PERSPECTIVES ON AUTHENTICITY: CONTEXTS FOR TECHNOLOGY

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To meet the intentions of the New Zealand Curriculum 2007 teachers must critically reflect on their role and their ideas of what is 'best practice' for teaching and learning in the twenty-first century. In this post-modern age the teacher's role has changed considerably and there is now, more than ever, a need for much greater transparency, accountability and collaborative practice within education. While famous philosophers and theorists of the past including Plato, Rousseau and Dewey have expounded the ideals of authenticity and authentic engagement, it is only in more recent times with the spread of constructivism that authenticity has gained more favour.

This paper will investigate several important perspectives of authenticity and authentic learning (Turnbull 2002, Splitter 2008, Newmann & Wehlage 1998, Kreber, Klampfleitner, McCune, Bayne and Kottenbelt 2007). It will help clarify how Technology Education programmes based on authentic education and integrating key competencies can develop enduring learning for students. We will consider the role of context in developing learning and introduce some new ideas on successful student engagement in the field of conation (Riggs & Gholar 2009). They define conation as the will, drive and effort of students' personal effort and is increasingly being seen as an important part of authentic education.

Introduction

The New Zealand Curriculum 2007 (MOE, 2007) with its emphasis on life-long learning and intention to promote the development of confident, creative, connected and actively involved young people expects teachers to incorporate a high degree of authenticity and meaningfulness into their programmes. More than ever, there is a need for students to understand, appreciate and engage with the world in which they live. They must become familiar with the diverse range of complex communities that now exist in order to meet the requirements of sustained learning and effective participation in society. Learning to appreciate these environments and communities

of practice, along with developing a mind and responsibility for the future means that learners must continually be involved in meaningful and authentic learning practices and do so using authentic practices.

While engaging students in meaningful contexts is essential, an equally important consideration is the role of the teacher and their ability to be able to meet the changing and complex needs of modern teaching and learning. Teaching today's students through yesteryear's pedagogies will no longer suffice. Authentic learning requires authentic teachers providing students with opportunities to understand their world and take greater responsibility using intrinsic and conative motivation (Riggs & Gholar, 2008).

There is a growing field of research relating to authenticity, authentic pedagogy and authentic teaching. Definitions and usage of terms vary depending on the researcher's perspective and context, and this makes it difficult to get a clear picture (Kreber et. al. 2007). Many, however, have made significant links from these ideas to those of the 'constructivist' or 'socio-constructivist' learning theories currently in vogue (Petraglia 1998, Turnbull 2002, Splitter 2008, Slavkin 2004 and Newmann & Wehlage 1998). In this paper the writers want to focus particularly on authenticity as it relates to contexts for enduring learning, authenticity defining appropriate action for teachers and students in technology education, and how these ideas beneficially develop the full intent of the New Zealand Curriculum 2007 for a twenty-first century understanding.

Authenticity

So what do we mean by authentic and authenticity? Kreber et al. (2007) state:

> Authenticity is seen to make individuals more whole, more integrated, more fully human, more aware, more content with their personal and professional lives, their actions more clearly linked to purpose, 'empowered,' better able to engage in community with others, and so forth. (p. 24)

This definition relates very clearly to the Ministry of Education's vision (MOE, 2007), for New Zealand's young people to become confident, connected, actively involved and lifelong learners. Splitter, (2008) also makes these connections when he discusses what it means to live authentically.

> In so doing (living authentically) we tap into one of the most promising veins in contemporary educational thought, namely, that what lie at the heart of education are not learning, truth and knowledge, but thinking, meaning and understanding. (p. 136)

The Collins Concise Dictionary and Thesaurus connects *'authentic'* to words such as accurate, actual, authoritative, bona fide, genuine, original, true-to-life and trustworthy.

Authentic pedagogy and instruction

Much of the work in authenticity by Newmann, Marks and Gamoran (1996), Slavkin (2004) and others is around the theme of 'authentic pedagogy' or 'authentic instruction'. Learning needs to be significant, meaningful, and seen to involve the interests of students. Newmann & Wehlage (1998) base authentic achievement on three criteria. Firstly, students will construct meaning and produce knowledge. Secondly, this knowledge will be achieved through disciplined inquiry and finally students will work toward production of discourse, products, and performances that have value or meaning beyond success in school. Such learning will override what they see as 'inauthentic and persistent maladies' in schooling, that is students not using their minds well and doing work that has no intrinsic meaning or value to students beyond achieving success in school. Splitter (2008,) states that "Newmann and his colleagues have thrown a life-line to students (and teachers) drowning in a sea of fragmented, low-level, second-hand content and assessment" (p. 139).

Newmann and Wehlage identify five standards of authentic instruction to appropriately engage students in their learning.

1. Higher-order thinking. This accentuates students manipulating information as opposed to students receiving and reciting factual information.
2. Depth of knowledge. Students work with significant and meaningful concepts and develop arguments, solve problems and work with complex understandings.
3. Connectedness to the world. There is a greater authenticity when there is connection to the larger social context of the students' lives. They will use personal experience contexts or real-world public problems.
4. Substantive conversation. There is considerable discussion and debate on topics, sharing of ideas and dialogue builds on participants' contributions.

5. Social support for student achievement. Social support involves high expectations, respect and inclusion for all students in the learning process. Students are encouraged to take risks and try harder to master higher learning.

Splitter (2008) embraces much of Newmann and Wehlage's (1998) opinions on authentic education although raises some cautions especially in connection with their 'real-world' associations. He says that many of these do not actually guarantee truly authentic teaching and learning. This is extremely important for teachers to consider when giving students opportunities for first-hand experiences. Much of the 'real-world' can seem phony, second-hand and inauthentic. It is not enough to just focus on 'real' world contexts, attention must be given to what 'ought to be' happening in the particular situation or scenario that is being used and consider the roles of those involved (Newmann and Wehlage). Teachers and their students must adhere to what most people would consider appropriate and genuine. Splitter highlights the subjectiveness of people's perception, as this will vary greatly. There will most likely be quite different views of similar situations from teachers and children. Splitter surmises that Newmann and Wehlage's, 'world beyond the classroom' may not be what we would always consider as authentic.

Newmann and Wehlage's insistence that authentic pedagogy make use of disciplined inquiry exemplified by 'successful' practitioners offers some balance here. Students will use their skills to examine, test, deliberate over and really think hard about the information and activity they may observe (Splitter 2008). 'Real-world' problems and scenarios require the prolonged higher-order and inquiry thinking necessary to engage students. Splitter's concern is that it is not what *is* in the world beyond the classroom that is important but what *ought to be, and* as such, authenticity will become a value judgement.

Petraglia (1998, cited Splitter, 2008), raises the need for authentic learning to persuade learners that the problems discussed correspond with their own sense of how the world works. Educational experiences will need to make sense to learners through connection to the sense they can make of theories and experiences that matter.

Learners considering connections between their own views, experiences and understandings, and those of accepted experts in the field will most likely see

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themselves as authentic participants (Splitter, 2008). As such, they will place greater credence on the knowledge they construct and be motivated by the level of engagement in genuine, real and legitimate exercise. It is the value of these experiences and the level of the engagement and inquiry that connect with and fulfil the intention of the New Zealand Curriculum (2007) so well.

Slavkin (2004) sums up authentic pedagogy by stating, "Knowledge should be socially created" (p. 7). He identifies that learners function best in environments that are intriguing, multi-sensory and dynamic. Real world, rich problems provide the opportunity for collaboration and the associated high-level discourse required for deeper learning. This is the heart of socio-constructivist philosophy; knowledge developed through social experience and community interaction. Petraglia (1998) writes:

> Vygotskian and Deweyan traditions suggest, we do not learn in isolation from others and studies of learning and cognitive development have long established that people naturally learn and work collaboratively throughout their lives. They (students) are inhabited with mentors, experts and advanced peers who work and think alongside them. (p. 54)

Interactivity between the student and the wider community is fundamental in shifting the focus of learning away from the instructor. This interactivity closely resembles everyday situations in that it provides students with opportunities to make decisions about the nature, content and pace of their learning (Petraglia). Rogers, cited in Kreber et. al. 2007, states:

> Learning is facilitated in an atmosphere of mutual trust, where the teacher is acting in congruent (read authentic) ways, believes in students, and in interacting with students, becomes a learner. (p. 29)

Slavkin details six suggestions for authentic pedagogy from a range of authentic educators:

a) teachers must be able to help students review experiences accurately
b) skills may be difficult to apply to new settings
c) authentic pedagogy needs complex and authentic tasks
d) responsibility for learning is shared between teacher and student
e) there are multiple ways to look at material
f) both teacher and student must be involved in ensuring learning occurs and that information is applied practically. (p. 9)

For authentic learning to be successful, it is necessary for the teacher to develop a positive physical, socio-emotional and cognitive classroom environment that is supportive of learners and learning (McGee and Fraser 2008, and www.techlink.org.nz/curriculum-support/indicators/index.htm).

Slavkin (2004) lists ten suggestions for creating a functional classroom that is interesting for both teacher and students:

1) Be open to perceiving new information about children and looking at them as individuals and in unique ways
2) Provide a multi-dimensional classroom/work environment
3) Evaluate students privately using critical reviews
4) Effective evaluation of individual learners requires both norm-referenced and criterion-referenced assessment
5) Ask open-ended questions about students' abilities from the beginning of the unit
6) Listen attentively to what students say
7) Help children identify their own abilities, strengths and potentials
8) Help children feel competent in multiple areas
9) Provide new challenges and provide comments on positive attempts
10) Teach strategies to accomplish tasks, not just factual information. (p.10)

Teachers' plans for group tasks and individual learning will not happen 'as of right'. Murdoch and Hornsby (2002), and Dalton (1982) identify that appropriate group and collaborative skills for children's must be part of the teaching and learning process.

It is evident that authentic pedagogy must have at its heart student ownership of learning. Student interest and ideas should drive the content of authentic study if it is to be of real value and integrity. (Murdoch & Hornsby 2003, Blythe 1998, and Turnbull 2002). Splitter (2008) in his summary identifies the classroom as a significant community in leading the dialogue necessary to achieve authentic learning and that the multitude of groups and communities to which we collectively or individually belong or associate with, can provide the 'authenticity-making' role.

Authentic Teachers

If authentic pedagogy is grounded in authentic experience then authentic teachers will need to take responsibility for keeping up to date and aware of the variety of possible opportunities that may exist for student involvement and engagement. The New Zealand Curriculum (2007) has effectively increased the scope for teacher effectiveness. The curriculum is now broader, multi-faceted and wider-ranging in content. Teachers can no longer remain ensconced in their discipline and adopt a

content-driven industrial model delivery (Gilbert 2005). Teachers must integrate aspects of key competencies and values into their learning areas and consider how they will teach using the outlined effective pedagogies. As professionals, teachers must ensure that their teaching pays particular attention to what is best for the students and their understanding, to help them make better sense of the world in which they live.

Cranton (2001), as cited in Kreber et. al. (2007) considers authenticity as a moral ideal and argues that "the authentic teacher cares about teaching, believes in its value, wants to work well with students, and has a professional respect for students" (p. 34). Professional teachers do not act solely on their own decisions but do so according to a code of practice. Kreber et.al. state that:

> Authentic teachers:
> a) engage with larger questions of purpose
> b) convey how their subject matter matters in the real-world
> c) connect learners in substantive authentic conversations or dialogue around significant issues
> d) are guided more by caring for the education of students than by their own self-interest.   (p. 37-38)

Implications for Technology Education

Turnbull (2002) and Fox-Turnbull (2007) has identified and expanded on the role of authenticity within the Technology Education curriculum. She notes it as one of the 'challenges' for teachers in this new curriculum area. Surely, the additional demands and directions of the New Zealand Curriculum (2007) now exasperate this. However, the principles, key competencies, values and effective pedagogies may actually help define more transparently, what she defines as authenticity in technology education. Her definition is predominantly based on connecting students' understanding to meaningful and real-world situations and their involvement in technological practice that is similar to practicing technologists while using authentic tools and processes. She cites Hennessey and Murphy (1999) in explaining that authentic practice involves situations that are real to the student, their lives, and to situations they may encounter in the future workplace. Activity embedded in authentic technological practice is more likely to produce greater understanding and provide the opportunities for students to identify, simulate and relate to the tacit knowledge of technologists.

It was a recommendation in the 1995 Technology Education Curriculum that a holistic approach where all three strands of the curriculum would feature in units of work. This view relates to authentic technological practice in reference to Turnbull's writing. Technological practice would involve the development of knowledge and understandings, and a societal or stakeholder perspective before a technological solution was considered and produced. Changes to the Technology Education learning area (Compton and France, 2006) in the New Zealand Curriculum (2007) no longer express this recommendation so specifically, however the writers believe it is still very significant especially in primary school education. The two new Technology strands of the New Zealand Curriculum (2007), the Nature of Technology and Technological Knowledge support the Technological Practice strand clearly by the way they introduce authenticity and real-world connection (MOE, 2007).

Authenticity through key competencies

In regard to the introduction of key competencies the New Zealand Curriculum (MOE, 2007) states "People use these competencies to live, learn, work and contribute as active members of their communities" (p. 12). Connection to authentic education here is very strong. There is a meaningful purpose to the learning and interaction of students' learning, and serious implications for the programmes teachers offer and the way they work with students. The New Zealand Curriculum says "opportunities to develop the competencies occur in social contexts. People adopt and adapt practices that they see used and valued by those closest to them, and they make these practices part of their own identity and expertise" (MOE, 2007, p. 12).

Hipkins (2005) collated a number of statements from literature with future-focused fostering of life-long learning that link the key competencies to authentic education and real-world themes.

1) Learning should provide a focus on student's identity and 'being' in a complex, rapidly changing and culturally diverse world.
2) It is no longer enough to 'train' our future workers to be obedient, punctual and loyal. They will also need to know how to be more self-reliant, critical and creative in their thinking.

3) Learners must be able to manage the cognitive, metacognitive, affective and emotional aspects of their learning. These include knowing what constitutes good learning in a range of situations, when and how to seek help, when and how to collaborate with peers, and how, when, where and why they learn best.

4) For students to take more responsibility for their own learning, the power structures in the classroom need to change. Teachers need to empower students as they guide, coach, model, collaborate and give feedback, and share their expert knowledge.

5) Knowledge we 'have' stored in our heads, is worthless if it cannot be put to meaningful use. All students need to know how to use their existing knowledge to create new knowledge. (p. 36-38)

The latest information added to the http://keycompetencies.tki.org.nz/In-teaching website (retrieved 12 July 2009) identifies a number of indicators of what key competencies might look like in practice. The themes again link very closely to what is valid, trustworthy, genuine and hence authentic for today's learners. These indicators include statements such as:

The teacher is likely to:
- notice, recognise and respond to learners
- alter and adjust plans in response to learners
- revisit learning plans with students
- show themselves as learners
- do things they've never done before

Students are likely to:
- take an active role in decisions about content, process and assessment of learning
- take an active role in learning
- wait less and learn more
- be interested in their learning
- feel empowered to make suggestions
- ask questions of themselves, the teacher and others

Content, topics or foci are likely to:
- be interesting to students
- draw on authentic contexts related to things that are happening in the local and global community
- relate to students' existing knowledge and experience
- broaden students' competencies

Activities are likely to:
- take students into real, authentic contexts
- be flexible and adaptive
- be dynamic – activities that lead to and generate other activities unforeseen

- be both for individuals and group
- be purposeful and worthwhile
- be aligned to important outcomes

Principles that underpin these key competencies include:

Active – doing and generating as opposed to just remembering, regurgitating, repeating, recording, waiting, copying.

Real / Purposeful – students interacting and making connections as opposed to classroom-only contexts or in relation only to discreet knowledge areas,

Relevant – to students' lives now and in their development as life-long learners as opposed to learning relevant only to a limited range of possibilities from the past,

Empowering – students developing dispositions – their desire, inclination and will to learn as opposed to a focus on complying with instructions, reliance on only teacher-directed, teacher-driven, teacher-prompted learning.

Authentic activities

Reeves, Herrington & Oliver (2002) present ten design characteristics of authentic activities that they identified in literature. They suggested they would make a suitable checklist for educators.

Authentic activities:
1) have real-world relevance
2) are ill-defined requiring students to define them in order to complete the activity
3) comprise complex tasks to be investigated by students over a sustained period of time
4) provide the opportunity for students to examine the task from different perspectives, using a variety of resources
5) provide the opportunity to collaborate
6) provide the opportunity to reflect
7) can be integrated and applied across different subject areas and lead beyond domain-specific outcomes
8) are seamlessly integrated with assessment
9) create polished products valuable in their own right rather than as preparation for something else

10) allow competing solutions and diversity of outcome

Fox-Turnbull (2007) outlines an example of authentic technological practice undertaken by initial teacher education students that links to a socio-cultural constructivist theory and relates to an authentic situation. As closely as possible the student teachers work in a company situation collaborating to produce a packaged biscuit that is marketed to an aid agency supporting new immigrants to New Zealand. Articles in The Press (Christchurch's morning newspaper) in January 2006 identify the reality of a significant influx of immigrants to Christchurch but this is indicative of a wider trend in New Zealand. Situated cognition or cognitive apprenticeship (Hennessy, 1993) are examples of authentic learning (Petraglia, 1998). Hennessey (1993) reminds us that within our understandings of situated cognition, "learning is most successful when embedded in authentic and meaningful activity, making deliberate use of physical and social context" (p. 15).

Fox-Turnbull (2007) also alludes to the modelling and scaffolding that are a significant and critical aspect of the teaching and learning. Students and teachers engage in dialogue about knowledge students have and the knowledge students need. They also consider how the teachers as 'experts' can assist and guide students. The activity uses time management strategies authentic with technologists' everyday practice such as critical pathways and herringbones. This is a very rich context as a wide range of skills, understandings and knowledge authentic to technological practice are evident in the students' work. There are many links to Newmann and Wehlage's (1998) authentic instruction model discussed earlier and there is a very close correlation to Reeves, Herrington & Oliver's (2002) list of authentic activity characteristics. The activity involves considerable dialogue, inquiry and collaboration if students are to be successful in producing the authentic technological outcomes required. Students are required to reflect on their practice, complete a portfolio recording their work and reflections, and produce quality outcomes including a biscuit, authentic package and a marketing promotion for their outcome. At the conclusion of the activity, they present their work, process and reflections to peers and teachers. Their individual portfolio is a considerable proportion of their course assessment.

Student's ownership and motivation (Murdoch & Hornsby, 2003) to engage is necessary if enduring learning is to take place and it will require a different classroom environment. Teachers will need to become conversant with formative assessment (Black & Wiliam, 1999) and the principles of active learning (Newmann, Marks & Gamoran, 1996), inquiry-based learning (Darling-Hammond, 2008) and collaborative learning (Brown & Thomson, 2000). Clarke (2005), and Clarke, Timperley and Hattie (2003) support this requirement for students to take a greater role in their learning, through their work on the use of learning intentions, questioning, self and peer assessment and formative assessment. This involvement increases as students become more aware of the purpose, intent and scope of their learning. Teachers using and making learning intentions explicit will tend to focus more on actual learning than the activity or experience being used to stimulate student thinking.

In their latest writing Riggs and Gholar (2008) have raised our attention to aspects beyond the cognitive. They focus on the role that students can themselves play to accomplish their dreams and aspirations. They describe this as the conative domain or conation. It is the *will, drive or determination* to achieve a goal. Researchers in the past have referred to similar aspects as self-actualisation, self-efficacy or individuation (Kreber et. al. 2007 and Tessmer and Richey, 1997). Riggs & Gholar state that "the conative connection focuses on two objectives. Firstly *knowing* what one has to do to achieve a special goal and secondly *doing* what one has to do, intentionally giving one's personal best to achieve a specific goal" (p. x). They identify the fundamental attributes of conation as belief, courage, energy, commitment, conviction and change.

Riggs & Gholar acknowledge that students involved in authentic teaching and learning are seldom motivated by any material rewards. A strong link to intrinsic motivation develops through the challenge, relevance, interest and involvement in the contexts they study. They state:

> The learner must choose to learn and the learner must have enough courage to make the choice to learn. Making the choice to learn is influenced by the learner's perception of herself, her perception of the world around her, her beliefs, how she interprets what she knows or thinks she knows and how she chooses to respond to what she believes. (p. 46-47)

These characteristics of conative classrooms (Riggs & Gholar, 2008) closely resemble the notions of authentic teaching and learning already discussed in this paper. Authentic teaching and learning in the classroom and using life-oriented experiences will foster learning and increase social wellness. Empowered students given choice, responsibility and encouragement will mostly flourish and develop the skills and frameworks needed for successful life-long and authentic learning. For these students motivation, drive and determination will not be problematic. They will learn effectively and relate these learning connections to the real-world in which they live.

Contexts for Technology Education

Contexts for use in Technology Education that will promote authentic education and pedagogy and link to the key competencies, principles and values of the New Zealand Curriculum are easily found. To be authentic they should relate to local and global communities and be of meaning and interest to students. Common sources for such contexts are television, newspapers and community broadsheets. These contexts can be seen to be real-world issues by students through their very appearance in the news. Petrglia, 1998 says that "contexts that are part of the student's immediate community and everyday experience may be of particular interest and therefore provide the meaning, motivation and interest for inclusion" (p. 54).

Cultural events

Being a long term nor'west dweller for over 40 years I certainly see the difference in our society today. Mostly as we are now classed as multi-cultural I am unsure as to why there are hardly any articles on many of the cultural events, clothes or even food that are just waiting to be explored. Could be fun!

M Brown
Riccarton

Deputy editor note: The Nor'West news recently covered one of the biggest cultural events in the north-west, Culture Galore, at Ray Blank Park, Ilam.

Nor'West News 8/7/09

This article from a local newspaper identifies an appropriate and authentic context for technological practice. Students may develop ideas for possible events to celebrate cultural diversity within their school or community and invite the newspaper to report on it. Many aspects of authenticity would be involved and the significance and connection of the work would ensure high student engagement and accountability. Dialogue, collaboration, beyond the school learning, problem solving, integration, polished and

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diverse outcomes and other ideas discussed in this paper would be involved in student study. Values (MOE, 2007) to be encouraged, modelled and explored such as excellence, inquiry, diversity and community engagement would all be included. The key competencies of relating to others and participation and contributing would feature highly.

Authenticity, authentic pedagogy, teaching and learning are all significant aspects relevant to and supportive of socio-constructivist learning theory. They relate successfully to twenty-first century thinking and through their connection to real, meaningful and purposeful work are worthy of inclusion in authentic teaching and learning programmes. Students making sense of their world needs to be paramount in the programmes of work they complete.

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