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## **Introduction**

A revolution is occurring in education. This revolution is being fuelled in part by the new information and communication technologies. Fundamentally, however, the change is in the human relations of learning. The reference point for the changes we will describe in this presentation is the traditional classroom. In its original form, this classroom was essentially a communications technology, a room large enough for a teacher to talk to twenty, thirty, even forty learners at once. Its classical oral communications modes were the teacher exposition, question and answer involving one learner at a time and whole-class recitation in unison. For most of the time an individual learner had to sit in silence. The primary written communications medium in this classroom was the textbook (closely following the state-directed syllabus). The learner produced their work (a piece of writing, a test) for an audience of one—the assessing teacher. The main official trace of the student's work was a recorded score. The teacher was pivotal in the predominant communication patterns of the traditional classroom, orchestrating classroom talk, directing students to the textbook and marking their work or their tests. Lateral peer-to-peer communication was practically unmanageable and when it did occur, it was mostly 'off task'.

This type of education, in other words, worked perfectly well for a society in which learners were destined to belong to traditional workplaces which required deference to authority and whose skills requirements were minimal, predictable and stable. It was well suited to the creation of homogeneous and submissive citizenries in the service of the old nation-state. It was appropriate to the development of compliant personalities. There was even a logic of sorts in having a large number of learners 'fail' at school; it was a way of rationalising lack of opportunity for a large part of the society.

This world has now gone, or at least it is in transition, and it has certainly retreated in the more affluent parts of the developed world. This kind of schooling is becoming less and less relevant to the needs of learners—any learners, in any part of the world.

A series of related social changes are occurring, encapsulated in part by the idea of an emerging 'knowledge society'. In this sort of economy, value is increasingly located in the intangibles of human capacity, organisational flexibility, business processes, customer relationships, brand identity, social networks, technological know-how, product aesthetics and service values. This represents a shift away from the old grounding of value primarily in fixed capital and basic skills. This is not to say that knowledge was unimportant before; it is simply to argue that knowledge and creativity now take a uniquely central place. In the domain of citizenship, the dynamics of belonging and governance now occur at multiple and overlapping levels—from community organisations and workplaces, to self-regulating professions, to communities of common knowledge and shared taste, to the increasingly federated layers of local, regional, national and supranational government. In the domain of personality, identity differences are becoming ever-more accentuated, and the keys to stable personality are responsibility, resilience and tolerance.

Herein lies an enormous challenge, and an enormous opportunity for education. What education does—building the knowledge capital of a society, the creative capacities for innovation as well as the sensibilities to navigate ambiguity and complexity—is now fundamental. Traditional classrooms and traditional bureaucratic education systems, cannot provide society what it now requires. The agenda of the new learning is to meet the needs of the knowledge society in a globalised world (Kalantzis and Cope 2008).

### **Diversity, Belonging and Transformation**

Rather than focusing on the native differences between the capabilities of individual learners—theories of pedagogy which emphasise the psychological or the ‘innate’—the *Learning by Design* approach instead focuses on the socio-cultural differences between learners and the role this plays in their transformation as learners .

So what are the cultural conditions of learning? 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.

In order to learn, the learner has to feel that 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.

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. So what are these differences, how do we conceptualise them for the purpose of knowing our students? Here’s a catalogue of differences which in an earlier modernity we tried to ignore, or assimilate, or if they could not be ignored or assimilated, which we tried to separate onto another side of a geographical border, or an institutional boundary, or a normative divide of ‘deviance’:

#### Material

*Class:* social resource access, employment and social status

*Locale:* neighborhoods and regions with differential social resources

*Family:* relationships of domesticity and cohabitation

#### Corporeal

*Age:* child development, life phases and peer dynamics

*Race:* historical and social constructions linked to phenotypical differences

*Sex and Sexuality:* the bodily realities of masculinity, femininity and varied sexualities

*Physical and Mental Abilities:* spectrums of bodily and cognitive capability

### Symbolic

*Language:* first and second language learners, dialect and social language

*Ethnos:* national, ethnic, indigenous and diasporic identities

*Genre:* identities based on gender and sexual orientation (Kalantzis and Cope 2008)

All of these differences present themselves in our late modernity as insistent demographic realities. They have become normative realities too, supported by an expanding conception of human rights (Fraser 2008; Kalantzis and Cope 2008).

However, as soon as we begin to negotiate these differences in good faith, we find ourselves bedeviled by the categories. We discover in our communities and in our classrooms that the gross demographic groupings are too simple for our needs. Instead, we find we are negotiating an inexhaustible range of intersectional possibilities—where gender and race and class meet, for instance. We face real-world specificities which confound generalisations about people who formally fit the ostensible categorical norm. In fact, if you take any one of the categories, you'll find that the variation within that group is greater than the average variation between groups. There are no group norms. The gross demographics might tell of larger historical forces, groupings and movements. But they don't tell enough to provide a sufficiently subtle heuristic or guide for our everyday interactions. For history's sake, we need to do the gross demographics, but also a lot more. We are also in the presence of differences which can only be grasped at a level which defies neat demographic classification:

### *Narratives:*

the stories of a person's life, their experiences, their background, their life history—in short, the givens that are constitutive of who they are, what they know and how they enact their being. Narratives tell how the social and historical is instantiated in the personal and contemporary.

### *Personae:*

identities, grounded both in the quirks of 'personality' traits and the experiential narratives of a larger social history. Persona captures the kind of person you envision yourself to be, style yourself to be and present yourself as. It may be affected. It may be semi-conscious or unconscious. Persona may be manifest in gesture, demeanor, social intersubjectivity, and the various modes of presentation of self such as fashion, ways of speaking or modes of interaction.

### *Affinity:*

constituted by attachments, to groups and to worldviews or stances—for instance, the infinitely varied shades of religious or areligious affinities, and political or apolitical affinities. Affinity may also be to products or material objects; or games or sports; or aesthetics or styles. You are what you associate yourself with, and what that

association stands for. Affinity captures an extraordinary variety of senses of connection, from personal beliefs and attitudes, to membership of networks, to more formal connections with groups.

*Orientations:*

the ways in which people connect with new and unfamiliar contexts their preferred ways of knowing (by immersion in the facts or by big picture abstraction, for instance), their ways of learning (experiential or conceptual, for instance), their ways of speaking of particular things (technical or applied discourses, for instance) and their ways of relating to people.

Centering educational energies on learner agency in all its variety will create a new dynamics, sociability and ethics of knowledge creation. A genuinely inclusive education changes the direction of knowledge flows so learners and teachers are more actively involved in the construction of knowledge. Learning is a matter of engagement, moving backward and forward between formal knowledge and the knowledge-base of the lifeworld. When learner lifeworlds are so varied, diversity of perspective becomes a learning resource. Learning is most powerful when collaborative and diverse perspectives are brought to bear. Knowledge construction and learning, in other words, is all the more potent for its productive engagement of diversity amongst learners. Diversity of the student population does not bring the group's performance levels down. In fact the evidence suggests an opposite effect. This is the basis for learning and knowledge ecologies very different from traditional transmission models of pedagogy and broadcast models for communicating learnable meanings. In the kind of 'new learning' environment we are advocating here, the educational outcome is not only content knowledge, or at least not even that primarily. It is the development of kinds of person who have the capacity to learn and act in particular ways. They can navigate change, negotiate deep diversity and make and lead change rather than be knocked about by it. They can engage in sometimes difficult dialogues; they can compromise and created shared understandings; and they can comfortably extend their cultural and knowledge repertoires into new areas. They are tolerant, responsible and resilient in their differences. They are capable of deep reflection, sustained investigation, creative designing and ongoing innovation. The key questions for educators, then, are how do these new 'types of people' learn to be themselves, learn to relate with others, learn how to know and what to know, and learn how to get things done in today's knowledge ecologies.

In all its difference, the lifeworld 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 education in the formal sense, or learning by design. It is from the start and always remains a place of deep learning, albeit in primarily amorphous, unorganised and endogenous ways. The lifeworld 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 lifeworld reality, and that reality is marked by extraordinary difference.

But learning is not simply about recognising and affirming difference. There's much more to effective education-for-diversity than that. Recognising difference is not enough. Staying where you are is not learning. Learning is a journey away from the learner's

comfort zone, away from the narrowness and limitations of the lifeworld. 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 values such as racism or sexism are socially 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 the key thread in what turns out to be a kind of cultural journey.

If the lifeworld 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 lifeworld (Cope and Kalantzis 2000a; Husserl 1970). The learning journey from the lifeworld 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 if 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—learning prompts or support—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 1978; Vygotsky 1962).

### **Learning by Design Pedagogy**

Developed as a part of the **Learning by Design** project, the Learning Element is an innovative technology tool for teachers which reconfigures traditional curriculum design and instructional roles. We developed it as part of the Learning by Design project in Australia and the USA. Using 'Web 2.0' social networking technologies, the technology supports teachers as they design online modules of teaching content ([www.L-by-D.com](http://www.L-by-D.com)). Our goal was to provide teachers with a space to make explicit their pedagogical choices, to justify them in terms of learning goals and to track the impact they had on learners in a reflective and collaborative way with other teachers and their students. We believed that

emerging 'social web' technologies provide us with new means of connecting, sharing, tracking our practices and being accountable to our communities.

The Learning Element we designed currently consists of two closely interconnected online spaces, which users can choose to view separately or juxtapose in side-by-side panes presenting parallel views: 1) a 'teacher resource' space in which lesson planning occurs; 2) a 'learner resource' space in which this plan is translated into student-accessible text for independent or semi-independent learning. The project currently has planned a third space, a 'learner workbook' space in which students undertake activities that have been scaffolded in the 'learner resource' space. This way teachers and learners can track the relationship between pedagogical choices and learner performance/outcomes in an ongoing way. The technology supports multimodal text delivery (text, image, video, audio). The project is in the process of implementing key elements of today's 'Web 2.0' social networking technologies including the potentials for the collaborative design of content amongst teams of teachers, easy dissemination to students, and rapid, responsive formative and summative assessment of student work. This has the potential to converge and connect the learner's school lives and their home lives in more meaningful ways. School-level curriculum design and instructional delivery has as yet barely been touched by highly interactive, multimodal Web 2.0 technologies. We believe the Learning Element could become the equivalent of Facebook for educators, focusing on professional rather than interpersonal interaction. This is a space which closely and easily interconnects learning design, learning content delivery, learner activity and learning assessment.

In the work of the Learning by Design project we have suggested a more participatory approach to learning in which learners are designers of their own meanings and understandings. The online software provides for explicit tracking of pedagogical choices and learner performance by a potentially much wider set of stakeholders, from students and their peers across the world, to concerned administrators and parents. Learners learn by undertaking a series of 'Knowledge Processes', or 'things you can do know':



### *The Learning by Design Knowledge Processes*

Learning designs can be created by teachers or negotiated with learners that consist of Knowledge Processes, selected in any (justifiable) sequence from the following:

#### *Experiencing ...*

- *the known* - learners reflecting on their own experiences, interests and perspective e.g. bring in, show or talk about something/somewhere familiar.
- *the new* - learners observe or take part in the unfamiliar, they are immersed in new situations or contents.

#### *Conceptualising ...*

- *by naming* - learners group things into categories, apply classifying terms, and define these terms.
- *with theory* - learners make generalisations using concepts, and connect terms in concept maps or theories.

#### *Analyzing ...*

- *functionally* - learners analyse logical connections, cause and effect, structure and function.
- *critically* – learners evaluate their own and other people’s perspectives, interests and motives.

#### *Applying ...*

- *appropriately* - learners apply new learning to real world situations and test their validity.
- *creatively* - learners make an intervention in the world which is innovative and creative, or transfer their learning to a different context

The theoretical rationale for this pedagogy is grounded in the notion that effective pedagogy involves a process of purposefully and deliberately ‘weaving’ (Luke, Cazden,

Lin, and Freebody 2003) backwards and forwards between a variety activity types or forms of engagement in order to ensure specific subject matter and other learning goals. We have used the following four broad categories to differentiate the various types of learning strategies that can be deployed based on their inherent epistemic orientations. They relate to requirements to mastery of different subject areas (mathematics, history science and so on), different skills (such as inquiry, problem solving innovation and so on); and different sensibilities (like empathy, inquisitiveness, exploration, calculated risk-taking, and so on).

We do not understand these four broad pedagogical moves or Knowledge Processes as a sequence-to-be-followed. Rather, we suggest them as an explicit framework for explicitly naming the range of pedagogical moves that teachers choose to demonstrate their pedagogical repertoires and their application in purposeful ways, or at the very least to justify the range of pedagogical moves teacher may use in order to meet particular teaching and learning goals. In this conception, pedagogy is not an ideological conceit or adherence to fashion but a process of deliberate choice and purposeful shunting between different acts of knowing, measuring their insights against each other. Education is a business of broadening not just learners' specific knowledge, but their capacities to make knowledge for different disciplines and different purposes. The purpose here is not to supply a formulaic sequence of pedagogical action, but to expanding both teacher and learner repertoires of knowledge-making action and for meeting specific learning goals. Pedagogy in this conception is the design of knowledge as action in characteristic ways in different academic and social domains: choosing activity types, sequencing activities, transitioning from one activity type to another and determining the outcomes of these activities. In the everyday practicalities of pedagogy, talk of knowledge repertoire becomes a way for the teacher or learner to say explicitly, 'now I am using this particular way to know, and, now I am using that other way, and here is the reason why I did this, then that'. By the end of a learning experience, both learner and teacher are able to say, 'this is what we have done to know', and 'this is the knowledge we have acquired and the knowledge-abilities we have developed'.

Most importantly, this approach positions the learner, not as a recipient of disciplinary knowledge, but as an actor. The learner is a maker of knowledge and meaning. The designer who works with available semantic resources, but who is nevertheless forever redesigning the world of meaning. In the process, they are adding something of their identity in the process of redesign. They redesign the world, and themselves. This is how learners become mathematicians, historians, scientist and or writers. This is how they learn.

The Learning by Design Pedagogy is the extension of a research program we first developed in the Multiliteracies Project (Cope and Kalantzis 2000b; Cope and Kalantzis 2009; New London Group 1996). More recently, we have worked with groups of teachers and clusters of schools in Australia, the US and Greece to trial an online learning design environment for teachers and learners to document pedagogical choices and their knowledge outcomes (<http://L-by-D.com>).

### **Shifting teachers' role**

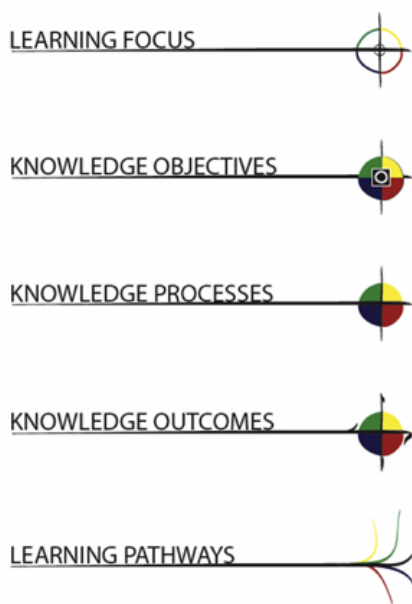


New media spaces are not just spaces of communication, they are places of recording. They are not just spaces of live communication; they are spaces of asynchronous multimodal communication of recorded meanings or incidental recording of asynchronous communication—emails, text messages, Facebook posts, twitter tweets.

In this context, the synchronous, unrecorded, live communication of the conventional classroom is an anachronism from an earlier information age. Some students may want to go back over things, but there is no ‘replay’. Other students may not be intellectually engaged by the communication of the moment, but there is no ‘fast forward’. While the teacher speaks, the class has to listen silently. If a student is to speak, it is one-at-a-time, following the ‘put your hand up to speak’ protocol.

For these reasons, it is likely that the speaking-down profession of the traditional didact will in time involve into a documenting profession of making learning designs and managing lateral learning ecologies. In this spirit, we have in the Learning by Design project developed an online learning design and interaction environment centred on a digital learning object that we call a ‘Learning Element’ (<http://L-by-D.com>).

The Learning Element’s overall pedagogical architecture is marked by the following level 1 section icons:



- *Learning Focus*: curriculum area and learning level; basic metadata.
- *Knowledge Objectives*: intended learning outcomes, links to mandated standards and assessment outcomes.
- *Knowledge Processes*: activities, marked up for the ‘kind of knowledge making’ required of the learner, sequenced appropriately and with a range that accommodates learner diversity.
- *Knowledge Outcomes*: assessment processes: formative and summative.
- *Learning Pathways*: recommended follow-on activities such as other Learning Elements.

### *The Pedagogical Architecture of the Learning Element*

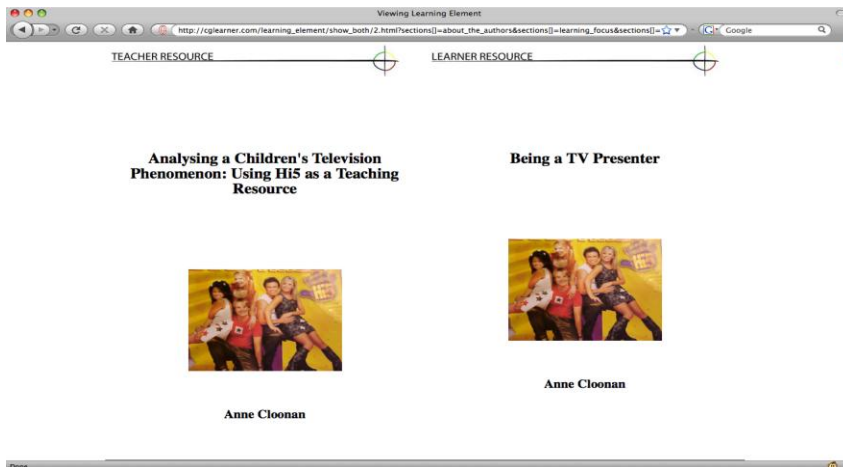
Each of the three Learning Element spaces can be viewed as separate ‘panes’. However, the power of the software is to in supporting the processes of translation across parallel panes within the Learning Element window. For instance, a teacher accesses the Learning Element software through a screen split into Teacher Resource and Learner Resource panes. This allows the teacher to translate a lesson plan (in the left hand pane) into an activity sequence accessible to learners (in the right hand pane), thus transferring the

learning design planning processes into activity sequences and student-accessible learning content.








### Online Learning Design

The Learning Element aims to develop teachers’ capacities in instructional design and documentation of pedagogy more suited to professional sharing than traditional, paper-based curriculum and lesson planning processes, or planning frameworks linked to individual teacher schedules. In so doing, it engages teachers as reflective practitioners, systematically assessing and evaluating the outcomes of their own and their peers’ pedagogical practices. It provides more effective and explicit articulation of generic standards with learning designs customised to specific learner needs and local circumstances. It facilitates tracking of teacher and learner inputs, making explicit links between teacher input and learner performance. It encourages teachers and schools to adopt a ‘knowledge management’ approach to documenting and sharing best practices; redrafting Learning Elements for reuse (modifying plans and resources for reuse based on the experience of application)—either the original teacher-author or a different teacher re-user/adapter. And it engages teachers and their students in a ‘new media’ environment for the creation and delivery of learning experiences. Such a learning design and delivery environment can also cater more effectively to learning diversity, by translating lesson plans and student-accessible learning designs which can be accessed by individuals or groups, and undertaken autonomously or semi-autonomously and asynchronously, in the classroom or anywhere beyond the classroom; also allowing that more than one Learning Element might be undertaken simultaneously by different students at the same time in the same class.



*Side-by-Side Rendering of Teacher and Learner Resource: The Opening Screens of an Early Literacy Learning Element*

<p><i>Learning Activity 4: Investigating the Hi5 Characters</i></p> <ul style="list-style-type: none"> <li>• Ask students to describe each of the 5 main characters.</li> <li>• What do they look like?</li> <li>• What is their style? Their interests? Their segment speciality? Their costumes, their caricature (from merchandising), their signature?</li> <li>• How are they similar? How are they different?</li> <li>• Why do you think they were chosen to be in Hi5?</li> </ul> <p>Shared writing - the teacher collates students' responses into "What we know about ....." character charts. Independently, students write and draw about the different characters.</p>	<p><i>Learning Activity 4: Draw or write about the Hi5 characters</i></p> <p><b>I think:</b></p> <p> <b>Tim is ...</b></p> <p> <b>Charli is ...</b></p> <p> <b>Kathleen is ...</b></p> <p> <b>Nathan is ...</b></p> <p> <b>Kelly is ...</b></p>
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*Example of a Learning Activity in the 'Being a TV Presenter' Learning Element*

Our research so far demonstrates that explicit documentation, highlighting patterns in teacher pedagogy identified in terms of knowledge processes, shows that teachers at times deploy strings of learning activities that are not always aligned explicitly to formal standards, curriculum frameworks or particular knowledge goals. At times, we have found that 'experiential learning' dominates at the expense of analytical and conceptual work, and that translation or application has become too limited, often focused narrowly on tests. Our findings show that documentation which links knowledge processes explicitly to outcomes enables both teachers and learners to be more purposeful about the way learning goals are set and met. Such explicitness also allows for adjustment to meet the specific learning needs of learners in diverse classrooms (Burrows 2005a; Burrows 2005b; Burrows 2005c; Burrows, Cope, Kalantzis, Morgan, Suominen, and Yelland 2007; Cloonan 2005; Cloonan 2007; Cloonan 2008; Neville 2005; Neville 2008; Suominen 2009; van Haren 2007; van Haren 2005).

Furthermore, our own research has shown that documentation of instructional choices assists in the evaluation of the bases for teacher effectiveness, as reflected in learner

outcomes (Burrows, Cope, Kalantzis, Morgan, Suominen, and Yelland 2009; Cloonan 2007; Kalantzis and Cope 2005). Careful planning of pedagogy produces improved outcomes, as does retrospective documentation and professional sharing of pedagogical strategies. This is particularly important in the shift to e-learning environments (Burrows 2005c; Kalantzis and Cope 2004). How, then, might broader, and at the same time more rigorous, curriculum and instruction processes be created and implemented? Innovative curriculum work benefits from a ‘knowledge management’ approach (Burrows 2005c; Kalantzis 2004; Polanyi 1962; Stewart 1998). This means that what is tacit in teacher professional practice is made explicit via the process of documentation in order to analyze and extend the range of that practice. This involves both prospective and retrospective aspects—how is the teaching and learning process planned, and how are the best teaching practices shared?—and a retrospective aspect—how are best teaching practices shared? Clear documentation of teaching is destined to become a more important feature of the emergence of e-learning environments, which will have the effect of transforming a speaking profession into a documenting profession (Burrows 2005c; Kalantzis and Cope 2004). Perhaps most importantly, however, such documentation provides explicit evidence of the relationship of teaching inputs to learner performance.

## Conclusions

The Learning by Design Project has set out to achieve the following objectives. Our research shows that we are at least part way towards achieving these objectives. It has been our aim to:

1. Bring the processes of *documenting learning* into the world of today’s ‘Web 2.0’ online media (O’Reilly 2005). This has many intrinsic advantages including ease of use, low cost, but perhaps most importantly the potential accessibility of content to colleagues, learners and interested parties in learning communities, such as parents. With accessibility comes transparency, opening access to whatever degree is determined by an individual teacher or a school. For instance, teachers may choose to open up their processes so other teachers can know what their learners have learned; learners can see where they have come from and where they are going; and parents can see what learners are learning.
2. Place an emphasis on *the teacher as learning designer*, and knowledgeable expert rather than their historic role as a curriculum implementer and a conduit of syllabus and textbook. It also frames the school as a knowledge producing community. For instance, the Learning Element will allow teachers to create grounded, localised versions of environmental studies, social studies or historical studies.
3. Cater to *learner diversity*, allowing for multiple individualised or small group learning paths drawing from the bank of online-accessible lessons in a teacher’s own Learning Element portfolio or assigned by a teacher from the broader, consolidated bank of Learning Elements. In other words, the Learning Elements become a resource for purposeful differentiated learning. This also encourages the creation of content that is

directly relevant to local communities at the same time as it is aligned to formal standards and curriculum frameworks.

4. Create *new efficiencies* in a context and learning outcomes where more is expected of our education system and resources need to be used wisely. Teachers reinvent similar wheels in their lesson plans daily and in the oral discourse of their classrooms. The Learning Element asks teachers to commit their learning designs to the digital record. This is more work, in the first instance, than a conventional lesson plan. For this reason, teachers would only document their best designs. However, access to others' designs creates enormous efficiencies— a teacher in the same school may create a Learning Element of great local relevance, or a teacher in another school may create an excellent or highly rated learning design that another teacher wants to rewrite or adapt to local conditions. It also allows for explicit tracking of and reflection on teacher inputs and learner outputs, enabling quick recalibrations on learning for more effective and timely outcomes.
5. Foster a culture of *professional collaboration*. The Learning Element supports joint authorship and team teaching. It encourages teachers to share of their greatest curricular successes and most powerful professional insights. It is accompanied by the choice of either a conventional copyright or Creative Commons license, both of which are framed to encourage rewriting and adaptation of Learning Elements by acknowledging both original sources and new contributions to the text.
6. Addresses in creative, flexible and relevant ways the vexing question of *evaluation and assessment* by linking in a more coherent and fluid way the process of learning with expected learning outcomes at different levels—from formative and summative assessment informing the students themselves, to providing transparent, well supported assessment judgments to parents.

In these respects, we have been attempting to exploit to the fullest the affordances of the new, digital media in order to transform the professional role of teachers and improve outcomes for learners. Beyond this it has been our aim to develop an explicit and accountable online documentation framework which prepares learners for living learning and working in the new world of the global, knowledge economy.

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