen by either case as the result of reflection, and rather more as a result of wider changes in the policy and practice environment.

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Note on Contributor

Dr Leon Benade is the Director of Research in the School of Education of Auckland University of Technology. He is the author of *From Technicians to Teachers: Ethical teaching in the context of globalized education reform* (Continuum, 2012). His interests are critical theory, policy, teachers' work and educational philosophy. Email: ibenade@aut.ac.nz