Designs for Learning

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ABSTRACT This article explores the potentials of new pedagogical approaches, assisted by digital technologies, to transform today's learning environments and create learning for the future – learning environments which could be more relevant to a changing world, more effective in meeting community expectations and which manage educational resources more efficiently. Equally important, the challenge is to create learning environments which engage the sensibilities of learners who are increasingly immersed in digital and global lifestyles – from the entertainment sources they choose to the way they work and learn. The experimental work upon which this article is based is grounded in a philosophy of teaching and learning that values a variety of active ways of knowing. Teaching that harnesses diversity and leads to learner transformation involves a variety of knowledge processes that need to be made explicit and part of a teacher's pedagogical repertoire. The tools described in the article provide a way for educators to reflect on their choices, document their learning programs, map curriculum, share effective practice and write up learning community goals. They also allow students to build, share, collaborate upon and publish portfolios of the work they have created digitally. The result will be greater transparency and accountability amongst those who share responsibility for education.

Learning is …

Humans are born with an innate capacity to learn, and over the span of a lifetime learning never stops. Learning simply happens as people engage with each other, interact with the natural world and move about in the world they have built. Indeed, one of the things that makes us distinctively human is our enormous capacity to learn. It is in our nature to learn, education or no education, curriculum or no curriculum, pedagogy or no pedagogy.

Education is the conscious nurturing of learning in a community which has been designed primarily for that purpose. Within education, curriculum is a consciously designed framework for learning a body of knowledge, be that a discipline or a coherent set of social competencies or capacities. And within curriculum, pedagogy is the conscious application of knowledge processes to the task of learning.

Education is built on the very ordinary (and extraordinary) fact of learning that is at the core of our natures. Education, however, is different from everyday learning in several respects. It is deliberate – learning is addressed in a relatively conscious, systematic and explicit way. It sets out to be efficient – as the end is learning, the processes of engagement are designed to meet that end via as direct a route as possible. And its reference point is primarily exophoric – although it is absolutely in the world, in an important sense education is not of the world. Education is not an end in itself. It is for use in the 'outside world' and refers to the 'outside world' as that, positioning itself as externally representative and reflective of the world.

In each of these respects, everyday learning is different from education. Everyday learning happens in ways that are relatively unconscious, haphazard and tacit. It happens in ways that are often circuitous, incidental, fortuitous or even accidental. Everyday learning is deeply embedded within the world. The distinguishing feature of education (and curriculum and pedagogy) is that learning happens by design.

Everyday Learning	Learning By Design
– Amorphous: haphazard and tacit. – Unorganised: incidental, accidental, roundabout. – Endogenous: embedded everywhere in the world, and so much so that it is often all but invisible.	– Deliberate: conscious, systematic and explicit. – Efficient: structured and goal oriented. – Exophoric: for and about the 'outside world'.

Table I. Ways of learning.

This article explores the dynamics of education, curriculum and pedagogy as designs for learning. It builds upon and extends the authors' earlier research and development interventions including their involvement in the Social Literacy Project (Kalantzis & Cope, 1989), the development of the Genre Approach to Literacy (Cope & Kalantzis, 1993a), the Multiliteracies project (Cope & Kalantzis, 2000b) and the New Learning Charter (Kalantzis & Cope, 2001a). It has been written as a base document for the Learning Design Language project, which commenced in 2002, involving groups of educators in Australia (in Victoria, Australian Capital Territory, New South Wales and Queensland), Greece and Malaysia.

The key questions this article sets out to address are what makes for success and failure in learning, and how do we best design the learning experiences that constitute pedagogy, curriculum and education? To the first of

these questions, the answer is to some degree located in the stuff of individuals' personal natures – in their native ability or intelligence for example. To this extent, investigations into learning become the business of psychology or cognitive science. And this in turn becomes the foundation of certain kinds of pedagogical, curriculum and educational 'sciences'.

Our approach is to take native intelligence as a given. More importantly, it is impossible almost by definition to do anything much about our natures. How does one change one's native ability? Cultural difference, by contrast, is something we can address. Besides, inherent differences between our native capacities are hard to unscramble from cultural differences. So let's do what we can about the part of the jumble we can do something about.

So what are the cultural conditions of learning? For the moment we will speak of learning in general, whether it is embedded in everyday life or whether it is learning by design.

The form and extent of learning is determined by the conditions in which it occurs. And some conditions are more favourable than others. Two conditions, particularly, impact on learning: first, whether a person's identity, subjectivity or sense of themselves has been engaged; and second, whether the engagement is such that it can broaden their horizons of knowledge and capability. Unlike innate capacity, these conditions are things we can do something about. When learning happens by design, we can, in other words, create conditions which improve the chances of engagement. And creating the optimal conditions for active engagement enhances pedagogical, curriculum and educational outcomes.

Learning Condition 1: BELONGING – a learner will not learn unless they 'belong' in that learning

In order to learn, the learner has to feel the learning is for them. They have to feel they belong in the content; they have to feel they belong in the community or learning setting; they have to feel at home with that kind of learning or way of getting to know the world. In other words, the learner's subjectivity and identity must be engaged.

Learners have to be motivated by what they are learning. They need to be involved as interested parties. They have to feel as if that learning is for them. The learning has to include them. And if they are learning in a formal educational setting such as a school, they also have to feel a sense of belonging in that social and institutional context. The more a learner 'belongs' in all these senses, the more they are likely to learn.

Belonging to learning is founded on three things: the learning ways, the learning content and the learning community. From the learner's point of view, the learning ways question is: 'Do I feel comfortable with this way of knowing the world?' (Or, do I feel at home with this style of thinking or way of acting? Do I feel it can work for me? Do I know it can help me know or do more?) The learning content question is: 'Do I already know enough about an

area of content to want to know more?' (Or, do I already know so much about something that I naturally want to know more? Has my appetite been sufficiently whetted by what little I already know to want to know more?) And the learning community question is: 'Do I feel at home in this learning environment?' (Or, do I feel sufficiently motivated to take on the learning tasks required by this environment as my own and feel safe enough in this space to be able to risk moving into new domains of knowledge and action?)

The learner's subjectivity, however, is always particular, and it is this particularity which must be engaged. Here, the concept of 'difference' is helpful because it highlights some dimensions of learner particularity.

Our natures may be taken as a departure point for understanding our differences. Sex, race and (dis)ability supply a biological or corporeal starting point for understanding the basis of our differences. But this is only the beginning. Difference is also self-identified and socially ascribed. This is when the cultural accretions to our natures, and our social relations of difference, become so very manifest and critical. Dimensions of difference include: ethnicity/race (and indigenous, immigrant, minority and colonising positions), gender (and sexual orientation), socioeconomic group, locale (global and regional) and (dis)ability.

By contrast with the descriptive semantics of difference, 'diversity' is the stuff of normative agendas, where difference becomes the basis of a program of action. Difference the insistent reality becomes diversity the agent of change. We live with the fact of difference. We do diversity. Many an historical and contemporary response to difference, however, is hardly worthy of the name 'diversity' – racism, discrimination and systematic inequity. As a normative agenda and social program, diversity also stands in contradistinction to systems of exclusion, separation or assimilation.

However, difference can sometimes be a less than helpful concept and diversity programs counterproductive, and particularly so when stereotypical generalisations are made on the basis of gross demographics – about Chinese learning styles, boys' communication styles or the conditions of socioeconomic disadvantage, for instance.

The gross demographics of difference, of course, do capture powerful realities – the dimensions of gender, age, ethnicity/race, locale, socioeconomic group and (dis)ability. They stare you in the face, as does the difference these demographic realities so predicably seem to make when it comes to educational and social outcomes. But they are not in themselves factors which affect learning. We will call these gross demographics 'Difference 1'.

Behind the gross demographics lie human attributes that are the underlying substance of these differences – experiences, interests, orientations to the world, values, dispositions, sensibilities, communication styles, interpersonal styles, thinking styles and the like. This is the raw material of identity, the stuff of the 'life-world' (Husserl, 1970; Cope & Kalantzis, 2000a). We will call these underlying attributes 'Difference 2'.

The life-world of Difference 2 is the everyday lived experience that learners bring to a learning setting. It is the person they have become through the influence of their family, their local community, their friends, their peers and the particular slices of popular or domestic culture with which they identify. It is a place where the learner's everyday understandings and actions seem to work, and so much so that their active participation is almost instinctive – something that requires not too much conscious or reflective thought. The life-world is what has shaped them. It is what they like. It is who they are.

The underlying attributes of life-world difference form the basis of identity and subjectivity. These attributes are the fundamental bases of a learner's sense of belonging in an everyday or formal learning setting, and their levels of engagement.

From the point of view of these underlying differences, the gross demographics of Difference 1 are as often deeply deceptive as they are immediately helpful. Measure any one underlying attribute of life-world difference and you will find greater internal difference within a demographically defined group than the average difference between groups. Look at the differences between girls and boys within a particular ethnically defined group, or within different age groupings. It is not long before the internal differences between members of that group are so great as to indicate that the ethnic descriptor is far too simple a variable. Or take gender differences. Once again, ethnic and age variations mean that gender dynamics may be played out in entirely different ways.

Difference 1 is a powerfully revealing 'first take' on learner differences. Difference 2, however, is where the realities of difference truly lie. And on the measure of Difference 2, the extent of internal difference within any group defined in terms of Difference 1 attributes, will be greater than the measure of average difference between Difference 1 groups.

Difference 1: Gross Demographics	Difference 2: Underlying Life-world Attributes
– Gender	– Experience
– Age	– Interests and orientations
– Ethnicity/Race	– Values
– Locale	– Dispositions and sensibilities
– Socioeconomic group	– Communication and interpersonal styles
– (Dis)ability	– Thinking styles
... and the like.	... and the like.

Table II. Lenses on difference.

There's also the question of which differences are individual and which are shared across groups. The identity of any individual is always multilayered. Even when we consider it from the point of view of Difference 1, every individual embodies a unique mix of gender, age, ethnicity/race, locale, socioeconomic group, (dis)ability dimensions, and within any one of these

dimensions, quite specific and often complex and multiple configurations emerge (the Italian-Australian with one Jewish grandparent, who speaks limited Italian with two grandparents, to take an ethnicity example). An individual partially shares gross demographics and underlying attributes with a wide and overlapping range of groups, but the particular mix of group attributes is invariably unique – and that's what makes the person an individual (Cope & Kalantzis, 1997).

Unless learning engages with the specifics of individual and group identities, it will not be productive. The dilemma for teaching is that, no matter how much filtering is done by the Difference 1 variables of age, locality, subject choice or ability level, groups of learners invariably remain different. Education, then, needs to start with a recognition of difference. The challenge, then, is how do we engage all learners in classrooms of difference? In other words, how do we do diversity?

For behind the demographics are real people, who have always already learned and whose range of learning possibilities are both boundless and circumscribed by what they have learned already and what they have become through that learning. Here we encounter the raw material difference – human experiences, dispositions, sensibilities, epistemologies and world views. These are always far more varied and complex than the immediate sight of the demographics would suggest. Learning succeeds or fails to the extent that it engages the varied subjectivities of learners. Engagement produces opportunity, equity and participation. Failure to engage produces failure, disadvantage and inequality.

– We are creatures of subjectivity, identity and motivation – intuitive, instinctive and deeply felt.
– The 'life-world' is the ground of our existence, the already-learned and continuously-being-learned experience of everyday life.
– The life-world is deeply permeated by difference; in fact, there is a myriad of diverging and interacting life-worlds.
– The individual is uniquely formed at the intersection of many group identities; they are a unique concatenation of many group identities, and live in and through multiple or multilayered identities.

Table III. Dynamics of difference.

In all its difference, the life-world is the first site of learning, not only in the chronological sense (babies and young children) but in the extended sense that it is always prior to, or the foundation of, any learning by design. It is from the start and always remains a place of deep learning, albeit mostly in amorphous, unorganised and endogenous ways. The life-world is the ground of all learning, including the secondary processes of learning by design.

And as learning occurs through engagement, engagement must be with learners in their life-world reality, and that reality is marked by extraordinary difference.

Learning Condition 2: TRANSFORMATION – learning takes the learner into new places, and along the this journey, acts as an agent of personal and cultural transformation

Learning is not simply about recognising and affirming difference. There's much more to effective diversity programs than that. The conservationist-multicultural idea is that recognition and affirmation of cultural difference is not only necessary; it is also sufficient. This is the preservationist or museum approach to diversity: recognise difference then patronise it.

Staying where you are, however, is not learning. Learning is a journey away from the learner's comfort zone, away from the narrowness and limitations of the life-world. As much as learning needs to affirm identity and create a sense of belonging, it is also a process of travelling away from the familiar, everyday world of experience. This journey is one of personal and cultural transformation.

The learning journey takes two paths, along two axes. Both of these journeys are away from who you are, and sometimes in unsettling ways. The first is a depth axis, or learning what's not immediately or intuitively obvious from the perspective of everyday lived experience. This may challenge everyday assumptions – that the earth is flat, for instance, or that certain unreflectively held value sets are sustainable. The second is a breadth axis, in which you travel to unfamiliar places in the mind and perhaps also in reality. This is a kind of cross-cultural journey, and deeply so because it involves a genuine crossover. The place to which you travel becomes part of you, part of your repertoire of life experience, and in fact another aspect of your identity. These journeys can be understood as narratives of sorts. They are life narratives of self-transformation and growth. But they are only that when the learner is safely and securely in the centre of the story. Retrospectively, the learning story runs like this: who the learner was, where they went, the things they encountered, and what as a consequence of their learning they have (knowingly) become. In this story, learning is a kind of cultural journey.

If the life-world is the place of belonging, the place from which learners depart, the new world of knowledge might be called the 'transcendental' – a place above and beyond the commonsense assumptions of the life-world (Husserl, 1970; Cope & Kalantzis, 2000a). The learning journey from the life-world to the transcendental takes the learner into realms that are necessarily unfamiliar but never too unsettling in their unfamiliarity. Education will not result in learning if the landscape is unseeable, unthinkable, incomprehensible, unintelligible, unachievable. Learners must travel into cultural territories which take them outside of their comfort zones, but not so far in any one stage of the journey that the journey takes the learner into places that are so strange as to be alienating. The journey will involve risk, but the risk will only be productive of the learning environment feels safe, if it is a place where the learner feels they still belong even if only as a traveller. The learner needs scaffolds which reassure them as they face of the risks of alienation and failure in the realm of

the unfamiliar. Vygotsky calls this the 'zone of proximal development' (Vygotsky, 1962, 1978).

Ideal learning settings scaffold or provide support as learners move into a zone of partial but as yet incomplete intelligibility. With all the motivation in the world to learn Chinese, there's no point for a beginner to start in the third year of the program, or for an aspiring mathematician to try to learn calculus before arithmetic. This brings us back to Learning Condition 1, the need to engage with identity. Learning Condition 2 now tells us that this engagement has to be achievable as well as aspirational. It also brings us back to the necessity to engage with the complex particularity of different learners, emphasising now the need to take a journey into strange places which genuinely adds something new to that particularity. For every student in every learning setting, the comfort zone of proximal development is going to be different. Herein lies the key dilemma of the whole educational project.

Those who succeed best in a particular learning setting do so because that setting is just right for people like them. The level of risk in moving into a new area of learning is one they are comfortable to take. Those who do not succeed so well, do not when the distance between who they are and what they are learning is too great, when they don't feel they belong in the content or the setting and when the risks of failure outweigh the benefits of engagement.

All too often, however, learning seems to gel for some kinds of students (such as the 'mainstream' learner, attuned to dominant educational values) and not for others. The key dilemma is how to make learning gel for all students.

And why do we need to learn? What is the role of formal, institutionalised learning? Why is the educational project so important to us? Why do we bother with learning by design when the life-world is already so profoundly a site of learning? The answers to these questions are as much practical as they are idealistic. It is because learning can transport you into new life-worlds. Learning provides access to material resources in the form of better paid employment; it affords an enhanced capacity to participate in civic life; it promises personal growth. Upon education rests one of the key promises of modern societies. The world is tragically unequal, and for all practical purposes most people regard this inequality as inevitable. Education, however, assures us of equity. Inequality is not unjust because education affords all people equivalent chances.

There is no equity in education unless the two learning conditions are met. Learning has to engage with students' identities, and these identities must be recognised as different. It must take people into unfamiliar places, and these places have to be unfamiliar in just the right measure. That measure can only be based on precisely who the learner is – all the life-world attributes combine to define who they are as an individual. Success is achieved when the measure of distance is appropriate to the learner. Failure occurs when the measure of distance is inappropriate to the learner. If the distance between the life-world and the learning is too great, the educational effort will be misdirected, compromised or ineffectual. And if there is no distance between the life-world

and what is to be learned, learning will be diminished or illusionary. The distance between the life-world and what is to be learned must be productive.

Condition 1: BELONGING – effective learning engages the learner's identity. It builds on the learner's knowledge, experiences, interests and motivation. In any learning community, there is a broad range of difference, and this is because the everyday life-worlds from which students come are always varied.
Condition 2: TRANSFORMATION – effective learning takes the learner on a journey into new and unfamiliar terrains. However, for learning to occur, the journey into the unfamiliar needs to stay with a zone of intelligibility and safety. At each step, it needs to travel just the right distance from the learner's life-world starting point.

Table IV. Conditions of learning.

Belonging is a generalised condition of learning, whether learning is endogenous to the everyday life-world, or whether learning is by conscious design. In the case of the former, belonging usually comes easily; in the case of learning by design, belonging needs to be a conscious endeavour. Spaces of formal learning are strangely not of the world, and for some learners, they prove just too strange. Transformation, on the other hand, is not the exclusive preserve of education. It may occur in the life-world, when for instance surroundings radically change. Migration is a case in point, as are other willed or unwilled, traumatic or relief giving changes in life-world circumstances. Transformational learning in these cases is incidental to circumstantial change. Education, however, uniquely makes transformation a deliberate project. Transformation is one of the primary purposes of learning by design.

Learning by design occurs at three levels. The overarching level is education, or communities dedicated to the project of learning. These include traditional settings such as schools, technical colleges and universities. Increasingly, however, these institutional boundaries are being blurred by distance, flexible and work-based or community-based education. These changes are the subject of the New Learning education charter (Kalantzis & Cope, 2001a).

Our primary focal points in this article, however, are the processes of curriculum and pedagogy. Pedagogy is learning by design at the level of coherent and complete units of learning. Curriculum pieces together the units of learning to create bodies of knowledge, disciplines of thinking and domains of practice and action. Curriculum and pedagogy are the subjects of the next two sections of this article.

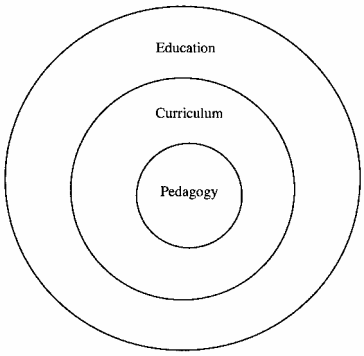

Figure 1. Learning by design: three levels of analysis.

Curriculum is …

Curriculum is the overall logistics of learning delivery: content (what's to be learned), media (the resources being used) and teaching processes (the dynamics of teacher-student interaction).

Various forms of curriculum deal with the differences amongst learners in varied ways – and difference there always is, whether the curriculum chooses to recognise it or not. Following are three models, seemingly representing an historical progression in the development of modern theories and practices of curriculum. In fact, there are some old ideas in the newer models, and all three models are very much alive and well in the schools of today (Kalantzis & Cope, 1993).

	Features	Advantages	Disadvantages
Content	Factual modes of knowing, memory work, learning by rote. Theoretical modes of knowing: internalising and applying abstractions that purport to have universal scientific validity in the natural or social worlds. Canonical and high cultural knowledge: great literature, great art.	Clarity: right or wrong answers on facts, correct or incorrect application of rules of theories. Testable. One-size-fits-all curriculum. Creation of a common culture (everybody knows the same official language, national story, literary canon, basic scientific truths).	Abstract, decontextualised knowledge. Simplistic concept of knowledge: received theories taken as truth, facts taken to be final. Empirical correctness: are the 'facts' always as clear-cut as their representors purport them to be? Are there ever such straightforwardly right and wrong answers?

	National or forms of language and culture: 'standard' national languages, the histories and identity narratives of the 'mainstream' or dominant group.		Theoretical correctness: what's the use of rules when you haven't internalised their rationale?
Media	Centralised syllabus specifies detailed content and sequence. Textbooks follow what's been prescribed in the syllabus. Standardised, system-wide testing measures individual 'performance' against content and discipline knowledge.	Simplicity, uniformity. Easy on teachers, who can follow the syllabus, tell students to work through the textbook and teach to the test. Consistency from one classroom/school/system to another.	Devalues teacher professionalism. Generic: not tailored to local conditions or individual learner needs. Linear and lock step: progression lesson by lesson, topic by topic, chapter by chapter. Fails students whose interests, identities and life-world experiences don't 'fit' with the subject-matter, tenor and assumed ideal learning styles of the curriculum.
Teaching processes	Didactic pedagogy. Transmission of curriculum content knowledge to learner. The teacher is the initiator and centre of classroom discourse. Classroom talk pitched at the middle of the class.	Predictability: students can see where the curriculum is going. Transparency: communities can see exactly what's going on in the curriculum, and this is likely to fit comfortably with conventional notions of what learning entails.	Intellectual rigidity. The learner is assumed to be an empty vessel, and this creates passive, compliant learners. Learner expression is restricted to a private audience of one: teacher-assessable work.

Table V. Model 1: traditional curriculum.

The equity effect of the 'progressivist' curriculum, by and large, is selective assimilation. There may well be a superficial honouring of different life-worlds, perhaps by employing a 'spaghetti and polka' approach, which highlights differences in the form of folkloric colour, for instance (Cope & Kalantzis, 1998). Notwithstanding the multicultural days and the special curriculum units on 'other cultures', the literacy and numeracy 'basics' stay as they always were. As does the pattern of academic results. If as a learner you are willing and able take that particular journey, if you can internalise the underlying motivations that will make the core disciplinary curriculum work for you – if you are

willing and able to become one of these 'kinds of people' – you may be included into the culture of the curriculum and your results will reflect this. You can come in, and make yourself over in the image of the curriculum, so long as the fundamental framework of seeing, valuing and knowing implicit in that curriculum remains singular and undisturbed. Of course, not to dismiss this kind of progressivism out of hand, the superficial honouring of life-world difference may have been just enough to make you feel sufficiently at home even to embark on this journey. And the result of assimilation may be access, which is undoubtedly a better outcome than exclusion.

	Features	Advantages	Disadvantages
Content	Primacy of experiential modes of knowing. 'Constructivist' pedagogy: learners build their own knowledge and understandings. Knowledge is built on awareness of the self as a knowledge maker. Curriculum often draws content drawn from local community life, relevant to student experience.	Engages students as active learners. Metacognition and self-awareness sharpens knowing and learning. Attempts to recognise and honour differences in background amongst learners. All cultures relative and equal.	Ambiguities and inconsistencies arise in defining the content and scope of learning. Anything goes? What is the truth? Or, at the very least, what is more and less valid knowledge drawn from experience? Not necessarily critical: immersion in experience can still involve subtly assumed answers and correct ways of seeing and interpreting the world. Sometimes slips into the patronising, conservationist view of cultural differences: the recognition is no more than superficial.
Media	Broad systems guidelines on learning outcomes. School-based curriculum development. Range of resources upon which to draw: library, Internet, community, student experience. Teacher assessment of learner development, based on professional judgment.	Teacher engagement: valuing teacher judgment and professionalism. Possibility of creating learning experiences relevant to local conditions. Possibility of creating learning experiences relevant to individual learner needs and interests.	A lot of work; in fact, an impossible amount if it's to be relevant to individual students. Lack of focus: the 'shopping mall curriculum' becomes the crowded curriculum. Resources: the 'photocopier curriculum' which often means falling back on traditional textbook content.

			Reinventing the wheel: locally produced learning materials almost invariably never see the light of day beyond a particular teacher in a particular classroom. 'Spaghetti and polka' diversity: patronising and tokenistic recognition of differences in gross demographics. Lack of transparency and predictability for learners and communities.
Teaching processes	Focus on curriculum processes rather than curriculum content. Learner-centred pedagogy.	Addressing individual learner needs. Recognising differences in student backgrounds, needs and interests. Inspiring and building upon learner motivation.	Not necessarily transformative: students not being sufficiently challenged; going nowhere significantly beyond where they already are. Subtle or hidden monocultural assumptions about ideal ways of learning and what constitutes a constructive contribution to the classroom.

Table VI. Model 2: progressivist curriculum.

What's the nature of the curriculum journey into progressivism? Into what will you be assimilating? What kind of person will you become if you manage to make the journey? Underlying 'constructivist' pedagogy, for instance, is a set of deep cultural assumptions. Constructivism assumes a learning style that embodies a particular kind of subjectivity. The self-aware individual is the reference point of all knowledge making and the knowledge that emerges is of their personal making – a matter of perspective, a product of problem solving, circumstantial and subjectively framed rather than universally given and self-evidently true.

Using a constructivist pedagogy, try teaching the Koran in the way devout Muslims believe it should, or elementary particle physics in a such a

way that your experience validates the theory. In both these cases, constructivism is destined to fail you. Try using a constructivist pedagogy to teach communities whose entry point into knowledge is not personal opinion and problem solving, but rather life-world settings in which teachers and texts are regarded as authoritative. Again, constructivism is destined to fail you. Some kinds of learners may feel more comfortable with facts, theories and the clarity of authoritative texts and received knowledge, at the very least as a starting point before they introduce their own opinions or attempt to solve problems.

After progressivism's invitation to engage – which seems to be with such open arms – this is the subtlest of exclusions. The curriculum has invited you in, but only on its own terms. Ostensibly, this is an classroom of open engagement, but if the rules of engagement don't click, you won't do well here. To succeed you need to get with the epistemological strength of the life-worlds closest to the culture of curriculum, to think in a particular way, act in a particular way, communicate in a particular way and ultimately know in a particular way. The key to success, in fact, is to leave your old life-world self at the door.

Take literacy learning again. Constructivist approaches to learning, of which 'whole language' and 'process writing' are well-established examples, foster active learning based on engagement with texts. The emphasis is on immersion in experience. Do a lot of reading and writing and do it regularly, then in much the same way that a baby learns oral language, you will learn to read and write. Despite extending this powerful invitation to learners to engage, the reality often does not match the rhetoric. Process writing, for instance, is based on some culturally specific assumptions about communication which give primacy to individual expressive voice, an orientation to meaning making which in turn can be tracked back to the conventional western notion of the author. This is good for children who are used to talking about themselves, who come from child-centred domestic settings and from life-worlds in which the voice of the opinionated self is granted primacy. It is not so good for children whose life-worlds prioritise family, community and the authority of elders. Similarly, progressivist reading pedagogy seems to work best for those who intuitively understand the logic and power of literacy, for middle-class children from print-immersed households who unreflectively 'know' the literacy game. It misses the mark when attempting to engage outsiders to the culture of literacy. Ironically, in some respects outsiders to the mainstream literacy game may find the traditional formal literacy curriculum preferable because it is explicit about rules – what a particular unfamiliar but powerful form of language does, and the generic devices it uses to achieve its ends (Delpit, 1988; Cope & Kalantzis, 1993a).

'Transformative' curriculum attempts to cater more consciously, directly and systematically to difference amongst learners. Its rationale is simple: to improve equity outcomes, and in so doing work to ensure that one of society's

most basic promises is not downright false. Its approach is to avoid dismissing out of hand either the traditional or progressivist curriculum. Rather, it attempts to supplement these powerful and enduring curriculum forms, building on their strengths and ameliorating their weaknesses.

	Features	Advantages	Disadvantages
Content	Appropriate mix of knowledge processes: experiencing, conceptualising, analysing, applying. 'Transformative' pedagogy: starts with learner life-world experience, but takes the learner to new and unfamiliar places and in so doing realises personal and cultural transformation; a 're-constructivist' pedagogy. A focus on core concepts and powerful ways of thinking, along with a respect for the empirical world. … but this always from the starting point of learner subjectivity; transformation must affirm the journey and its life-world starting point.	Engages with learner subjectivity. A focus on learner sensibilities, capabilities, competence. Encourages multiple ways of seeing, knowing and thinking. Transcendental: deepening the knowledge brought from the life-world by taking journeys of knowing along the depth axis (non-commonsense underlying realities in everyday life) and breadth axis (unfamiliar places, cultures, circumstances, universes). Pedagogical familiarity: recruits aspects of both traditional and progressivist pedagogy; supplements rather than negates current teaching practices.	The challenge of getting the mix right for particular learners in particular learning settings. The challenge of pushing learners out of their comfort zones – risk must be in just the right measure, and remain with a zone of safety. Requires high levels of interpersonal intelligence on the part of teachers, and will succeed or fail on that. The challenge of working from learner subjectivity whilst maintaining academic discipline, intellectual rigour and meeting broader educational goals.
Media	Educational knowledge management: teacher documentation of learning processes. A layered systems approach, with teacher-curriculum developers at the core, and broader structures of departments, schools, regions and systems assuming the role of a quality filter: commissioning, advising,	Teachers and learners as the source of curriculum content. Changing the source of knowledge and the basis of authoritativeness. Capturing and sharing the phenomenal amount of excellent curriculum content that is created at the level of the learning institution, by individual teachers	Won't work without pedagogical scaffolds and systems commitment. New skills: documenting curriculum is not the same as doing curriculum. More work than just teaching a lesson, but in the longer run less work as teachers select and adapt other

	editing, refereeing and showcasing roles. Publication level 1: banks of locally created, tried and tested learning materials for teacher and learner access within a learning community. Publication level 2: building a bank of learning materials that can be shared between schools, across an education system and to the wider world.	and groups of teachers in team-taught subjects and programs. Not reinventing the wheel – showcasing excellent practices and making those experiences widely accessible. Student-oriented material provides flexibility and choice for learners; creating the possibility of autonomous learning and collaborative learning with peers, as well as scaffolded learning involving the teacher.	teachers' work rather then reinvent the wheel. Minimal computer access, Internet connectivity and electronic publishing tools.
Teaching Processes	Balanced focus on curriculum process and curriculum content. Collaborative learning: learner-leaner, learner-teacher; good learners are good teachers and vice versa; co-construction of knowledge. Changing the audience: student meanings shared across a learning community. Transparency and accountability in access to curriculum content and student work.	Peer-to-peer learning: learners work collaboratively and publish their work, and this in turn also becomes a part of the curriculum content. Non-linear learning and a range of navigation paths: students can work through units of work according to their own interest, at their own pace, and focusing on those learning processes within those units of work which best suit their needs and interests. Accessibility: learning at any time and in any place.	A dramatic change in classroom ecology. The student as 'citizen': moving out of protection of the four walls of the classroom; duty of care more challenging. Quality is harder to ensure and outcomes harder to define, particularly in terms of traditional discipline standards. Measurement challenges: what constitutes effective learning? Accountability to parents, school governance structures and the broader community becomes more complex.

Table VII. Model 3: transformative curriculum.

The intended equity effect of transformative curriculum is to achieve comparable learning outcomes without prejudice to difference. Indeed,

successful negotiation of difference is a fundamental basis for equity. You don't have to be the same to be equal. And life-world difference should not make a difference to outcomes.

The effect of traditional curriculum is selective inclusion. The effect of progressivist curriculum is selective assimilation. The intended effect of transformative curriculum is pluralism – a community of productive diversity. Diversity agendas are to be found in all three curriculum forms, sometimes articulated and sometimes not, sometimes promised but sometimes making false promises. Diversity agendas, however, are always there, and at the very least can be discovered in inarticulate action and unmentionable discriminatory effect. Transformative curriculum embodies a systematic diversity agenda whose intended outcome is equity.

Transformative curriculum starts with the premise that the life-world experiences learners bring to the educational setting are inherently and profoundly different from each other. To learn effectively, any learner has to have a sense of belonging in that curriculum – belonging by participating in ways of knowing which are valued, belonging in the content of the curriculum and belonging in the social environment of the school. At the level of social environment, an educational setting needs to be welcoming and inclusive. At the level of curriculum content, one of the key learning resources needs to be the learner's own knowledge and capabilities. And at the epistemological level, the curriculum needs to be able to recognise and build upon a variety of ways of knowing, however these might be conceptualised, in terms of 'learning styles' or 'multiple intelligences'(Gardner, 2002), for instance.

Furthermore, learning-as-transformation – the journey into new and unfamiliar places that transforms the learner – need not favour a single life-world destination. Transformative curriculum is not a matter of 'development', in which you leave your old, less developed self behind. For outsiders, this is a typical trajectory both in traditional and progressivist curricula, by medium of which successful learners find that, in order to succeed, they have to leave life-worlds that have less of a grip on power in order to move into life-worlds that have more. Rather, it is a matter of recognition of the resilience and vibrancy of marginalised as well as dominant life-worlds, and setting out to extend one's repertoire without having to deny one's identity or forsake one's roots. This is not so much a process of development by means of which the learner travels in one, preordained direction. Rather, it conceives learning as a process of expanding horizons, by which means learners extend their range of knowing and being, but not necessarily in order to leave their old selves behind or to reject original life-worlds.

This is the theory. But what might it mean in practice? Take literacy learning once again. Here we will use the example of the Multiliteracies pedagogy (New London Group, 1996; Cope & Kalantzis, 2000b; Kalantzis & Cope, 2001b), slightly reframing its terminology to be consistent with the framework of Learning Design Language introduced later in this article. Belonging to the content of curriculum involves experiential learning processes

which bring into the classroom the texts of learner life-world experience. This might be the multimodal texts of popular music, the Internet, television or adolescent magazines. Invariably, these texts will reflect highly particularised subcultures, genre, fad or fetish to which a student or a group of students is attached – heavy metal as compared to hip hop, or girls' as compared to boys' magazines. These texts may be strangers to the traditional English curriculum, but at the very least they are familiar to students, and manifestly 'real' to them. They are the texts of life-world engagement.

Alternatively or alongside this, and still deploying experiential processes, a teacher might immerse students in new texts that have at least partial purchase on their experiences and interests. This takes learners on a cultural journey away from their life-worlds, but will only work when the distance, one step at a time, is not so great as to lose them – adolescent romance in girls' magazines, for instance, leading into the *Romeo and Juliet* movie, and some time later to Shakespeare's text.

Conceptual learning processes take learners away from the life-world in another way, by unpacking the design features of the texts, otherwise simply experienced in relatively unreflective ways. Critical analytical learning processes lead learners to ask what texts are for and whose purposes they serve. And transformative or applied learning processes invite learners to create a text of their own, an expression in part of their life-world experience but also displaying evidence of a learning journey which has extended their literacy repertoire – writing lyrics for a song in their favourite genre, writing a romance based on their own interpretation of adolescence, or imaginatively transferring what they know and have learned into a new domain by creating a new and hybrid text. Their actual destinations may be different, but the distance they have travelled will be palpable.

	Traditional	Progressivist	Transformative
Pedagogy	Content focus. Facts, non-negotiable truths. Learning by rote. Teacher-dominated classrooms; authoritarian. Generic, universalistic: differences ignored.	Process focus. Inquiry and experiential learning; 'natural' and 'authentic' learning. Student-centred classrooms: teachers as facilitators. Difference recognised, if often in superficial and tokenistic ways.	Teaching and learning as dialogue. Pedagogical variations: experiencing, conceptualising, analysing, applying. Different pedagogical emphases and different sequences for different learners and areas of knowledge. Honouring life-world differences: diversity strategies of belonging and transformation. Singular ends: equity.

Curriculum	Centralised syllabus, textbooks. Traditional disciplines. Standardised tests, quantifiable results.	School-based curriculum. Locally relevant and needs-based curriculum. Context-relevant, teacher-judged assessment. Crowded curriculum.	'New basics': knowledge, capacities, sensibilities. Openness to a broad range of content. Authoritativeness in knowledge and learning. Assessment of comparabilities. Measurement for pedagogical and curriculum ends: to open out possibilities rather than seal fates. Educational 'knowledge management': documenting and showcasing exemplary teaching and learning.
Education	Hierarchical, bureaucratic.	Devolved. Developing a 'corporate' culture at the local level.	Subsidiarity and federalism. Productive diversity. Civic engagement.

Table VIII. Educational designs: past, present, future.

In a sense, this is no more than the ordinary stuff of good teaching. But this ordinary stuff is magically extraordinary when, for any student, the two conditions of learning are met. First, the learner has, notwithstanding the uniqueness of their identity, belonged in the curriculum. They have been part of the curriculum, and the curriculum has been part of them. Second, the learning has taken them into a new and unfamiliar place, changed their view of the world, and changed them in some incremental way into a person whose horizons have been broadened. Productive learning is both purposeful and transformative.

As much as these three models represent an historical trajectory in curriculum, 'back to the future' forces seem for the moment at least to be favouring traditional curriculum. Two such forces are rigidly mandated testing regimes and some versions of online learning.

Testing Times

Traditional assessment worked this way: education authorities listed the contents-to-be-covered in the syllabus; the textbooks followed the syllabus; the teachers in the classroom did their chalk-and-talk in a way which was faithful to the syllabus and the textbook; and finally the students did the tests, demonstrating (by their right or wrong answers to content-focused questions) what they had learned or not. More than just the end point of the learning process, however, the tests drove the system. They were the measure of all

value – the value of individual students, the value of their teachers and the knowledge which the tests adjudged to be known or not known.

The 'back-to-basics' people have for some time wanted us to return to old-style testing, and in most places in the world their political pressure has to a greater or lesser degree borne fruit. Regular, universal, standardised testing puts accountability back into the system, they say. It gives parents and learners clear information about how the learner is going. It makes teachers and educational institutions perform.

Actually, the new-old tests take education back to a time when the whole educational effort was focused on exam technique and the kinds of 'correct' answers which (after spending a considerable amount of mental effort into divining the intentions of the examiners) seem to produce the 'best' results. They are individualised (measuring what's in a single person's head), when real-world learning is increasingly collaborative and knowledge is seen to be possessed by groups and organisations (relying on the information and recording systems which constitute corporate memory, instead of relying on what's in individuals' heads). They rely on memory when knowledge is increasingly supported by ever-present props (books to look up, people to ask, help menus to search and help desks to contact). And they measure certain limited kinds of intelligence. To be precise, these are just those kinds of intelligence which thrive on what tests measure. Tests are an excellent measure of a person's ability to do tests, and not much else.

This kind of testing-driven education certainly produced some people who had demonstrably learned things, and the test results were the evidence of this learning. But they were things which were too often narrow, decontextualised, abstract and fragmented into subject areas artificially created by the education system. More than anything, standardised testing produced compliant learners, people who would accept what was presented to them as correct, and who had passively learned off by heart knowledge which could not readily be reapplied in new and different contexts. They may have been superficially knowledgeable (facts, theories, correct usages), but they did not have knowledge of sufficient depth for a life of difference and change.

Application of what has been learned, as well as the discovery of new ways of knowing and acting, are vital in an era that thrives on innovation and spawns complexity. The new learning of today and in the near future will be less about imparting defined knowledge and skills and more about shaping a kind of person: somebody who knows what they don't know; knows how to learn what they need to know; knows how to create knowledge through problem solving; knows how to create knowledge by drawing on informational and human resources around them; knows how to make knowledge collaboratively; knows how to nurture, mentor and teach others; and knows how to document and pass on personal knowledge (Kalantzis & Cope, 2001a).

From the point of view of difference and diversity, they key problem is that the tests of traditional curriculum favour the kind of person who does well in tests. They fail people who do not. The tautology is that tight, and the two

classes of people reflect two different kinds of life-world experience. One life-world, perennially it seems, produces people well suited temperamentally to traditional curriculum, and they seem to succeed. The alternative is not simply any other life-world, but every other life-world, and by and large, people from these places seem to fail.

Tests tend not to tell the teacher anything they do not already know about their students. Their purposes are more political than they are pedagogical. When aligned to resource distribution (rewards and punishment for school success or failure), the testing agenda is even more misguided. Not to mention the expense – the huge amounts of money being thrown at testing, and the resources devoted by schools to teaching to the tests in order to get the best performance results and meet their accountability targets. The resources would be better spent on teacher professional development and designing strategies for capturing and disseminating teacher best practice, including sophisticated assessment strategies that arise from and relate directly to the curriculum, and that value teacher professional judgment.

The terrible irony of this moment is that, precisely when old-style tests are least relevant, we are nevertheless relentlessly falling back on their supposedly definite clarity. This is partly because many of our political leaders cannot imagine an educational future which goes much beyond their own experiences of schooling. And so, in our attempt to address new problems we find ourselves using old solutions.

Digital Dilemmas

The second area in which there is evidence of a return to traditional curriculum is the area of e-learning. This is counterintuitive, at first glance anyway. What could be more future oriented than learning on a computer, or better still, a networked computer?

In a pedagogical sense, however, there is nothing necessarily new about computer-assisted and online learning environments. In fact, they can be a place for the revival of the worst of old learning environments: didactic, lock step and assessed by an impassive private audience, in this case the computer calculating the 'results' of learning and reporting these to the student and the teacher. Indeed, e-learning may well be worse than the old environments – more dogmatically univocal, linear and arbitrarily judgmental than even the most rigid of traditional teachers.

Learning objects, for instance, appear to be one of the dazzling innovations of the new e-learning world. They are built on the constructivist principles of learner engagement and demand high levels of learner interaction, or so we are told, and with such regularity that constructivism has nearly become an article of e-learning faith.

As often as they provide an exciting glimpse of the future, however, learning objects can also be depressing reminders of the past. This is when they represent a form of curriculum development akin to old-style generic and

centrally produced textbook publishing. Their creation often requires huge upfront investment, and computer coders rather than teachers are required to do the work. Some learning objects cost hundreds of thousands of dollars per hour of learner interaction to develop. The result, from a curriculum point of view, is frequently less than satisfactory. Instead of teachers actively being engaged in instructional design, they once again become recipients of learning resources that have been instructionally designed for them, by somebody else who knows better. And to justify the investment, the objects have to be sufficiently generic to reach a mass audience. As a consequence, learning resources are created that do not engage with the panoply of life-world differences – local learning settings, groups of students and individual learners.

Often, the dazzle of learning objects is not so much in the pedagogy as it is in the colour and movement. The old textbook had a page with a diagram and text showing the phases of the moon; now the students can see the earth and the moon turning, and they might even be able to use their mouse to turn the orrery depicted on the screen. The only difference is that a still object has become a moving object. Pedagogically, this is a small and insignificant step. The dazzle is particularly deceptive when, behind the colour and movement, there is a traditional pedagogy.

This is not to dismiss e-learning. Some things it does well: drills, simulations and the presentation of vivid moving images. And when learning objects are structured like computer games, they also have the virtue of requiring the learner to be 'in' the narrative, not unlike the first-person shooter games, whose allure is to place the player at the centre of the story. There is much in e-learning that is ingenious and inherently attractive.

Still, difficulties remain. Learning objects are dependent on computer access which all-too-neatly sorts students onto one side or other of the digital divide, not just between one school and another but also between learners who have computers at home and those who haven't. This kind of learning is also machine dependent – if you're not tethered to the machine, you're not going to benefit from the learning object.

The learning environments of transformative curriculum, on the other hand, can be created without fancy technologies – with good curriculum design, on paper and with intensive oral interaction. Ideal uses of technology involve mixed media, employing the Internet and computers as but one element in a learning environment whilst also providing channel alternatives – print, oral communication and task-focused group interaction.

What matters most is the design of learning, and the curriculum architecture in which learning sits. What is the source of curriculum? How is it designed to mesh with the differences amongst learner life-world experiences and subjectivities? What is the nature of teacher-teacher, teacher-learner and learner-learner interaction in the fabrication and realisation of curriculum?

Digital learning objects are just another 'input', in much the same way that the chapter of a textbook might be used as an input. Learning design is much more than the construction of inputs. It connects a knowing expert – the

teacher as knowledge worker – and learners brimming with all manner of interests and purposes. The inputs are incidental to this process. The real issue is one of engagement, and this will only occur in conditions of belonging and transformation, where the engagement carries the learner, one step at a time, distances that are appropriate to their starting point. None of this is inherent in the inputs, and that applies to a learning object as much as it does to a textbook chapter. The keys are the level of engagement, the datum point of the learner's life-world, the dynamics of motivation, the time spent on task (sustained engagement), the success in expanding horizons and the effects of personal transformation.

The principal practical questions for curriculum are how to develop and share a broad range of curriculum units capable of engaging with widely different student interests and needs (rather than generic 'activities'), how to track 'performance' measured as distance travelled (relative to the learner rather than the input), and how to account for the learner's learning to the learners themselves, to parents, to the school, to the education system and to the broader community.

Notwithstanding the limitations of learning objects, digital technologies do afford some exciting opportunities in developing transformative curriculum. Imagine, for instance, if teachers wrote up their lessons on an e-publishing platform which provided clear scaffolds for writing up curriculum and allowed them to share their work with other teachers in and beyond their own department or even their own school, with their students and with the wider learning community. This would not require computer access for all, as documents could simply be downloaded and printed out by individual users, or multiple copies produced through a print-on-demand interface. Then it would be possible to create curriculum which genuinely engaged with local life-worlds, and without every teacher having to reinvent the wheel. This could include material on local history, local communities and the local natural environment, or learning though literacy texts representing a flash in time and a narrow slice of peer, popular or media culture.

It would also be possible to build an ever-growing bank of lessons which catered to the needs of different groups of students within the school, depending on interest, ability level and the like – and then, individual students and groups of students could work through units of work that suited them, and at their own pace. This could also be a space for any place, any time learning, as well as learning collaboratively with and through peers and the community. It could unshackle learning from the linear and monological topic-by-topic, chapter-by-chapter curriculum, in which teacher talk can succeed at little more than reaching for the unhappy medium that is the middle of the class. It could be the beginnings of a curriculum that genuinely catered to difference.

This is a practical vision for transformative curriculum. What, then, are the pedagogical processes that lie at the heart of transformative curriculum?

Pedagogy is …

Within education, curriculum defines an area of knowledge, such as a discipline area or a domain of practical competence. Within curriculum, pedagogy addresses the microdynamics of learning.

Theories of pedagogy are often grounded in the cognitive or psychological stuff of our natures – stuff which we need to take into account, for sure, but which (by nature) we can't do that much about.

To complement these theories, we are proposing an epistemologically grounded theory of pedagogy. Its focus is microdynamics of knowing, or how knowing happens. It is also a theory of pedagogy that is culturally grounded in the types of people we have become through knowing. Culture is the sum total of what we have learned from the context in which we have become knowing people. Culture is what is left by learning, either from the accretions to our natures which have been the result of the everyday learning that is an integral part of life-world experience, or the residues left after engagement with formal education. Culture is a product of human invention and socialisation. Knowing and culture are things we can do more about than our natures, although of course we would not want to defy our natures too glibly. Knowing is the process of connecting the stuff of the mind to the stuff of the world. Knowing is a form of action and to know in this active sense is to learn. Learning is a relationship between the knower and the knowable, in which the learner discovers that the knowable can in fact be known and is perhaps worth knowing.

As people are different and act differently, so too they have come to know in different ways and they know different things. As for ways of knowing, it might be by experiencing (deep understandings, intuitions or judgments based on extended immersion in a particular situation), or by conceptualising (knowing the underlying concepts and theories of a particular discipline, system or vocation), or by analysing (linking cause with effect, interests with behaviours, purposes with outcomes), or by applying (doing something again or anew). These are some of the ways in which knowing is done, and some people are more inclined to learn in one way than in another. As for the different things people know, these are the facts, the values, the interests and the sensibilities that they have learned in their peculiar world.

Effective pedagogy employs ways of knowing that are capable of drawing the knower closer to the knowable. It also uses learning contents which have purchase on learner life-world and educational experience. These may be at times familiar or strange, but never so strange as to be unknowable or alienating in a counterproductive way. Effective pedagogy carefully calibrates the distance between the learner's known life-world and the transformational possibilities of the to-be-known. It is the process of engaging with the stuff of the world which affirms (belonging) and extends (transformation) the learner's framework for knowing.

So, pedagogy is a knowledge process. But what is knowledge? If knowledge is the connection between the stuff of the mind and the stuff of the

world, we could view this connection narrowly or broadly, depending on the lens we choose to use to view (and thus define) knowledge. Here is a definition of knowledge as seen through a narrowly focused lens: knowledge is data, the raw material of everyday experience, the empirical world, the world as directly apperceived by our senses, the tangible world of hard-to-deny facts. And here is knowledge seen through a slightly wider lens: knowledge is information; it is data plus the synthesising mental processes that have been applied to that data as it has been aggregated, sorted, categorised and verified. We have information when the stuff of the world has been strung together into stories, reports, counts, illustrations, files and the like.

Yet there's a broader sense in which we are immersed in data and information, to be sure, but in which knowledge is more than just mental processes; it is the product of our actions and our propensity as humans to make meaning. In this broad sense, knowledge is acting and meaning, as well as thinking.

Acting

Knowing is founded on 'real things', including actual-life experiences (being in the thick of things) and practical applications (having to get things done). In this practically grounded world, the cognitive is itself an integral part of the action. And even when somewhat removed from the thick of things and the practical business of getting things done (let's theorise the atom or critique culture, for a moment), the cognitive is itself a form of action – something you do in a place and that takes time and effort. It is a peculiarly human and distinctively cultural act to take the data and information of the world and apply to it the cognitive processes of abstraction (making generalisations which encompass numerous particulars), inference (drawing conclusions), interpretation (drawing together what's significant information from a mass of information), critique (assessing the validity and truth claims) and transfer (applying conclusions drawn in one situation to other possible situations).

Meaning

We transform the world, and ourselves, by making meaning in the world. Meaning is the process of signifying, representing or intending. Meaning may be a way of seeing (selecting focal points of interest by naming them in contradistinction to other points). Or it may be a matter of purpose (meaning to ...), action (meaning through ...) or disposition (meaning by ...).

Knowing is the business of engagement with the stuff of the world. It is more than thinking, although there is no engagement without thinking.

There are four fundamental ways of knowing, four processes of acting and meaning: experiencing, conceptualising, analysing and applying. In these sites of acting and meaning, epistemology (theories of knowledge) meets pedagogy (theories of learning). Each of these four knowledge processes is

more or less equivalent to one of the curriculum orientations in the multiliteracies pedagogy (Cope & Kalantzis, 2000b; Kalantzis & Cope, 2001b) (see Table IX).

When learning is by design, to borrow a musical metaphor, these four ways of knowing become 'movements'. There is no necessary order to these movements, nor need there be four. However, the concept of movement is intended to indicate an intrinsic dynamism. This dynamism manifests itself in several ways. First, unlike everyday learning in the life-world, these are active and explicit moves – conscious at the very least, and also more or less planned and systematic. They are orchestrated. Second, they are not static and clearly defined things. They have a textual dynamic designed into them. Each movement leads into another. Pedagogy is composed, arranged, conducted and performed as a whole text. Third, each movement also has an internal dynamic. It has its own opening, body and close. This internal dynamic, it seems, almost has a life of its own, telling of having come from somewhere and possibly leading somewhere. And that somewhere is often another knowledge process or movement. In fact, each movement begs each other's perspective, and particularly as it reaches its close. This is the point of transition from one movement to another, and each of the many possible transitions (from conceptualising to experiencing, or applying to conceptualising, or analysing to applying, for instance) is quite unique.

Knowledge 'Movements'	Equivalent Multiliteracies Curriculum Orientations
Experiencing	Situated Practice
Conceptualising	Overt Instruction
Analysing	Critical Framing
Applying	Transformed Practice

Table IX. Pedagogical processes.

A particular process of knowing may go through any number of movements, and any number and varieties of transition from one movement to another, whilst nevertheless sticking to the same theme. To stay with our musical metaphor, each movement is a variation on a theme. Transitions might come rapidly or slowly, and so movements might be frequent or be a long time coming. Movements are, in other words, scalable, from short movements and frequent transitions within classroom discourse to slower movements and less frequent transitions within a longer learning experience that lasts days or weeks or months. Movements and transitions can also be regular or irregular, differing in tempo and varying in modulation.

There is, however, a basic 'unit of capacity' or granularity to a pedagogical process, and that is the theme the variations have been designed to explore. There is a point at which a piece of knowledge is too small a fragment to be called pedagogy, a design for learning: a fraction of a movement, for instance, or a movement that is left isolated and unfulfilled. Such fragments

might be used for learning, but they are not learning designs. They could only be characterised as fact, data, input or information.

There is, on the other hand, a point at which a sequence of Knowledge Movements has attained a certain kind of completeness, even if only momentary, and this relative completeness deserves the name 'pedagogy'. We will call this basic unit of capacity a 'learning element'. Speaking in conventional pedagogical terms, this basic unit of capacity might be the chapter of a textbook, or a sequence of lessons. To speak in textual terms now, pedagogy is a genre, a whole text which has characteristic structure and whose dynamic can be defined and described by tracing its sequence of movements. This beginning is followed by this middle, is drawn to a conclusion with this end, and by then the range of useful variations on a particular theme will have been explored.

Expanding on this, various aspects of the main Knowledge Movements can be identified follows (Figure 2).

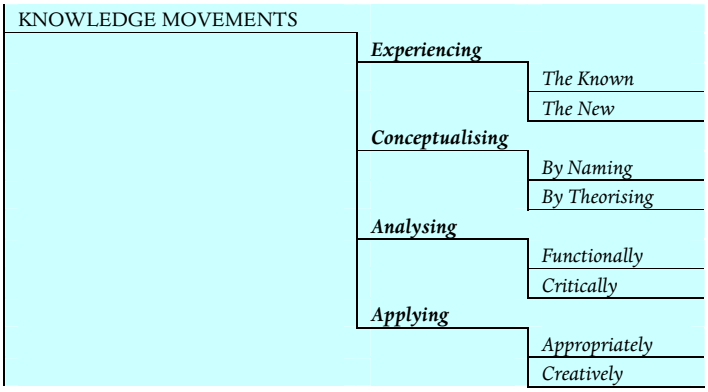

Figure 2. Pedagogy as knowing in action.

Experiencing

… is a knowledge process involving learning through immersion in the real, everyday stuff of the world: personal experience, concrete engagement and exposure to evidence, facts and data. This is one of the primary emphases of progressivist curriculum.

Experiencing occurs as an unexceptional matter of course in the life-world – and the learning that is its consequence tends to be unconscious, haphazard, tacit, incidental and deeply endogenous to the life-world. By comparison, the experiencing that is part of pedagogy (learning by design) in its nature tends to be far more conscious, systematic, explicit, structured and exophoric. It assumes a stance in which the experiencing refers to a place

outside of the educational setting – by means of textual, visual or audio representation, by simulation or by excursion, for instance.

There are two, quite distinct ways of experiencing:

- *Experiencing the Known* ... is a process which draws on learner life-world experience: building upon the learning resource of prior knowledge, community background, personal interests, individual motivation, the everyday and the familiar.
- *Experiencing the New* ... is a process in which the learner is immersed in an unfamiliar domain of experience, either real (places, communities, situations) or virtual (texts, images, data and other represented meanings). The 'new' is defined from the learner's perspective: what is unfamiliar to them, given their life-world origins. To make sense adequate to productive learning, however, the new at least has to have some elements of familiarity; it has to make at least half sense; it must make intuitive overall sense. For learning to occur, it also needs to be scaffolded; there must be means for the parts that are unfamiliar to be made intelligible – with the assistance of peers, teachers, textual cross-references or help menus, for instance. The result is a journey away from the life-world along a breadth access, taking a cross-cultural journey.

Conceptualising

... is a knowledge process involving the development of abstract, generalising concepts and theoretical synthesis of these concepts. It involves moving away from life-world experience along a depth axis – examining underlying structures, causes and relationships, many of which may be counterintuitive and challenge commonsense assumptions. This is one of the primary emphases of traditional curriculum: teaching abstract concept definitions, rules and disciplinary knowledge frameworks.

Conceptualising occurs in two ways:

- *Conceptualising by Naming* ... is a process involving the development of abstract, generalising terms. A concept not only names the particular; it also abstracts something general from that particular so that other particulars can be given the same name despite visible and situational dissimilarities. In child development, Vygotsky describes the development of concepts in psycholinguistic terms (Vygotsky, 1978; Cope & Kalantzis, 1993a, b). Sophisticated adult thinking equally involves naming concepts (Luria, 1976).
- *Conceptualising by Theorising* ... is a process by means of which concept names are linked into a language of generalisation. Theorising involves explicit, overt, systematic, analytic and conscious understanding, and uncovers implicit or underlying realities which may not be immediately obvious from the perspective of life-world experience. Theorising is typically the basis of paradigmatic schemas and mental models which form the underlying, synthesising discourse of academic discipline areas.

Analysing

... is a knowledge process involving the examination of constituent and functional elements of something, and an interpretation of the underlying rationale for a particular piece of knowledge, action, object or represented meaning. This may include identifying its purposes, interpreting the perspectives and intentions of those whose interests it serves, and situating these in context.

Analysing takes two forms:

- *Analysing Functionally* ... is a process of involving the examination of the function of a piece of knowledge, action, object or represented meaning. What does it do? How does it do it? What is its structure, function, connections and context? What are its causes and what are its effects?
- *Analysing Critically* ... is a process of interrogating human intentions and interests. For any piece of knowledge, action, object or represented meaning we can ask the questions: whose point of view or perspective does it represent? Who does it affect? Whose interests does it serve? What are its social and environmental consequences? This is the characteristic primary orientation of critique or critical pedagogies.

Applying

... is a knowledge process involving active intervention in the human and natural world, learning by applying experiential, conceptual or critical knowledge – acting in the world on the basis of knowing something of the world – and learning something new from the experience of acting. This is the typical emphasis in the tradition of applied or competency-based learning.

Applying occurs in unexceptional ways in the everyday realm of the life-world. We are always doing things and learning by doing them. As was the case with experiencing, we learn by application in the life-world in ways which are more or less unconscious or incidental to the process of application; in other words, in ways which are endogenous to that life-world. Application in pedagogy is always a process of more or less consciously taking knowledge out from an educational setting and making it work there. In this sense, it is still exophoric. Applying is about as real as education gets, albeit not as endemically real as the unconscious applications that are of the life-world itself.

Applying can occur in two ways:

- *Applying Appropriately* ... is a process by means of which knowledge is acted upon or realised in a predictable or typical way in a specific context. Such action could be taken to match normal expectations in a particular situation, for instance: objects are used in the way they are supposed to be, or meanings are represented in a way which conforms to the generic conventions of a semiotic setting. Never does this involve exact replication or precise reproduction. It always involves some measure of transformation,

reinventing or revoicing the world in a way which, ever-so-subtly perhaps, has never occurred before.

- *Applying Creatively* ... is a process which takes knowledge and capabilities from one setting and adapts them to quite a different setting – a place far from the one from which that knowledge or capabilities originated, and perhaps a setting unfamiliar to the learner. It involves taking something out of its familiar context and making it work – differently perhaps – somewhere else. This kind of transformation may result in imaginative originality, creative divergence and generative hybridity.

The focus here is on ways of knowing (epistemology) and knowing as meaning and action, rather than upon inherent mental capacities (cognition, psyche) – although of course, there can be no knowing without thinking and psychological processes. Cognition and psychology are the raw materials of learning. At the heart of learning, however, are knowledge processes and these entail meaning and acting. Or, more precisely, ways of meaning and acting in the plural. There are multiple ways of knowing. We have identified four: experiencing, conceptualising, analysing and applying. The particular mix of these four will reflect differences amongst and between:

- *Cultures:* some cultures, subcultures, institutions, situations or communities of practice may be driven more by one way of knowing than others – they may tend towards relatively unreflective, passive immersion of participants in experience (such as tourism); or relatively disengaged conceptual work (such as some moments in science and theology); or relatively critical interrogation of purposes and interests (such as politics); or highly practical activity (such as salesmanship).
- *Learners:* different individuals may feel more comfortable with, or inclined to use, one learning style in preference to another: learning by immersion in experience; learning by getting a big picture conceptual overview; learning by figuring out what something is for; learning whilst getting done the practical things that have to be done. These need not be the sum total of a learner's knowledge processes, but they may be their preferred starting point.
- *Knowledge domains:* some content or discipline domains lend themselves more readily to one way of knowing over others: experiencing in the case of learning to read; conceptualising in the case of chemistry; analysing in the case of social studies; applying in the case of learning a sport or a trade. Although these may well be the predominant emphases of a knowledge domain, they will rarely be the sum total of learning.
- *Pedagogies:* some forms of instructional design and teaching tend to emphasise certain knowledge processes in preference to others. Western knowledge systems vacillate between objectivism (grounding in the 'facts' of external experience, the 'findings' of theory and the rights and wrongs of appropriate application) and subjectivism (grounding in the 'perspectives' of personal experience, the relativity of interests, and the creativity inherent in the process of applying what one knows). Broadly speaking, objectivism is

the basis of what we have called traditional curriculum and subjectivism the basis of progressivist curriculum.

In the first instance, we would not presume to pass judgment upon cultures, learners, knowledge domains or pedagogies. Each seems to suit its own.

It is important, however, that teachers and learners are knowing participants in their knowing. They should be as clear about their ways of knowing as they are about what they are knowing. Not only should they be becoming more knowing, they should also be becoming more knowingly knowing.

And when they are clear about their ways of their knowing, they may consciously choose to broaden their repertoire of ways of knowing (or choose not to, but at least choosing consciously). Transformative curriculum is not in itself defined by the choice to broaden the repertoire of ways of knowing, although when that choice is made, it is evidence of transformative curriculum at work. Rather, it is the business of knowingly making the choice amongst the range of possible knowledge processes.

The four knowledge processes are presented as a conceptual schema, and by means of this schema, the flavour of a particular pedagogy can be identified, and then perhaps also justified. The schema is a way of identifying the epistemological underpinning of a particular piece of learning. Translating this into curriculum, this schema can be embodied as a template or scaffold for designing, documenting and publishing learning content – not in a single, prescribed way, but in any way that suits a culture, a group of learners, a knowledge domain or a pedagogical orientation.

Pedagogy into Practice

Following are some examples of how the four Knowledge Movements play out in four classrooms with teachers involved in the Multiliteracies project: an early literacy/science class in Bamaga (Cape York), Queensland (Figure 3); a junior secondary science class in Townsville, Queensland (Figure 4); a middle years social studies class in Keilor Downs, Melbourne (Figure 5); and a junior secondary English class in Townsville, Queensland (Figure 6).

KNOWLEDGE MOVEMENTS

Experiencing

The Known

- Coconut trees pervasive in the local environment.

Conceptualising

By Naming

- Naming 'sid' (not a commonsense name for coconut), 'sut', 'rut'.
- Scientific labelling: multimodal naming.

By Theorising

- Connecting the concepts and generalising: 'Da rut i go andaun'.

Analysing

Functionally

- Why do we need to know about coconuts? (Dangers when growing in public places.)

Critically

- Facing pages of text: Torres Strait Kriol (right) and 'standard English' (not shown). When and to whom do you speak about coconuts in Kriol? When and to whom in English? (The council workers about moving dangerous ripe coconuts from a tree.)

Applying

Appropriately

- The scientific text (right).

Creatively

- Find out more about coconuts from your parents (Kriol).
- Visit the council and find out about the ways in which they manage the danger of falling coconuts (Council English).

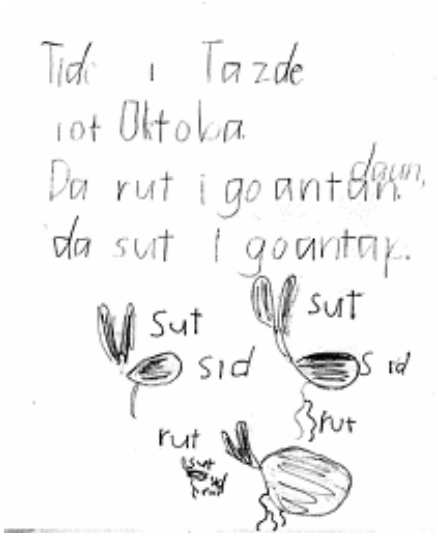

Figure 3. Coconuts: Early Literacy/Science Class, Bamaga (Cape York), Queensland.

KNOWLEDGE MOVEMENTS

Experiencing

The Known

- Everyday uses of electricity: what does it do in our lives?

The New

- Cyclone simulation: what would happen if there was no electricity for a while?
- Experimentation with simple circuits.

Conceptualising

*By Naming*Scientific concepts: current etc.

- Electrician's concepts: circuit diagrams, and the way of naming the parts symbolically, visually.

By Theorising

- Developing a scientific theory which explains what electricity is.
- Putting the electrician's concepts together into a circuit diagram.

Analysing

Critically

- Contrast everyday domestic descriptions of electricity, with scientific and electrician's descriptions. How and why are they different?

Applying

Creatively

- Create a burglar alarm.
- Draw a circuit diagram to explain how it works to an electrician.
- Explain what's happening in scientific terms on a science program
- Provide your parents an introduction in everyday language on how the alarm works

Figure 4. Junior Secondary Science Class, Townsville, Queensland.

KNOWLEDGE MOVEMENTS

Experiencing

The New

- Visit to local Council to investigate local government elections.

Conceptualising

By Naming

- Framing (how the image is of the candidate is represented).
- Authorisation (a specific part of an election leaflet)

By Theorising

- Putting the concepts together to describe the characteristic features of a political flyer.

Analysing

Functionally

- What the political flyer tries to achieve, its purpose.

Critically

- Selectively says good things about a candidate.

Applying

Appropriately

- Create a political flyer.

Marie Quinne and her year 5 class

Figure 5. Middle Years Social Studies Class, Keilor Downs, Melbourne.

KNOWLEDGE PROCESSES

Experiencing

The Known

- Bring in your favourite CD.

The New

- Listen to a piece of popular music in an unfamiliar genre.
- Read magazine reviews of music: magazines for different genres.
- Survey other students on favourite music genre.

Conceptualising

By Naming

- Text features: lyrics.
- Musical features.
- Visual features: video clip.

By Theorising

- How the various features of meaning work together to create a song in particular genre.

Analysing

Critically

- What kinds of people listen to what kinds of music: heavy metal, hip hop, techno, folk etc?
- How do the record companies market music? How well do they serve the interests of artists?

Applying

Appropriately

- Write a music review.

Creatively

- Write song lyrics, music, perform, film video clip.

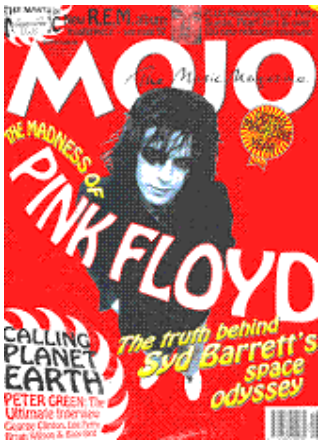

Figure 6. Junior Secondary English Class, Townsville, Queensland.

Learning Design Language

The Knowledge Movements described and exemplified above form the core of Learning Design Language, a curriculum research and development initiative led by the authors of this article.

Practically speaking, Learning Design Language is a set of publishing tools by means of which teachers can document the choices made in the construction of learning experiences, and capture curriculum content so that it can be shared with learners and other teachers. It is an attempt to develop a vocabulary of learning that can be used by teachers for the documentation of locally developed, difference-sensitive curriculum.

Theoretically, it builds upon and significantly extends insights gleaned from a series of long-running curriculum research and development projects: the Social Literacy project from the late 1970s until the late 1980s (Kalantzis & Cope, 1989); the Genre Approach Literacy in the late 1980s and early 1990s (Cope & Kalantzis, 1993a, b) and the Multiliteracies pedagogy developed from the mid-1990s (Cope & Kalantzis, 2000a, b).

Learning Design Language identifies three levels of analysis, and proposes three levels of documentation:

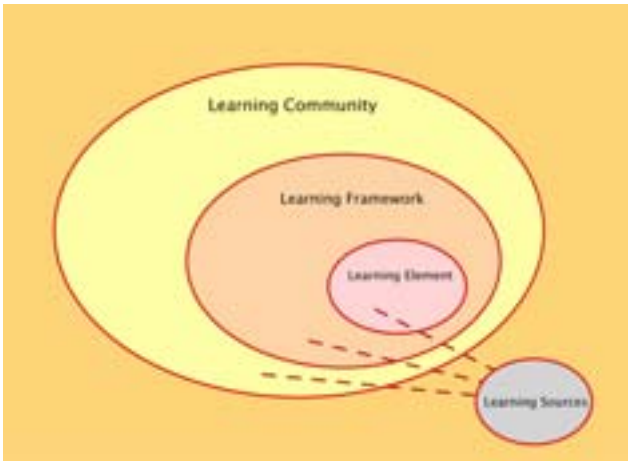

Figure 7. Levels of documentation.

Pedagogy	Learning Element
Learning is a process of knowing, and knowing is a form of action. In learning, a knower positions themselves in relation to the knowable, and engages (by experiencing, conceptualising, analysing or applying, for instance). A learner brings their own person to the knowing, their subjectivity. When engagement occurs, they become a more or less transformed person. Their horizons of knowing and acting have been expanded. Pedagogy is the science and practice of the dynamics of knowing. Assessment is the measure of pedagogy: telling of the shape and extent of the knower's transformation.	Documenting pedagogy: a Learning Element is a coherent bundle of learning activities and tasks, such as a lesson or a short string of lessons. A Learning Element can be documented as a teacher resource, a learner resource, or both in parallel. It is the equivalent of a textbook chapter or lesson plan.
Curriculum	Learning Framework
In places of formal and systematic teaching and learning, pedagogy occurs within larger frameworks in which the processes of engagement are given structure and order, often defined by content and methodology, hence the distinctive 'disciplines', such as 'literacy', 'numeracy', 'science', 'history', 'social studies', 'economics' or 'physical education'. Evaluation is the measure of the effectiveness of curriculum.	Documenting Curriculum: a Learning Framework ties together a coherent bundle of Learning Elements, such as a whole course, a subject, a discipline-based area of knowledge or training program. It can be documented as a teacher resource, a learner resource, or both in parallel. It is the equivalent of a student textbook, teacher curriculum resource book or teaching program plan.
Education	Learning Community
Learning happens in community settings, sometimes specially designed as such (institutions of early childhood, school, technical/vocational, university and adult learning), and sometimes takes informal or semiformal forms within settings whose primary rationale is commercial or communal (such as workplaces, community groups, households or public places as locations of learning). Research tells us how and how well education works in a particular setting.	Documenting Education: a Learning Community document might write up innovative practices, research results and evaluation outcomes in a learning community, or the application and evaluation of a program consisting of a bundle of Learning Frameworks.

Table X. Learning Design Language: the overall framework.

Outside of these three levels of documentation, there may also be Learning Source. A Learning Source is something that is referred to in a Learning Element, Learning Framework or Learning Community document. This could include images, short texts, chapters of books, digital learning objects, multimedia resources, databases, websites and the like, uploaded and archived or, in the case of external digital sources, hyperlinked to a Learning Element, Learning Framework or Learning Community document.

Learning Element

The Learning Element level consists of core Knowledge Movements, described in some detail in the earlier pedagogy section of this article.

Wrapped around these knowledge processes are Learning Objectives and Knowledge Assessment, by means of which the effectiveness of the Learning Element in meeting its Learning Objectives might be met. In each of the Learning Objectives and Learning Assessment areas two fundamental questions are raised – who defines the objectives and outcomes, and what are they?

The 'who' question might be answered as the learners themselves, the teacher or the instructional designer (the author of the Learning Element, for instance) – or it might be an outcome of collaboration and negotiation between one or more of these parties, each of who has an 'interest' in the Learning Element.

The 'what' question might be framed in terms of the four Knowledge Movements – as Knowledge Objectives before engaging in the Knowledge Movements and as Knowledge Assessment during or after the engagement with the Knowledge Movements.

Wrapped around these again are entry and exit points into a Learning Element. The Learning Focus defines the Knowledge Domain (subject or discipline area), Scope of Learning (theme or topic), Learning Level (stage, year or age) and Prior Knowledge. This last area could be defined in terms of the four Knowledge Processes: Prior Experience, Prior Concepts, Prior Analyses and Prior Applications. It could provide a basis for learning which stays within the learner's zone of proximal development (belonging in the learning), and also provide a measure at the point of assessment of the extent to which the envelope of that zone has been broadened (learning as transformation).

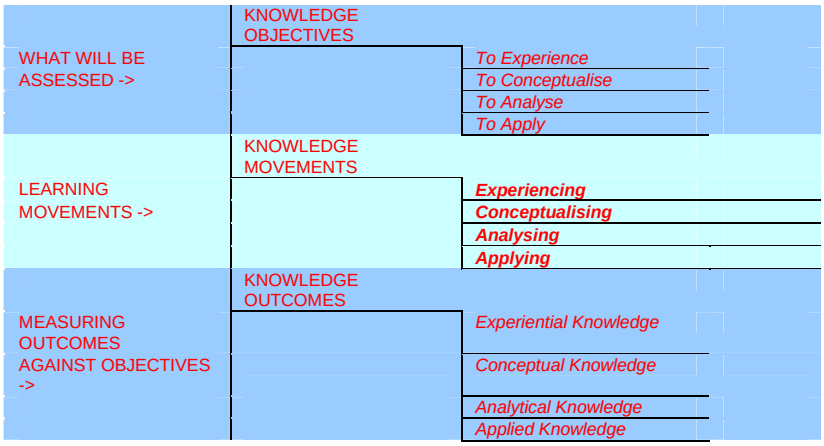

Figure 8. A focus on pedagogy (1).

The exit point of a Learning Element raises the question of Learning Pathways, or what the next Learning Element will be. In fact, there are two questions: who determines the pathway, and what is the pathway. The 'who' question might be answered by the learner (what they'd like to do next), the teacher (when the learning is program driven) or the instructional designer ('now move on to Chapter 4'). Or the pathway might be determined by the negotiated process of pathway co-design.

Learning Design Language presents this as a range of possibilities at the Learning Element level, not at all prescriptive and ordered in no necessary sequence. The taxonomic representation above is ordered the way it is for clarity of exposition. Different choices of elements and different sequences will determine the particular pedagogical flavour of a set of learning experiences. For instance, a traditional curriculum might focus on a Learning Focus and Learning Objectives determined by the instructional designer and the teacher; the Knowledge Objectives might be best categorised as To Conceptualise; the Knowledge Movements may primarily involve factual Experiencing the New and the Theorising required of a particular academic discipline; the Knowledge Assessment may be by means of a test, either one that comes with the course materials in the form of an assessment task developed by an instructional designer or a teacher-generated test.

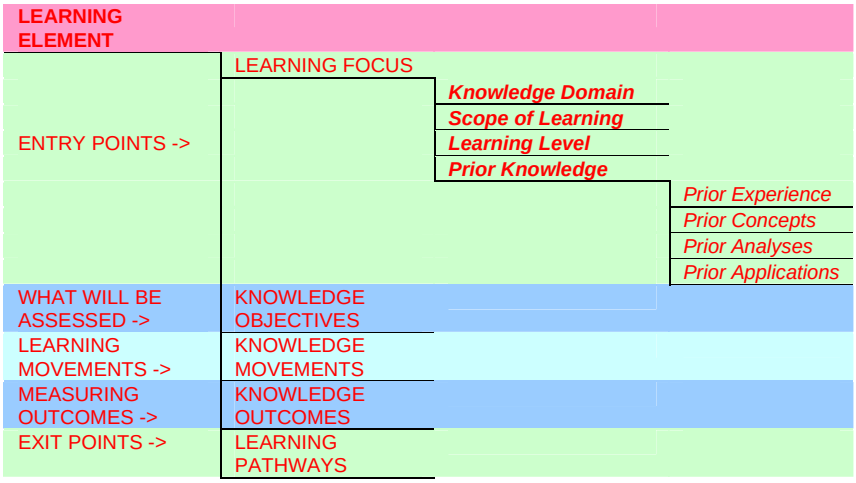

Figure 9. A focus on pedagogy (2).

And all this may well be for the best of reasons, related to the nature of the subject-matter, the learning styles of the students or the 'rigorous academic' branding of the educational institution, for instance. Progressivist curriculum will have different emphases. And transformative curriculum will traverse a broader pedagogical range.

The above taxonomy reflects the way in which the Learning Design Language concept-tags might be represented in a teacher resource. They perform the function of 'marking up' the pedagogy, and as such are made visible as section headings, labels or pedagogical flags. Learning Design Language speaks of learning in the professional language of teaching.

In the case of a learner resource, the concept-tags may need simplification if they are to be intelligible to particular groups of learners. When simplified, they still describe the same underlying aspects of learning. The following paraphrase of the Learning Design Language concept-tags has been pitched at about the middle of the primary school.

LEARNING ELEMENT	LEARNING SPACE
LEARNING FOCUS	WHAT WE'RE LEARNING
Knowledge Domain	***Our Subject***
Scope of Learning	***Our Topic***
Learning Level	***Our Class***
Prior Knowledge	***What I Already Know***
Prior Experience	*Places I Have Been*
Prior Concepts	*Things I Have Thought About*
Prior Analyses	*Views I Have*
Prior Applications	*Things I have Done*
KNOWLEDGE OBJECTIVES	WHY WE'RE LEARNING
To Experience	*By Looking*
To Conceptualise	*By Thinking*
To Analyse	*By Checking*
To Apply	*By Doing*
KNOWLEDGE MOVEMENTS	DOING THINGS
Experiencing	***Look***
Experiencing the Known	*Your Place*
Experiencing the New	*Other Places*
Conceptualising	***Think***
Conceptualising by Naming	*Name*
Conceptualising by Theorising	*Connect*
Analysing	***Check***
Identifying Functionally	*What For*
Identifying Critically	*Who For*
Applying	***Do***
Applying Appropriately	*Do it Right*
Applying Creatively	*Be Creative*
KNOWLEDGE OUTCOMES	HOW WELL HAVE YOU LEARNED?
Experiential Knowledge	*Things*
Conceptual Knowledge	*Ideas*
Analytical Knowledge	*Views*
Applied Knowledge	*Doings*
LEARNING PATHWAYS	MOVING ON

Figure 10. Learning Element concept-tags with translation to approximately mid-primary level.

Learning Framework

The Learning Framework level of documentation pieces Learning Elements together into a coherent program of learning. The heart of this level is the Learning Elements Map, a place where Learning Elements are ordered. Typically, traditional curriculum ordered Learning Elements in a linear way, topic by topic, week by week, chapter by chapter. Learning Design Language is perfectly capable of this kind of mapping, which might simply take the form of a numbered list.

However, in learning communities of difference, a Learning Elements Map may be a place where students and teachers negotiate alternative navigation paths, depending on the dynamics of life-world difference. Learners might access Learning Elements which suit their needs, interests and abilities, and which stretch these in just the right measure.

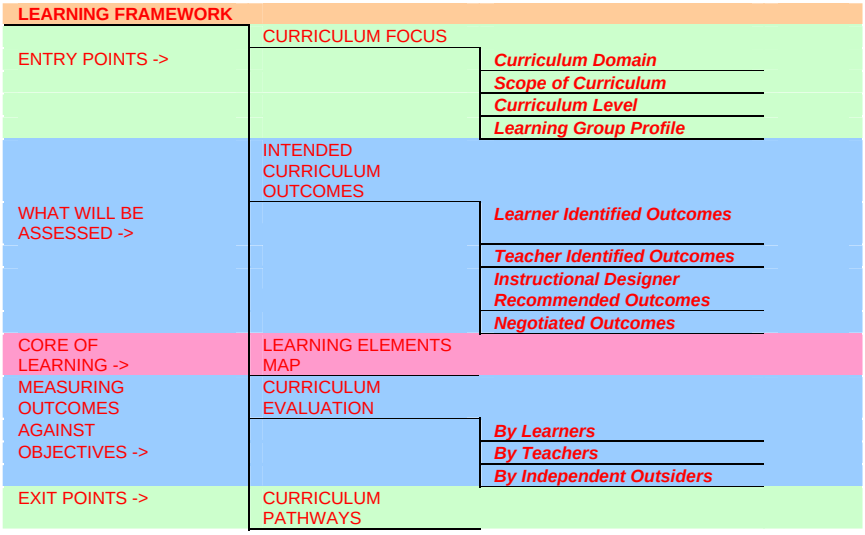

Figure 11. A focus on curriculum.

The Learning Elements Map may be preceded by the preliminaries of Curriculum Focus, such as defining the Curriculum Domain (the subject or discipline), the Scope of Curriculum, the Curriculum Level and the Learning Group Profile. It may also be preceded by an outline of Intended Curriculum Outcomes, and these could be defined in terms of Learner Identified Outcomes, Teacher Identified Outcomes, Instructional Designer Recommended Outcomes or collaboratively resulting in Negotiated Outcomes.

And the Learning Elements Map may be followed by an outline of the processes of Curriculum Evaluation, or an overall analysis of whether the

Learning Framework meets its objectives. This may involve learners, teachers or independent outsiders. Here, the key question to be addressed is to what extent did it meet the aspirations articulated in the Intended Learning Outcomes?

Finally, there's the question of Curriculum Pathways: what would be an appropriate follow-on Learning Framework or subject within the scope of an overall learning program?

Learning Community

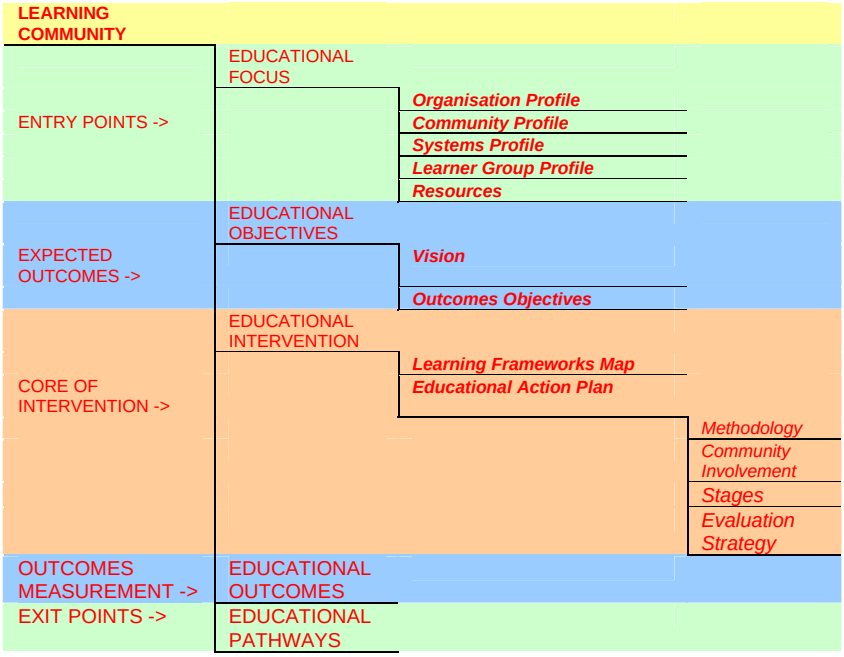

Figure 12. A focus on education.

Documentation at the Learning Community level frames education as a process of active engagement with learners, or as reflective practice of 'action research'. What is the Educational Focus: Organisation Profile, Community Profile, Systems Profile, Learner Group Profile and available Resources? What are the broad Educational Objectives: Vision and Outcomes Objectives? What is the nature of the particular Educational Intervention that is being documented, be that a Learning Frameworks Map in the case of documenting an existing or new learning program, or an Educational Action Plan in the case of an organisational development, community capacity building or action research activity? In the case of an Educational Action Plan, aspects of the documentation process may include descriptions of Methodology, Community

Involvement, Stages and the Evaluation Strategy for the intervention. At the end of the process, actual Educational Outcomes can be documented, as well as Educational Pathways – such as recommendations for possible follow-on interventions.

Learning Design Language in Practice

Learning Design Language is not a pedagogy. It is not a singular and definitive answer to the perennial question of the structure of effective learning. Rather, it is a series of building blocks for creating pedagogies, empathically in the plural. These pedagogies can and will vary according to the nature of a discipline, the learning styles of a student and the learning philosophy of a school or a teacher. Learning Design Language is no more than a series of flags or headings to assist in the process of documenting learning experiences, and share these beyond the otherwise largely ephemeral experience of classroom pedagogy, curriculum implementation or the life of an educational community.

An instructional designer, teacher, educational administrator or learner can use these tags as a kind of scaffold as they document and publish their learning innovation, instructional design or learning experience. Any of these tags can be used, in any combination and in any order. This is not to say that any and all combinations of tags will produce equally effective or valid learning experiences or adequately document the design of educational interventions in a particular learning community. Rather, it is to emphasise the fact that Learning Design Language is no more than a set of recombinable concepts which will allow alternative frameworks for documenting innovation and curriculum. It is an open language for documenting a wide range of possible pedagogies, possible curricula and possible educational interventions.

Following are a number of key principles underlying Learning Design Language.

Learning Design Language is not a pedagogy. Rather, it is a language of education, curriculum and pedagogy. It aims to name as comprehensively as possible the various aspects of learning.

Learning Design Language does not prescribe or even recommend a correct pedagogy. Rather, it provides a language by means of which the defining features of pedagogy – any pedagogy, every pedagogy – can be distinguished and named. It can name the prominent aspects of traditional curriculum, and indeed help identify it as such – a curriculum which is heavily skewed to one kind of experiential learning (immersion in new empirical experience) and conceptual learning (the concept definitions and theories that tie a discipline together). It can do the same with progressivist pedagogy, which is often heavily skewed towards the experiential. In certain circumstances, these choices of pedagogy may be entirely appropriate and defensible – as in the cases of Koranic learning and the subject-matter of elementary particle physics already mentioned.

Learning Design Language consists of a number of concept-tags: labels that can be applied to the different parts of learning content or the stages of a learning experience. These concept tags are presented analytically through the medium of a taxonomy. Although they are laid out in a particular way for clarity of exposition, there is no rigid order or essential sequence to these concept-tags.

Learning Design Language serves a number of practical functions. It works as a scaffold for writing up learning processes, and sharing these with other teachers, learners and communities. In the most practical of senses, the concept tags can be cut and pasted as structural markers into publishable documents. Learning Design Language sets out to make the stages or aspects of the learning process transparent. It aims to add structure and rigour, not only to the documentation process, but to the processes of curriculum development and delivery.

Learning Design Language provides definitions of each concept-tag in a dictionary of learning concepts. Synonyms of each concept can be mapped into the major approaches to pedagogy by means of conceptual 'crosswalks'. For instance, Learning Design Language concept-tags have been mapped one by one against their synonyms in Bloom's taxonomy (Anderson & Krathwohl, 2001) and Kolb's theory of experiential learning (Kolb, 1984). This process continues as the research continues. In other words, Learning Design Language can be used as a way of 'doing' Bloom's taxonomy or Kolb's experiential learning, or whatever pedagogy a teacher chooses to use in a particular learning setting. For that matter, you could 'do' rigorously traditional forms of curriculum, such as Direct Instruction, mapping these also against Learning Design Language – and that mapping would reveal the narrowness of their pedagogical range.

Learning Design Language serves as a kind of checklist. What are the emphases of a particular set of learning activities? And are these sufficient to meet the needs of learners and to convey the breadth of discipline-specific subject-matter? Could these be extended? Such a checklist might well (but not necessarily) point to the possibility of extending learning in the direction of a transformative curriculum. Transformative curriculum involves the appropriate and, where feasible, balanced use of a variety of experiential, conceptual, analytical and applied knowledge processes.

In sum, Learning Design Language provides tools at three levels. At the Learning Community level it provides tools by means of which learning organisations (such as schools, further and higher education institutions) or units within learning organisations (such as divisions, departments, faculties) can document educational innovation, programs, research and evaluation.

At the Learning Framework level, it provides tools for the documentation of curriculum – programs of learning at the level of courses, subjects or individual customised learning. This is a space in which instructional designers, curriculum developers and educators wishing to publish their curriculum innovations to the wider world may choose to work.

And at the Learning Element level, it provides some basic concepts for the documentation of pedagogy – the microdynamics of learning experiences, tasks or activities. This is a space in which teachers and curriculum designers can document and publish their work. It is also a space in which learners may be able to document their learnings for the purposes of building a portfolio of their learning experience and sharing them with each other. These three forms of documentation can be nested within each other – a Learning Element within the context of a Learning Framework, and this within the context of a Learning Community. Effective documentation, however, can occur at each of these three levels separately, or at all three levels, or in combinations of levels.

Creating Common Educational Knowledge

All human groups – be they families, community groups, businesses or educational organisations – work with knowledge as a matter of course. As defined earlier in this article, knowledge is the connection between the stuff of the mind and the stuff of the world. It is not just thinking. Knowledge is also acting and meaning.

With knowing, comes learning. In the context of the everyday learning in the life-world, knowing and learning are more or less implicit, organic and deeply embedded. They are an unconscious part of everyday practices. There is minimal need for explicit articulation and little or no need for documentation. Knowledge is pervasive but unmanaged; learning is everywhere but not pedagogical, curricular or educational.

Managing Pedagogical, Curriculum and Educational Knowledge

Knowledge management is the systematic, conscious and explicit process of capturing and documenting knowledge (Cope & Kalantzis, 2002). Institutions of learning manage knowledge in a number of ways: as course prospectuses, annual reports, curriculum outlines and lesson plans, for instance. However, much of this documentation is for a limited audience – and in the case of a lesson plan, it may be so limited as to serve the teacher's everyday needs and meet minimal performance review requirements. Rarely would this knowledge be captured in such a way as to fill the space of the textbook in the case of learner resources, or the space of a teaching resource book in the case of teacher resources. The effect is either that, on the one hand, localised knowledge stays with the individual teacher or, on the other hand, the space of the learning experience is filled with generic, commercially published textbook and teacher resource material which may be inappropriate to local conditions or the range of learners in the classroom.

People may know things, and this is implicit in their practice. This knowledge, however, is of limited value in and of itself. It is of restricted value if it is not transferred or transferable to other people within a community of common interest. Knowledge management involves the transformation of

personal knowledge into common knowledge through a process of communication.

Personal knowledge may well be founded on a profound personal or professional understanding of an area of practice, such as pedagogy, curriculum or education. However, it remains ephemeral if it is left implicit, internalised and individualised. This is called tacit knowledge because it resides in individual minds and frequently remains unarticulated (Martin, 2002).

Common knowledge, on the other hand, is knowledge that is collaboratively constructed and socially shared. Wheels are not reinvented. Lessons from mistakes are learned once. The knowledge of the organisation or community is not dangerously depleted when a key person departs. Common knowledge, however, requires high levels of communication or knowledge transfer. In organisations where knowledge is managed well, common knowledge is formally documented in a process strikingly akin to publishing. The resulting 'published product' is explicit, externalised, shared social knowledge.

Too often, this process of creating common knowledge is reduced to 'solutions' packaged as the latest information and communications systems – such as 'data warehousing' and 'content management' systems. Certainly, electronic information and communications technologies can aid the process of knowledge management. But they are no more than aids. The crux of knowledge management is not the medium but the message, and the value of the message comes down to effective communication. And effective communication means, not that the message has been transmitted, but that the knowledge it embodies is actionable. It's of no use if it can't be used.

The business of transforming personal knowledge into common knowledge involves a number of processes of definition and refinement, and these processes of refinement reflect the characteristic features of publishing:

- *Information architectures*. Effective communication occurs within recognisable information designs. In Learning Design Language, three flexible information architectures have been developed for the documentation of a Learning Element (describing pedagogy), a Learning Framework (describing curriculum) and a Learning Community (describing education). Information architectures are characteristically represented as schemas. The schema of a book, for instance, consists of a cover, title page, copyright page, table of contents, parts, chapters, chapter sections and subsections, appendices, bibliography and the like. Although there are enormous variations between books (novels, picture books, technical books, textbooks, etc.), they are all recognisable (and thus readily 'readable') because we know what to expect from the book as an information architecture. So it is with learning. There are certain characteristic features of learning and these can be represented schematically or paradigmatically. This level of clarity, however, does not mean that within the overall paradigm of learning there might not be enormous variations in pedagogy

and curriculum in education. Indeed, the schema may well reveal significant variations.

- *Collaboration*. Authoritative texts are almost invariably created socially, the product not only of their authors but also of collaborators who play various commissioning, editorial, refereeing and publication roles. Commissioning: a head of the social science department (publisher) might suggest that a teacher (author) write up the Learning Element on the migration experience. Editorial: the head then comments on various drafts. Refereeing: other members of the department, and an external educational consultant, all look at draft and make comments. Publication: when the work is completed, and is deemed to be of a standard worthy of publication into the bank of Learning Elements being developed by the social science department, it is published to the Web for access by other departmental members, learners, parents and maybe also the wider world. The quality of the text is in the careful social construction that has gone into it.
- *Validation*. Authoritative texts are the product of delegation (only the members of the social science department at the school can publish into their bank of Learning Elements, and in this case a particular teacher was invited to write up their Learning Element). They are also published at the end of a quality filtering process, and with the authority of a person or group who wishes to maintain the integrity of the developing knowledge bank.
- *Access*. Knowledge is then made available on the basis of 'permissions' – to the audiences for whom the documents in which it is embodied were designed. In the case of a school, teacher resources may be made available only to teachers, and learner resources to teachers, learners or parents. Or they might be made available through the Web to the wide world, free or at a cost.

These publishing processes can be layered from level to level: the school council as publisher of Learning Community documentation authored by working groups of parents, teachers or administrators as authors; the school programs committee as publisher of Learning Framework documentation authored by teachers or school departments; school departments or curriculum project groups as publishers of Learning Elements authored by teachers; and teachers as publishers of student resources authored by learners themselves.

At any and every level, publishing is a metaphor for the documentation of knowledge in recognisably regular yet flexibly variable information architectures, using processes of collaboration for content development and the validation of quality, and providing access according to the intentions of the parties to the publishing process.

Networked computers and the Internet may well be handy tools in this process, but the key difference between knowledge management processes and the practices of making web pages or sending emails is the collaboration factor. Neither web pages nor emails require collaboration – in this sense they are simply a transmission medium. Knowledge management requires systematic

processes of collaboration, and it is not until the Web is used to facilitate systematic collaboration that it truly becomes a publishing medium.

Implementing Learning Design Language

How, in a practical sense, might Learning Design Language work? Learning Design Language is a knowledge management tool. The Learning Design Language research and development project uses the online publishing platform *CommonGroundPUBLISHER*. Teachers work in *Microsoft Word* templates which give stylistic consistency to their work, and publish these to 'bookstores' within *CommonGroundPUBLISHER*. Within the templates, they cut the concept-tags and paste them in whichever combination and order suit the needs of their learners and the particular body of knowledge their learners are addressing. These templates give explicit pedagogical shape to the curriculum they are writing up. *CommonGroundPUBLISHER* also provides a collaborative space within which co-authors can work together, and works can be commissioned, refereed, reviewed, copy-edited and approved for publication.

In terms of technology requirements, implementation of *CommonGroundPUBLISHER* requires no more than a networked computer with a web browser and a word processing program. Within this environment, Learning Design Language is an authoring tool, with templates representing each of three levels of documentation – Learning Community, Learning Framework and Learning Element. These word templates can be published within the broader *CommonGroundPUBLISHER* online content management system, in which any kind of downloadable or printable file or template format may be used.

The Learning Design Language templates simultaneously provide two kinds of structural support (and in both cases, the templates are flexible and suggestive rather than rigid and insistent):

1. *Presentational:* by providing text/style formats and page designs which will look good and work well for print and eBook rendering.

2. *Structural:* by providing prompts relating to possible information architectures for published material documenting pedagogy, curriculum or educational interventions.

The operational aim of both *CommonGroundPUBLISHER* and Learning Design Language is to make publishers of people and organisations with knowledge, content and experience who would not otherwise be in a position to publish. Its aim is to turn the 'common sense' of everyday practice into explicit and well-presented documentation.

One of the less remarked but profoundly significant aspects of the new communications environment is digital printing (Cope & Kalantzis, 2003). Herein lies a means of using the digital revolution to cross the digital divide. Nor does every learner have to be tethered to a computer to enjoy the benefits of digitisation. One computer may serve many teachers and learners. The

computer can be a means by which curriculum is documented and published, and also a place from which multiple copies of a resource can be printed, either to a network printer or by remote order to a printing company – which may even be able to print and bind a piece of work to professional standards as a paperback book. *CommonGroundPUBLISHER* supports both eBook (electronically downloadable) and pBook (printable) formats, as well as any other electronic file format (audio, video, digital still image, multimedia). The medium is cheap and accessible, both from the point of view of creators and consumers.

CommonGroundPUBLISHER sets up an environment which emulates traditional publishing, with all its quality control and checking filters. Nothing simply gets published. Rather, it sets up a series of publishing relationships involving author, refereeing, editorial and publishing roles. Texts are socially constructed and systematically evaluated before they 'go live' – and when they do, they go live in two places: on the publisher website as well as the author's personal website.

Creating a Publisher Site

Figure 13. Publisher Site: http://MultiliteraciesEarlyYears.Publisher-Site.com

Creating an Author Site

Figure 14. Author Site: http://AnneCloonan.Author-Site.com

A Learning Element

Figure 15.

In an educational setting, there may be many layers of author (creator) and publisher (approval) relationships. In a classroom, the publisher may be the teacher (one publisher site representing the best of the class's work, with multiple author sites for each of the learners and to which their work is published once approved by the publisher/teacher). Or the publisher of Learning Elements and Learning Frameworks might be the school department, and the authors the teachers who are writing up their best teaching/learning programs. Or the publisher of a Learning Community document might be the school, once the final draft produced by the authors, parents or working group has been approved. Or the publisher of any of these kinds of documents authored by members of schools might be the education system, or a consultant working within the system.

The benefits of adopting this publishing approach to educational content development are the following:

- *Empowerment:* conferring power to teachers and schools or other learning institutions by giving them the capacity to document, archive and disseminate (commercially or for free) their best work.
- *Content development:* providing teachers and learning institutions with a publishing process management tool (conceptualisation, copyright agreement, manuscript development and publication in an online bookstore) managed by delegated publishing editors within the learning institution.
- *Flexibility and modularity:* allowing for the publication of units of work as small as a Learning Element.
- *Local relevance:* creating materials relevant to local community and individual learner needs.

- *Diversity:* building up a modularised knowledge bank which allows considerable flexibility in learning paths, from class to class and even learner to learner.
- *Knowledge management:* building, archiving and publishing a progressively expanding knowledge bank, preserving corporate or learning community memory for access by new teachers and learning community members.
- *Knowledge efficiencies:* reducing the inherent tendency of teachers to reinvent the wheel in school-based curriculum, whilst at the same time reducing the teacher's and the school's dependency on commercially published textbooks.
- *Transparency:* with parental as well as teacher and student access to material documented and published by the school.
- *Access:* with all published material downloadable either as an eBook or printed from source files for distribution to people without immediate computer access.
- *Progression:* creating a pathway for ongoing experimentation and integration of emerging online activities and resources with conventional curriculum resource development processes.
- *Commercialisation:* providing teachers and schools with a platform through which to sell their best work to the wider world, and thus commercialise school-based intellectual property. (*CommonGroundPUBLISHER* manages e-commerce and digital rights.)

In these ways, digital technologies (print, screen, the Internet) can form the basis of new learning environments which allow diversified engagement with learning more appropriate to the range of students' interests and capacities; they can facilitate the creation of non-linear curricula; and they can support the creation of a publishing environment in which the readership of student work is a community of peers as well as a public audience of family and community.

It is the purpose of Learning Design Language and *CommonGround-PUBLISHER* to provide tools with which to capture the ephemeral, to articulate the tacit, to transform personal-professional knowledge into common knowledge. It also builds on the premise that knowledge is social and knowledge construction is best approached collaboratively.

Two key concepts underlie this approach to educational knowledge management: paradigm and narrative. Paradigm consists of the concepts used to define the processes of pedagogy, curriculum and education. These are metalanguage of sorts, a language by means of which it is possible to speak explicitly about the language of learning. The concept-tags within the Learning Design Language templates speak this language in some detail. They are accompanied by a semantics spelt out in part in this article, and in greater detail in a dictionary of learning currently in development as part of the Learning Design Language project. They are also accompanied by 'crosswalks' – a thesaurus of tag synonyms – by means of which it is possible to 'do' other pedagogies within the same templates.

Narrative is what actually happens in the development or realisation of the learning design laid out within a Learning Element, Learning Framework or Learning Community document. It is how the 'movements' in a Learning Element play themselves out for a particular resource writer, teacher or learner, or how they hang together in the case of a particular theme within a particular discipline. In this sense, paradigm is by no means prescriptive. It provides not so much a structure for knowledge, but open possibilities in which learning takes its own narrative course – for the realisation of pedagogies, curricula and educational alternatives emphatically in the plural, and thus knowledges, equally in the plural.

The results should include transparency and accountability – making learning processes visible to professional co-workers, learners and the wider community. They should create efficiencies in stringent times, making more work in the first instance but less work in the longer run, as knowledge is captured, reapplied and revised. And they should also add a layer of quality assurance, as knowledge is made official through a filtering system of commissioning, drafting, collaborative writing, refereeing, reviewing, editing and approving for publication.

What does all this managing of knowledge do? It creates a different kind of organisation. This organisation is one in which certain kinds of knowledge rise to higher levels of validity. This is the knowledge that has been collaboratively constructed, is widely informed, is cross-referenced – and these processes give it a collegial or organisational imprimatur. This knowledge becomes authoritative to the extent that the processes of knowledge construction are made transparent. And the unidirectional (top-bottom, expert-novice, organisation-customer) transmission of knowledge is replaced by knowledge as dialogue.

With or without technology assistance, knowledge management involves transforming personal knowledge into common knowledge, implicit and individual knowledge into explicit and shared understandings and everyday common sense into systematic designs. It is also the business of codifying these designs as information architectures, paradigms or disciplines. Not that this leaves the world of tacit and individual subjectivity behind as a poor cousin to knowledge proper. On the contrary, herein lies the raw material of inspiration, imagination and creativity. The shape of things has to be felt before it can be articulated.

Most importantly, it is the project of knowledge management to ensure that collaboration is institutionalised and that knowledge sharing does occur. As a result, wheels are not needlessly reinvented. Lessons from mistakes are learned once. And the knowledge of the organisation or community is not dangerously depleted when a key person departs. In short, the extra work of organising knowledge should create less.

This, then, is an outline of a knowledge management agenda for education. Its overall aims are to change the sources of knowledge and the direction of content flows, to create greater transparency in learning

communities and to broaden the professional repertoires of educators. And in terms of the themes with which this article opened, one of the overarching aims is to provide a space for the creation of learning spaces which are sensitive to difference, and which programmatically deploy diversity as a strategy for educational and social access.

In this last task lies a paradox. On the one hand, we may be agnostic about life-world origins, yet we are interested in access and diversity – and some life-worlds deny one or both of these possibilities. Translating this paradox into the domain of education, on the one hand out of respect for difference we may be agnostic about different forms of pedagogy, curriculum and education – differences in the ways in which the 'learning movements' are orchestrated, and the thematic and disciplinary narratives they embody. On the other hand, we are interested in an agenda of transformation which does not remain satisfied with differences the way they are. It strongly implies that a broader and more modulated repertoire of learning movements is preferable, and that learning should take learners into new and potentially transformational places.

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