Education: yesterday, today, and tomorrow

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My aim this evening is to discuss, what has been, what is, and what might be in education. As an eternal optimist who also believes that change is inevitable, I am always hopeful that it might be for the better—but, what is better? My underlying belief is that we need, individually and communally, to re-consider and re-interpret the aims for education in schools and universities, so that we can plan to make our professional work more fulfilling for all involved. Thus, looking forward, I present some possibilities for consideration, and hopefully I can be provocative by causing you to question some of the taken-for-granted assumptions.

Yesterday

Most of my working life has been within education. My summer job as I went through university was teaching swimming. My full time employment began as a mathematics teacher, and yes, I accept that too often I taught mathematics instead of students. Later I worked as a curriculum officer, and now as a university teacher. While in these three sectors I also developed resources hoping that these might help teachers. However, while working I slowly realized that education is much more than teaching. As an ex-mathematics teacher, I am still fond of theorems, and I have come to see the truth of one theorem and its converse, that is:

"Teaching is neither a necessary nor a sufficient condition for learning”

The proof is simple, one only has to find two counter examples: something one learnt without being taught, and something one was taught that one did not learn.

In spite of that theorem I believe that education is important, and that while teaching may not be necessary nor sufficient, it does help. However, for me our focus should be learning rather than teaching. I believe that learning and living are completely intertwined, and that throughout our lives as teachers we are actually learners. And now, with most of my work being supervising research and researching, I am very aware that I am still learning.

Because of my interest in learning I became interested in learning theories, especially radical constructivism and enactivism. As a maths teacher I learnt something that many maths and science educators do not believe, that is, that in maths there is no truth, only results one can prove that are conditional on the assumptions one makes. While searching for the x-factor in learning theories I realized the same was true. As table 1 indicates, there are many theories, they all contain some ‘relative’ truth but none give the total answer.

For me now, education/learning/living involves being, knowing, doing, and thinking; and all of these imply continually changing. And, in spite of what some people think and governments would like us to believe, while learning may be influenced to some extent by teaching, curriculum has less effect, and traditional assessment often has negative effects. Thus for me the challenge is how might our educational system evolve from yesterday’s version to one that is suitable for tomorrow.
### Table 1: Teaching, learning and knowing: what is the X-factor?

<table>
<thead>
<tr>
<th>Activity-based learning, activity theory, affordance theory, alternative education, andragogy (adult learning), appreciative inquiry, apprenticeship, artificial intelligence, associationism (Thorndike), attribution theory, authentic learning, awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandura’s reciprocal determinism, behaviourism (Watson), Bloom’s taxonomy, bodily knowing, Bronfenbrenner’s ecological system theory</td>
</tr>
<tr>
<td>Caring thinking, cognitive dissonance, cognitivism, Comenius’ pansophism (universal knowledge), communities of practice, community-based learning, complexity, computer-assisted instruction, conditioning theories, connectionism, constructionism, constructivism, contemplative knowing/thinking, cooperative/collaborative learning</td>
</tr>
<tr>
<td>Darwinism, Dewey’s experiential learning, didactical design theory, direct instruction, discovery learning, distributed cognition, drill and practice</td>
</tr>
<tr>
<td>Elaboration theory, e-learning, emancipatory learning, embodied learning, emergence, enactivism, engagement theory, enquiry-based learning, Erikson’s developmental theory, ethical knowing, experiential learning</td>
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<tr>
<td>Facilitative teaching, Freud’s levels of consciousness, Friere’s critical education</td>
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<td>Gagne’s conditions of learning, gestalt theory, group learning, growth theory</td>
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<td>Hands-on learning, hermeneutics, holistic learning, humanist education</td>
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<tr>
<td>Imitative learning, incidental learning, individualised learning, informal learning, information processing theory, inquiry-based learning, instructional design theories, integrated learning, interactive teaching, intuitional learning</td>
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<td>Job-based learning</td>
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<td>Kinaesthetic education, koan-based learning, Kohlberg’s moral development theory</td>
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<td>Laboratory-based learning, lecturing, living is learning, logic-based learning</td>
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<td>Maslow’s hierarchy of needs, mastery learning, meditative practices, memory training, modelling-based learning, Montessori education, motivational design theory, multi-media learning, multiple intelligences (Gardner)</td>
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<td>Narrative pedagogy, neo-behaviourism, neo-Deweyism</td>
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<td>Observation-based learning, operant conditioning (Skinner)</td>
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<tr>
<td>Phenomenological knowing, Piaget’s genetic epistemology, post-structuralism, problem-based learning, programmed instruction, progressive education, project-based learning</td>
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<tr>
<td>Question-based (Socratic) learning</td>
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<tr>
<td>Radical constructivism, reciprocal learning-teaching, reflective practice, reinforcement theory, research-led teaching, Rousseau’s natural education</td>
</tr>
<tr>
<td>Schema theory, sensory knowing, situated learning, social constructivism, Steiner education, structuralism</td>
</tr>
<tr>
<td>Tabula rasa (Locke), thinking-focussed learning, training, transformative learning, transpersonal consciousness</td>
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<tr>
<td>Unconscious knowing/learning</td>
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<tr>
<td>Visual learning, vocational education, Vygotsky’s socio-cultural constructivism</td>
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<tr>
<td>Waldorf (Steiner) education, women’s ways of knowing, writing-based learning</td>
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<tr>
<td>X</td>
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<tr>
<td>Yin-yang learning</td>
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<td>Zone of proximal development</td>
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Another important issue related to my concern about learning theories that seems to me to be prevalent amongst educators is that these theories focus our attention on how organized learning may occur, but neglects: informal learning, the choice of what is to be learnt, and even more importantly, the aims of education that have implications regarding what the focus of education is.

**Today (and some recent yesterdays)**

*Change*

As a teacher I was concerned with change, because learning means changing. As a curriculum development officer change was the focus of my work. And change has been and is currently the focus of my research. Some change agents talk of RDD (research, development, and dissemination), though more often this has seemed to me as PHUT (politics, hunches, underfunding and totalitarianism).

While writing a thesis at the Open University in 2006 (Begg, 2008/2006), I conceptualized an alternative and complex model to help explain the change process. This is summarized in figure 1. The model seems to have eight activities, but for me it has 28-dimensions because of the 28 dialogic links between the activities. It is complex—the activities impact on each other and the outcomes are unpredictable. It becomes more complex when one considers ideas flowing into the node activities from the environment in which the system lives.

![Figure 1: Eight co-emerging activities in educational development.](image-url)

Now, in 2011 this seems inadequate, it seems to be only a partial picture. Now I want to consider another activity that influences curriculum that I think is important. This activity is the process of determining (and implementing) the aims of education; and this is just as important for our universities as it is for our schools. Some may argue this could be subsumed under developing policy, but policy too often is related with local, national or international politics—my belief is we all have idealistic aims.
And talking about idealism, I still believe and hope that in writing aims we are determining an overall direction for change. However, this idealism is somewhat tinged by experience—I remember being on a University Entrance Board Syllabus Committee, we were at our very last meeting, we had determined the content for the papers, and then the chairman reminded us that one task remained, that was to decide the aims for the papers.

In spite of this experience, my logic suggests that while influences co-emerge, we need to prioritize the aims of education. Not merely looking at them, but implementing them as they are only meaningful if they provide a sense of direction which is followed. This process is not simple. We live in a democracy and that implies there will always be alternative views about the aims and what they might mean and thus, quite reasonably with a complex model, there will be activities working in ways that might be adjudged as counter-productive but such complexity adds to the richness. However, I do believe that at least at the meta-level, we are likely to reach some agreement about our aims.

**Aims in schools**

During my time at the “University of New Zealand–Auckland College” (yes, there was a time when we had just one university in New Zealand and colleges did not compete for students wasting a significant part of their budget in the process), at teachers college, and in my first teaching position, I cannot recall discussing the aims of education, though of course schools had mottos. We took for granted ideas about the value of academic learning, and also non-academic subjects and optional sporting and cultural activities.

As a young and somewhat idealistic teacher my first memory of being confronted with I was introduced to aims for education when the PPTA report (Munro, 1969) was published, and I felt very comfortable with these aims. The report said that:

... this statement of major aims consists of a short list of human qualities which education should be concerned to promote at all times. The highest value is placed on:

- the urge to enquire;
- concern for others;
- the desire for self respect. (Munro, 1969, p. 1)

I often reflect on these aims, my present-day interpretation of them is somewhat richer than my initial reaction, but for me they still summarize our core business beautifully.

It was 24 years later in 1993 when we first had an overarching curriculum framework document (Ministry of Education, 1993). This was a step towards a single national curriculum document rather than separate subject documents; and this first version was written as an ‘umbrella’ under which separate subject documents could sit. It did not have ‘aims’ but rather ‘principles’ (pp. 6–7), these were concerned with:

- establishing a direction for learning and assessment
- fostering achievement and success by defining achievement objectives
- providing for flexibility
- ensuring that learning progression is coherent
- encouraging independent and life-long learning
- providing equitable opportunities
- recognizing the significance of the Treaty of Waitangi
- reflecting the multicultural nature of New Zealand society
- relating learning to the wider world.
For me three of these principles needed some tweaking:

- establishing a direction for learning and assessment
- fostering achievement and success by defining achievement objectives
- ensuring that learning progression is coherent

These deletions were made because I see assessment and achievement objectives as limiting learning rather than encouraging it; and progression as a self-fulfilling teacher-control mechanism that does not recognize that learning is not a well-defined linear project.

The next stage, three years later, was the publication of our first early childhood curriculum, *Te Whāriki*. It used the terms principles and goals rather than aims and included four broad principles that I had no problem with, these related to:

- empowerment
- holistic development
- family and community
- relationships


Eleven years later we had the ‘new’ curriculum for schools (Ministry of Education, 2007) with: vision, values, key competencies, and principles, learning areas and achievement objectives. My interpretation of the key competencies (pp. 12–13) as aims gives me:

- thinking
- using language, symbols and texts
- managing self
- relating to others
- participating and contributing

which is not too far away from 42 years ago with the emphasis on self, other and enquiry.

My ‘problem’ with these aims is not their existence (I’m glad that they are there), nor their nature (I believe that most of us who are involved in education agree with them), but their implementation (or the lack of it).

As I see it, many very professional teachers reflect on their practice; they look at their current practice, analyze it, and improve it (in terms of improving learning and achievement of specific prescribed outcomes). However, often teachers teach what is in the curriculum without considering other reasons for teaching to such focused outcomes. They do not always consider how many outcomes could be dealt with in more holistic ways. Nor do they ask themselves how they are addressing the more fundamental aims. This is not new, the aims have been around for years but have always been in the background while teachers were concerned with day-to-day details of content coverage. Putting it another way, most teachers read the front half of the curriculum once, but often revisit the back half that details the specifics to be taught.

**Aims in universities**

University teachers are very similar to school teachers, they are influenced, albeit unwittingly, by managerial philosophies that view education as a commodity available at a price from an educational market. They are obsessed with the content knowledge of their courses and the way that courses are approved and assessed emphasizes this focus. This is particularly evident in professional faculties that lead to entry to a profession subject to specific requirements. More generally, university teachers see themselves as having knowledge and their task being to transmit this to their students.
One example that illustrates this occurred with a colleague who was studying physics at the tertiary level, though it could well have occurred at high school level. She had a teacher fellowship, and being a science teacher with a degree in chemistry and biology, she had decided to study undergraduate physics at the same time as she started her masters in education. Rather unusually, she was permitted to enroll simultaneously for Physics 1 and Physics 2. At the end of the year she passed both papers with a bare C for Physics 1 and an A’ for Physics 2. The professor of physics was amazed at this and contacted her to discuss how it might have occurred. She gave a simple example that typified the two courses.

In stage 1: the students were told that magnet A with strength \( x \) was placed at distance \( d \) from magnet B with strength \( y \), and they were asked to find the strength of the force between the two magnets.

In stage 2 the students were asked to discuss why, when two magnets are placed close to each other, they attract or repel each other.

As she summarized it, the stage 1 paper was an applied mathematics paper, while stage 2 was an interesting paper about the concepts of physics, and it was stage 2, the qualitative rather than the quantitative, that had interested her.

This example shows how a subject can be organized to meet specific outcomes, but these outcomes might not be ordered logically, nor have much to with students’ interests or the more general aims of education.

While accepting the need to master some subject knowledge and to meet relevant professional requirements I am also concerned about the universities aims and how these might be implemented. Our universities do have mission statements, but unfortunately these seem more like corporate advertising slogans with “motherhood and apple pie” statements using phrases such as:

... foster excellence, equity ... advance knowledge ...
... learning, teaching, research ... locally, nationally and internationally ...

While such phrases say very little, we do have more gutsy aims within the legislation where the universities are asked to serve as a critic and conscience of society (Education Act 1989, Section 162(4)(a)(v)). These two aims are part of the tradition of academic freedom that most universities claim; although such claims are often not made very loudly.

Research or enquiry?

At university we see ourselves as part of a research culture that contributes to knowledge, and government happily uses this through PBRF as a funding mechanism. What concerns me is that the vast majority of university academic staff members think of themselves as the researchers rather than thinking that learning is research; and think of their job as lecturers as being providing what the students need to know instead of encouraging them to find out the things they need to know.

I would imagine that if you all were to cast your mind back to the time before you started at high school then the most meaningful learning experiences that you would remember would be either projects you did by yourself or in small groups, or experiential activities that you learnt from that seemed to have nothing to do with what you now consider as the school curriculum. For me these two forms of activity are formal and informal research, or if research is regarded as a privileged term, then enquiry-based learning. In addition, at the same stage in your life there were things you wanted to know, so, you read books (literature
reviews), you watched experienced people (observation), you asked questions (interviews),
or you simply thought about the topic (phenomenological knowing)—all forms of research.

In spite of this successful enquiry-based learning that we experienced at our primary
schools, most of us found that high school subjects moved away from project-based
learning, and undergraduate work involves rather too much memory work and regurgitation
for assessment. Doing a thesis seems to be the stage when most lecturers and tertiary
students see research (or enquiry) as legitimate. I believe we have to change our ways of
thinking about education and move towards enquiry-based-learning rather than talking
about research-led-teaching.

A related aim for tertiary (and other levels of) education is to have our students become
autonomous life-long learners. We know from our own experience that we never stop
learning, indeed I would agree with Varela who said, “to live is to learn”; we know that it is
impractical for adults to keep calling up tertiary educators whenever they want to know
something; so it seems we should prepare our students by encouraging them to learn by and
for themselves in systematic ways. It seems that this aim should be considered at the same
time as we consider the place of enquiry-based learning. Such enquiry-based learning is not
new at universities; one only has to think about the traditional Oxford model of ‘reading’ a
subject and having tutorials rather than lectures.

**Thinking in education**

When we think about the curriculum in schools and universities it contains elements of
*knowing, doing* and *thinking*. Our assessment usually focuses on knowing, some practical
work is concerned with doing, but thinking is often taken for granted. When thinking is
considered it is usually thought of as having three forms—*critical* (or logical), *creative*, and
*meta-cognitive* (or self-monitoring).

Critical for some people suggests criticism but critical thinking involves looking at the
underpinning assumptions that are being made. This is particularly important in our
multicultural society where different people make different assumptions and logically
arrive at different but valid conclusions.

Creative thinking is often considered to only be relevant in some subjects. In my high
school education it was only evident in creative writing and art; and in my undergraduate
university education in mathematics, science, accounting, economics, and education, I was
not asked to be creative, yet all five areas have huge potential for creative activity. My first
chance to really be creative was when starting on a thesis.

Meta-cognitive thinking (monitoring one’s thinking, or self-assessing [diagnostically/
formatively/summatively]) is something we all do, though are hardly aware of doing it. It
becomes more important when one is in charge of one’s own learning and therefore has to
set and monitor limits.

My concern with this analysis of thinking is that it has two other forms of thinking. The
first of these is ‘*caring*’ thinking (Lipman, 2003; Lipman, Sharp, & Oscanyan, 1980); this
involves ethical thing and includes caring for self, for others, for the eco-system, and for
the world. This is important in terms of the aims of concern for others and the desire for
self respect (Munro, 1969, p. 1), the key competencies managing self and relating to others
(Ministry of Education, 2007, p 12), and our emerging concern for the eco-system.
The second is what might be called ‘contemplative’ thinking, or ‘being aware’. Contemplative thinking has a long history involving religious leaders, shamans, philosophers through the ages, and now new-age philosophers. A common strand in their writing and practices involves meditation, and its modern secular interpretation, mindfulness which is based on non-religious Buddhist philosophy (Nhat Hahn, 1975; Langer, 1989; Kabat-Zinn, 1994). I believe that we cannot continue to ignore this long tradition of contemplative thinking. For me it is a form of phenomenological knowing and offers a way of thinking/knowing that relates to the ‘sense-certainty’ of Hegel (1977/1807) that occurs when one perceives an object as the “thing-in-itself”, and arises also with phenomenologists such as Husserl and Heidegger. It also links with the notion of intuition in continental philosophy; this notion being much stronger than the English interpretation where intuition may simply be a hunch.

**Tomorrow**

We know change is inevitable, but if we wish to influence the direction of change then we need to have a clear vision of what we would like to see in the future, and how we might work towards such a goal.

**Vision**

Defining one’s vision could well involve ignoring curriculum and assessment details for a while and concentrating on basic assumptions and aims. The basic assumptions might include:

*Education ... is a process of living and not a preparation for future living* (Dewey, 1897), and, *A mind is a fire to be kindled, not a vessel to be filled* (Plutarch, 46–120 AD).

Such assumptions need to be considered critically, we may not all agree with them. Certainly many politicians would disagree with Dewey’s notion that education is for ‘now’.

Next we would need to consider our aims and how to operationalize them. I would expect or at least hope for some general agreement on aims involving

- enquiry (as the basis for autonomous and life-long learning)
- caring (for self, others, the eco-system, and the world)
- thinking (critical, creative, meta-cognitive, caring, and contemplative)
- academic freedom (critic and conscience of society).

We also need to consider other influences, and perhaps one of the most important is technology. I believe that technology has an important place; but commercial interests have exaggerated this place. For example, ‘interactive’ whiteboards usually involve the teacher interacting with the board which is not very different from chalk and blackboards when a student could use the chalk. And, while the web is a useful source of high quality information, information is not knowledge, and most students have not developed the critical skills to sort the useful information from the rest. There seems to me to be a danger of students being able to access everything and knowing nothing. I want our students to spend some quiet time reflecting on their learning, on what it might mean, on where it might take them, and on the alternatives. Technology needs to be seen as a tool in the same way as blackboards and chalk, paper and pens, and books are tools. The worst aspect of technology is the sight of a couple walking down the street, holding hands, and both talking to others on their phones! Perhaps I am a Luddite after all.
**Change process**

Accepting that neither RDD or PHUT are appropriate ways of making changes, there is a need to consider how we might move forward in the future. I would suggest that the process is not one that comes from government, nor from the top-level or middle-level administration of our institutions; it comes from small groups of like-minded professionals who simply want to make a real difference.

Such small groups of colleagues will be able to work within and around institutional constraints and over time these restrictions will disappear. Of course we are all learners and will make mistakes and learn from them but eventually each group is likely to achieve some significant milestones. When these successful initiatives become known, word will get out and others will follow; but we know that can only change ourselves and our practice and be an example to others. Such a change process is a learning process, it is part of my vision as seeing us all as life-long learners using enquiry or project-based situations as our learning forums.

Over time different groups may well work in opposite directions; but, as with mathematics, learning theories, and most things we know, there is no absolute truth. The visions and aims that are established are likely to vary from group to group; there is no right or wrong. Even making changes by myself there are arguments as conflicting ideas emerge in my mind. This is not a problem as cognitive conflict usually leads to conflict resolution or to acceptance of complexity, and in either case I am learning.

The changes might seem quite small but over time they grow. For example, I am trying to restructure all my ‘teaching’ sessions so that my work becomes stimulating enquiry, reading, sharing, and critique rather than lecturing or teaching by providing facts. One of the approaches I am using involves telling stories, because,

*It is from our stories that we will remake the world. ... Also, there is an easy distrust of ‘information’. There is too much of it. Knowledge supplies the facts, stories give sensation to the heart.* (Walker, 2005, p 223)

And, as the New Zealand psychologist Michael Corballis wrote (2011, p 114),

*when a graduate student, one of his teachers told the class * 
  “you could learn more about human relations from reading novels than from taking courses in psychology.”

**And**

Finally, change in education is a slow process, it seems to work on a geological time scale, but as you folk in Canterbury are only too aware, when change occurs on this time scale it can be very significant.

Thank you!
References


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