# E-learning standards: Open enablers of learning or compliance strait jackets?

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E-learning standards have attracted a substantial and growing amount of attention from practitioners, institutions and governments over the past decade. Millions of dollars are being invested in a process of standardisation that, while aimed at supporting e-learning, seems to have neglected important aspects of learning that consequently appear to be at risk of being devalued. The current standards agendas of interoperability and discovery seem more closely aligned with the desire to commoditise learning and create new economic opportunities than with the needs of learners. This paper casts a critical eye over current developments and suggests closer attention to the role of standards in improving quality and supporting teachers and learners rather than constraining them. While standardisation implies a comforting sense of security, reliability and consistency, we may have to remain at least partially outside of the standards "comfort zone" if we wish to obtain real benefits from technology integration into education.

**Keywords:** e-learning, standards, compliance, heuristics, guidelines

## Introduction

> The nice thing about standards is that there are so many to choose from (Andrew S. Tanenbaum)

One of the characteristics of modern technological life is the ease with which new products from many sources are integrated into our lives. Much of this occurs because of the use of standards and the regulatory bodies of most countries list standards for a wide range of technological and prosaic items. Internationally, standards are developed and promulgated by organisations such as the International Organization for Standardization (ISO: http://www.iso.org). The provision of education has not been immune to standardisation, with considerable activity happening in the area of e-learning and also disproportionate attention on e-learning standards and quality assurance processes from Governments:

> Formal, transparent and credible systems of quality assurance will help guarantee a successful future for Australian universities(DETYA 2000)
> …universities are expected to engage in a pro-active, rigorous and ongoing process of planning and self assessment which will enable them to ensure the quality outcomes expected by their students and the wider community. (DETYA 2000)
> Teachers need technical standards to enable them to share and build on each other's ideas, and learners need to be ensured of the quality of e-learning materials. (DfES 2003)

An illustration of the level of interest in e-learning can be found in the United Kingdom's e-Government Interoperability Framework (http://www.govtalk.gov.uk/egif/specifications.asp), which references 21 separate standards and specifications (some are listed in Table 1) for e-learning as either recommended or under some form of review. This compares with only four in the areas of health and finance. Commerce and purchasing only have eight standards listed. Despite this high level interest and the substantial resources involved, some critics are raising concerns about the impact this work will have on learning and teaching (Boyle 2003; Oliver and Liber 2003; Blandin 2004, Friesen 2004a). This paper discusses the relationship between e-learning standards activity and learning and teaching. The intent is to balance the perceived focus on technological and economic aspects with a concern for pedagogy and a development of e-learning skills by teachers and students. The paper deliberately presents a provocative point of view, not to attack those engaged in the important work of making e-learning work, but rather to join with others (Mason 2003) in highlighting the need for greater involvement from a wider range of academic perspectives.

## Current standards activities

Currently there are many standards and similar documents being developed or in existence in the area of e-learning; a small list of some of the more prominent is given in Table 1 (for more detailed information on this rapidly developing area see the AICTEC web site http://standards.edna.edu.au/ and the CEN learning Technology Standards Observatory http://www.cen-ltso.net/Users/main.aspx; a good overview of metadata work can be found at http://mapageweb.umontreal.ca/turner/meta/english/index.html). Few of these are, strictly speaking, standards, which must be issued by national or international standards organisations. For the purposes of simplicity, and at the risk of irritating standards experts, this paper will use the term 'standards' to refer to both standards as well as standards like documents, such as specifications. Irrespective of definitions, it is clearly apparent from Table 1 that issues of technology, interoperability and resource discovery dominate the standards and standards like efforts of a large number of people and organisations.

**Table 1: A selection of prominent e-learning standards**

| **Metadata/Resource Discovery** | |
| --- | --- |
| ARIADNE Educational Metadata Recommendation | http://www.ariadne-eu.org/en/publications/metadata/index.html |
| Dublin Core Metadata Element Set | http://dublincore.org/documents/dces/ |
| Canadian Core Learning Resource Metadata Application Profile | http://www.cancore.ca/documents.html |
| EdNA Metadata Standard | http://www.edna.edu.au/metadata |
| Gateway to Educational Materials Element Set | http://www.geminfo.org/Workbench/Metadata/index.html |
| IEEE 1484.12.1-2002 Learning Object Metadata standard | http://ltsc.ieee.org/wg12/ |
| IMS Learning Resource Meta-data Specification | http://www.imsproject.org/metadata/index.cfm |
| Le@rning Federation Metadata Application Profile | http://www.thelearningfederation.edu.au/repo/cms2/tlf/published/8519/Metadata_Application_Profile_1_3.pdf |
| Microsoft LRN | http://www.microsoft.com/elearn/support.asp |
| SingCore | http://www.ecc.org.sg/cocoon/ecc/website/standards/singcore.standards |
| UK LOM Core | http://www.cetis.ac.uk/profiles/uklomcore |
| **Knowledge/Content Mangement** | |
| The Digital Object Identifier | http://www.doi.org/ |
| IEEE P1484.11 Computer Managed Instruction | http://ltsc.ieee.org/wg11/index.html |
| IMS Content Packaging Specification | http://www.imsproject.org/content/packaging/index.cfm |
| IMS Simple Sequencing Specification | http://www.imsproject.org/simplesequencing/index.cfm |
| IMS Learning Design specification | http://www.imsglobal.org/learningdesign/ |
| Learning Material Markup Language | http://www.lmml.de/ |
| PALO | http://sensei.lsi.uned.es/palo/ |
| ADL SCORM Content Aggregation Model | http://www.adlnet.org/index.cfm?fuseaction=scormabt |
| **Interoperability** | |
| ADL SCORM | http://www.adlnet.org/index.cfm?fuseaction=scormabt |
| AICC CMI Guidelines for Interoperability | http://www.aicc.org/docs/tech/cmi001v3-5.pdf |
| IMS Resource List Interoperability Specification | http://www.imsglobal.org/rli/index.cfm |
| IMS Enterprise Information Model | http://www.imsglobal.org/enterprise/index.cfm |
| IMS Enterprise Services Specification | http://www.imsproject.org/es/index.cfm |
| IMS Question & Test Interoperability Specification | http://www.imsglobal.org/question/index.cfm |
| IMS Shareable State Persistence Specification | http://www.imsglobal.org/ssp/index.cfm |
| IMS Digital Repositories | http://www.imsglobal.org/digitalrepositories/ |
| IMS Learner Information Package Specification | http://www.imsglobal.org/profiles/index.cfm |
| Internet2 Shibboleth | http://shibboleth.internet2.edu/ |
| ISO/IEC JTC1 SC36/WG3 Learner Information | http://participant-info.jtc1sc36.org/ |
| OASIS Security Assertion Markup Language | http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=security |
| School's Interoperability Framework | http://www.sifinfo.org/index.asp |
| **Accessibility** | |
| IMS AccessForAll Meta-data Specification | http://www.imsglobal.org/accessibility/index.cfm |
| Le@rning Federation Accessibility Specification | http://www.thelearningfederation.edu.au/repo/cms2/tlf/published/8519/Accessibility_Specification_V2_0.pdf |
| Web Content Accessibility Guidelines | http://www.w3.org/TR/WAI-WEBCONTENT/ |
| **Intellectual Property and Digital Rights Management** | |
| ISO/IEC JTC1 SC36/WG4 Digital Rights Expression Language | http://ltsc.ieee.org/wg4/index.html |
| Le@rning Federation Rights Management Specification | http://www.thelearningfederation.edu.au/repo/cms2/tlf/published/8519/docs/rights_management_specification_v1_2.pdf |
| Open Digital Rights Language | http://www.odrl.net/ |
| **Quality/Pedagogy** | |
| Le@rning Federation Educational Soundness Specification | http://www.thelearningfederation.edu.au/repo/cms2/tlf/published/8519/docs/educational_soundness_specification_v2_2.pdf |

To the extent that content influences and supports learning, the support of resource discovery and reuse provided by the metadata standards effort seems to be one of the most relevant to educators. Interestingly, this area is also attracting the most diversity of effort. The early efforts of pioneers in the library field that resulted in the well regarded Dublin Core (DC) work (Thiele 1998) has stimulated a proliferation of useful work aimed at facilitating the definition of metadata that is relevant to a range of pedagogical and

international environments. Examples include CANCORE in Canada, EdNA Metadata Standard in Australia, SINGCORE in Singapore, and the work of the ARIADNE Foundation in Europe which has fed into the IEEE 1484.12.1-2002 standard for learning object metadata, as well as the DC-ED extensions to the Dublin Core that address educational uses of materials. All of the metadata standards listed in Table 1 refer to and draw upon the DC work and elements appear directly in some of the other standards (for example the Australian EdNA metadata standard, Millea 2003). Here, at least, the standards effort has a clear direction and is meeting an obvious teaching and learning need. Considerable effort is also being spent in the area of technical interoperability (for example US$40 million spent on SCORM by the ADL initiative to date; GAO 2003):

> The ADL Initiative is designed to accelerate large scale development of dynamic and cost-effective learning software and systems to stimulate an efficient market for these products in order to meet the education and training needs of the Military Services and the nation's workforce of the future. (www.adlnet.org)

The US Department of Defense spends US$17 billion annually (GAO 2003) to provide training to defence personnel. Investment in the ADL initiative is likely to exceed $US2.6 billion dollars over the ten years from 1997 to 2007. Despite these large investments, the only benefits identified are in terms of reduction in travel and associated costs of staff being on training, and an increase in the hours spent in training. No attempt has been made to assess whether the learning outcomes are maintained as the project is still in the "early stages of implementation" (GAO 2003). Despite the amount of money spent in the ADL Initiative, technical interoperability is to some extent irrelevant to educators. The expectation of teachers and students must be that the e-learning infrastructure simply works. The technical issues being addressed by the SCORM framework are certainly non-trivial, but then so are the technical challenges that underlie the Internet and the electricity network. The majority of the standards listed in Table 1 are not *e-learning* standards per se, they are technical, *computer* standards. They offer little to inform our understanding of e-learning pedagogies or improve student learning, in much the same way the safety standards for workplaces make institutions safer but do not contribute to the educational outcomes. To the extent that these activities happen in a flexible, and pedagogically neutral fashion they are important but should not dominate discussions of how to engage in effective e-learning. In reviewing the activities listed in Table 1 it is not clear that they are any different to earlier work dating back to the 1950s which provided standards for learning resources programmes (Cornell 1988). Much as with the older work, this new standards development effort is of direct value to those at the periphery of the classroom, but is less useful for encouraging and supporting teachers in adopting innovative uses of technology that actually improve student learning. The blame for this must lie firmly with educators who appear to have left this area firmly in the hands of technologists (Mason 2003).

## Benefits of standards

This does raise the question – why should educators get involved? What is the benefit to learners? Teachers? Institutions? Standards can be held to be an aspect of professionalism (Dean 1990) but there is little evidence that the standards listed in Table 1 have this as their objective. There is also no mention of this aspect in the benefits identified by the various standards groups for their work (see below). Interoperability has some benefits (Duval 2004) but this assumes the use of technology is found to have a benefit in and of itself. There is a sense that by being able to cast e-learning as "standards compliant" we are validating the immense amounts of money being spent on e-learning despite the absence of any real evidence that students are being empowered to learn more effectively or efficiently. Alternatively, the risk exists that standards would be used by funders of education, such as governments, to drive down the costs of education by mandating 'standard' approaches that while possibly cheaper, may also be of lower quality. Cost control is clearly the objective of the US Department of Defense (GAO 2003); the quality concerns come from those with needs beyond immediate training and systems interoperability (Welsch 2002). The inability to identify educational benefits by those involved in standards work may reflect, in part, a weakness inherent to standards which is apparent from the ISO definition of a standard:

> a document, established by consensus, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context (ISO/IEC 1996).

It is not clear that the objective of achieving an "optimum degree of order" has much to do with high quality learning. Similarly, there is the assertion from the UK Government that "Teachers need technical standards to enable them to share and build on each other's ideas" (DfES 2003), a position that could easily be challenged. Despite these and other concerns, there is within the standards literature a general presumption that standards are automatically good things and a requirement for e-learning to work (Mason 2003). While this general assumption of benefit can be questioned (Blandin 2004), there are specific benefits of standards for e-learning identified by those promoting their use. The UK Centre for Educational Technology Interoperability Standards (CETIS 2004) claims these benefits for standards:

- ability to reuse e-learning resources despite rapid changes in technology;
- supporting the cataloging and discovery of learning resources;
- facilitating the transfer of student records and information between systems and institutions.

Olivier and Liber (2003) identify benefits in the reuse and economics of e-learning:

- authors and publisher's learning products can work across multiple systems. They don't need to target a specific system or adapt them for different platforms;
- learning environment developers can ensure that a wide variety of content works on their systems. They don't have to persuade content authors and publishers to develop specifically for their platform;
- resource users can use a wider range of content for their chosen system. They don't have to worry about which resources work with which systems, or the consequences and costs if they want to change or add their content or system providers;
- standards remove some of the barriers to the development of the e-learning market and potentially provide the basis on which a learning object economy can be developed.

This last, economic, focus is also apparent in the more extensive list provided by the developers of the CanCore metadata specification in Canada (EduSpecs 2004):

- a cohesive market for educational products and developmental tools;
- more choices for the end user and the option to use non-proprietary software packages for the development of courseware;
- the ability for end users to integrate components of various systems into their total package through the use of standards compliant software and hardware;
- supporting the learning economy through the re-use and re-purposing of content;
- creating a potentially global market for domestically developed e-learning products;
- facilitating storage and retrieval;
- facilitating interoperability and exchange; and
- providing opportunities to construct individual learning models and meeting diverse learning needs.

These 'benefits' seem to be dominated by issues and outcomes that seem only distantly related to the human processes of learning and teaching. In considering the demands of stakeholders outside the classroom, they have been dominated by economics and the creation of new markets through the commoditisation of learning. Given this context it is perhaps unsurprising that the standards generated fail to address the needs of e-learning specialists and teachers to identify better practices and ways of improving learning, and even that they may constrain learning and teaching so as to facilitate the economic goals to the detriment of the pedagogical outcomes.

## Are standards pedagogically neutral?

> It is very difficult to define interchange standards that do not have some effect on functionality … the priorities that different specifications make can represent a bias towards one educational approach amongst others. (CETIS 2004)

Standards represent a significant investment of resources and are consequently driven by a desire to solve specific problems in particular contexts that are relevant to those providing the resources. A danger arises, however, when a standard is then applied more generally. Much as the AICC navigation icons (AICC 1996) are completely out of place in most modern e-learning environments, other standards may be more subtly disruptive or unhelpful. An example is the SCORM standard that is widely cited as a means of supporting e-learning deployment. This standard has been extensively developed to meet the training needs of the US Defense Department (Welsch 2002, Friesen 2004b) and contains much that can be used

to support other forms of e-learning. It is not ideal for all forms of e-learning as noted by Olivier and Liber (2003) and others (Rehak 2002).

The acknowledged single user focus of SCORM (Rehak 2002) is a reflection of the problems it is designed to solve and it is clear that it can potentially be extended and evolved to meet the needs of new pedagogies such as collaborative learning (Ip and Canale 2003). The risk is that SCORM is being adopted in areas beyond its intended area of application and without such careful consideration of the changes needed to support pedagogical goals as well as the technological ones. The widespread adoption of SCORM and other standards without a consideration and acknowledgement of their limitations is consistent with the observations about how few of the standards in Table 1 have any real consideration of pedagogy and student learning outcomes. Unfortunately, this is not an unusual situation. An acknowledged problem with the use of technology in learning is that of 'fads' or 'panics' that arise out of new technological developments. A recent example is the concern about the rise of virtual universities and global media conglomerates which were cast as inevitably destroying established educational providers (Katz 1999; Cunningham *et al.* 2000). Historically, there have been similar 'panics' over movies, computer assisted learning, television and others (Cuban 2001; Oppenheimer 2003). It is easy to be seduced by technology and to imply that greater use of technology automatically results in more effective delivery; similarly, it is easy to use standards and to think that they solve a need that actually exists. A significant risk is that standards can be used simply to validate predetermined outcomes. The selection of which standards are used to inform practice and mandate compliance can ensure particular outcomes while maintaining an illusion of independence and validity. Standards can also be used to simplify complex issues in ways that obscure important details. A standard can be reified into something desirable in and of itself, rather than being recognised as an abstraction that describes aspects of effective e-learning not the totality of the learning experience.

An example of the problem that this can potentially generate is with the work around learning objects. The attention being directed towards metadata and learning objects implies that the key problem in e-learning that needs solving is the discovery and reuse of pre-existing materials. While resource discovery has driven the successful work around meta-data standards, the learning objects work attempts to go further and explicitly encompass aspects of pedagogy within the objects themselves, opening up significant areas for research and exploration (Duval & Hodgins 2003). Unfortunately, a lack of clarity about what a learning object actually is has lead to the situation where "because anything can be said to be a learning object, nothing is" (David Merrill quoted in Welsch 2002, Friesen 2004b). The IEEE 1484.12.1-2002 Learning Object Metadata standard uses less poetic words to essentially describe the same ambiguous situation where a learning object is "… any entity, digital or non-digital, which can be used, re-used or referenced during technology supported learning" (IEEE 2002). Boyle (2003) noted that "In order to provide a non-contentious basis for standardisation, a learning object is defined to be almost anything", clearly illustrating the risk that the standards process can come to dominate the outcomes of that process. This lack of clarity of intent and meaning has reduced discussions about learning objects to a consideration of issues such as how to move collections of material from one system to another, such as the IMS Content Packaging specification (IMS 2003). While useful, this leaves open the issue of whether those working in the area really believe that creating effective learning experiences is just like clipping together blocks of Lego (The CommonPlace 2002). This situation may simply reflect the current lack of understanding about the benefits of reuse and how they can be obtained in a learning context but wider engagement is not likely to happen until the focus moves on from technical aspects.

The problem of learners' needs being ignored in the introduction of new technology has been long recognised, and it is interesting to reflect on whether much of the current standards activity is ignoring the historically identified weaknesses of technology deployment practices (MacGregor 1993):

- Dissection of content into unrelated fragments reducing learner control over learning.
- Design is carried out in isolation from the learner and relies on arbitrary means of the population. This erodes individual differences and replaces them with imposed standards and imposed evaluation techniques, most of which are derived from outside the discipline.
- Little attention is paid to the impact of either the technology or the organisation on the design effort or the learner's perspective.

The contention has been made that comment on standards by those engaged in the support and development of e-learning is premature, and that a strong infrastructural framework is needed to support e-learning. Once we have such a framework, it is contended, we will then be able to add effective learning experiences as a form of "interior decoration" to the technological, organisational and economic framework provided (Welsch 2002). This would be true if the types of standards being worked on operated at sufficiently abstract level as to be pedagogically neutral, but it appears that at least some of these standards are constraining teaching and learning decisions, rather than enabling more options.

While proponents of some e-learning standards claim that the benefits of interoperability are separate to the pedagogy and student learning, it is apparent from the discussions around learning objects that the integration of pedagogical concerns into standards is challenging (Boyle 2003). Blandin (2004) has suggested that rather than pedagogically neutral and able to be applied to any form of learning, standards are culturally founded documents that include presumptions about the range of pedagogies used. Friesen (2004a) notes that "standards, specifications, and instances of content need to be conceptualised in terms of their pedagogical engagement and relevance, not in terms of their neutrality." The motives of governments in defining quality standards for learning and teaching are clearly those of compliance and control rather than enabling teachers and institutions to teach more efficiently or students to learn more effectively. Governments are not, however, the ones developing all of the standards. Practitioners worldwide are involved in the standards process and need to start reflecting on how the standards are changing the nature of engagement with students:

> [The question is whether] eLearning standards will constrain Internet supported learning by freezing a sub-set of existing practices, or whether specifications can be provided that can support the development of new, enhanced, but yet to be developed approaches to learning which the Internet makes possible? (Olivier & Liber 2003)

The problem is that learning is not a tidy, mechanical process that responds well to rigid frameworks and defined, quality assured, processes and checklists. Learning appears to flourish when humans are able to communicate and engage with each other, to respond to our individual strengths and weaknesses and immediate needs rather than be a product that is purchased and plugged into our brains. Standards activities need to acknowledge the learning context more explicitly, if they are to inform and support learning rather than just standardise it (Olivier and Liber 2003; Friesen 2004b).

## E-learning standards to enable learning

But, how can we use standards to inform and support better practices as educators and institutions when we do not have strong and unambiguous evidence as to what better practice might be? One response is to continue to do as we have done and wait for better evidence before changing our current practice. The rapid uptake of educational technology worldwide suggests that the "do nothing" option is not popular with institutions, although the universal popularity of technology and e-learning in particular with academics and teaching staff, has been less clear (Cuban 2001; Butler and Sellborn 2002). One problem is that the use of Internet technology in education has been driven by a focus on individual situations rather than on wider needs of the educators and students (Hagner 2000; Buckley 2002). The rapid introduction of digital technology and the Internet into educational institutions has been driven by the strong belief that technology has the potential to significantly improve the quality and flexibility of learning (Bush 1945; Cuban 2001; Oppenheimer 2003) combined with longstanding recognition that the traditional lecturing approach has weaknesses resulting from its focus on teachers and institutions rather than learners (Oblinger and Maruyama 1996; Buckley 2002; Laurillard 2002). This rapid change has in many cases outpaced our understanding and experience as teachers and it is clear that we do not yet know what the successful models of online education actually are (Phipps1999; Ryan 2002). Until clear models of success that can be used as generic exemplars are identified, teachers and institutions are left groping blindly and by instinct for how to use e-learning effectively in the context of their students' needs.

The desire for 'standards' to address a perceived lack of a strong foundation for e-learning is a not unexpected reaction. For some aspects of e-learning it is clear that standards are useful, even necessary, and the impact of their utility is clearly measurable. Standards for accessibility and inclusiveness for example, are normally driven by legislation and thus have the advantage of clarity of objectives. It is also clear that, where large e-learning projects are undertaken, project management standards have a significant and positive contribution to success. Particularly as they are independent of the pedagogical

and technological environment of the project (Alexander 1998; Kenny 2002). In the absence of standards which provide a strong foundation for the learning and teaching aspects of e-learning we have instead open ended frameworks that provide a means for reflection about practice, linking design decisions to pedagogical theory. Table 2 provides a list of common models and guidelines which relate to e-learning and which do concern themselves with issues of pedagogy. The reason that these are listed separately to Table 1 is that they are quite different in their mode of creation and development. Widely accepted they may be, but most are built on (admittedly expert) opinion and belief rather than a solid foundation of documented scholarship and evidence of how they impact positively on students and the educational environment (Phipps 1999; Mitchel 2000; Conole *et al*. 2004), and on outputs rather than process and inputs (Twigg 2001). The application of these heuristics in particular contexts still requires considerable expertise and knowledge of the underlying theory on the part of practitioners. This is fine for specialists but is rather more problematic for most teachers.

**Table 2: A selection of pedagogical quality standards and guidelines**

| | |
|---|---|
| Teaching, Learning and Technology Group<br>Seven Principles | http://www.tltgroup.org/programs/seven.html |
| Council of Regional Accrediting Commissions and the Western Cooperative for Educational Telecommunications (WCET)<br>Guidelines for the Evaluation of Electronically Offered Certificate and Degree Programs | http://www.wiche.edu/telecom/<br>Guidelines.htm |
| Western Cooperative for Educational Telecommunications (WCET)<br>Principles of Good Practice for Electronically Offered Academic Degree and Certificate Programs | http://www.wiche.edu/telecom/<br>projects/balancing/principles.htm |
| American Distance Education Consortium<br>ADEC Guiding Principles for Distance Learning | http://www.adec.edu/admin/papers/<br>distance-learning_principles.html |
| Instructional Telecommunications Council (ITC)<br>Quality Enhancing Practices in Distance Education | http://www.itcnetwork.org/quality.html |
| The American Federation of Teachers (AFT)<br>Distance Education: Guidelines for Good Practice | http://www.aft.org/higher_ed/downloadable/<br>distance.pdf |
| National Education Association (NEA), Blackboard Inc. and the Institute for Higher Education Policy (IHEP)<br>Quality on the Line: Benchmarks for Success in Internet-Based Distance Education | http://www.ihep.com/quality.pdf |
| IMS Learning Design<br>Specification to describe learning scenarios for reuse or transfer between systems | http://www.imsglobal.org/<br>learningdesign/ |
| Southern Regional Education Board<br>Principles of Good Practice | http://www.electroniccampus.org/student/srecinfo/pu<br>blications/principles.asp |
| Australian National Training Authority<br>Flexible Learning Toolbox | http://www.flexiblelearning.net.au/toolbox / |
| FuturEd, Community Association for Community Education (CACE) and the Office of Learning Technologies (OLT) of Human Resources Development Canada (HRDC)<br>Canadian Recommended E-learning Guidelines (CanREGs) | http://www.futured.com/pdf/<br>CanREGs%20Eng.pdf |
| The Le@rning Federation Educational Soundness Specification | http://www.thelearningfederation.edu.au/repo/cms2/tl<br>f/published/8519/docs/educational_soundness_specifi<br>cation_v2_2.pdf |

The absence of a strong evidentiary basis in the presentation of these heuristics is part of the reason that these documents seem to be lacking as a vehicle for informing change and innovation. Standards have the potential, if built on a solid evidentiary basis, of informing effective practice rather than constraining it. For this to happen the standards need to be designed in an 'open' manner, acknowledging the educational context and the needs of students, encouraging flexibility and focusing on student outcomes, and providing wider access to learning opportunities rather than compliance and control within existing models of teaching and institutional practice. At its heart, the current, technology focused, standards approach draws heavily on the positivist way of describing the world (Woods 1999). The presumption is that standards can represent a defined model of e-learning in a way that would allow for a deterministic development of successful learning environments. Unfortunately experience with standards has illustrated that they are meaningless if applied in a deterministic, mechanistic way. The desire for better documentation standards has lead to the widely criticised ISO9001 standard that has been cast as taking poor practice and turning it into well documented poor practice. Similarly, the desire for better quality service and processes has lead to a degree of cynicism about 'quality' standards and the movement for their adoption. Rather than jingoistic movements and tools for management reporting and compliance, standards need to be tools for the enabling of outcomes that we, as educators, value. It is also clear from attempts to describe resources (Hatala and Richards 2002; Millea 2003) that the range of activities and approaches used in education requires careful design of vocabularies specific to particular contexts.

Bach (1994) in his criticism of standards in software engineering identified particular problems with the standards being proposed, and these criticisms can also be applied to many e-learning standards:

- *There is no, or only a weak, theoretical basis for the standard or guideline.* Heuristics or expert intuition and experience are used, rather than well founded understanding built on evidence of actual outcomes and an understanding of the context within which the outcomes were obtained.
- *Lack of empirical support.* Standards are built on a foundation of anecdotes and poorly conducted comparisons. This is a particular problem for e-learning where the research published has been criticised extensively on methodological grounds (Phipps1999, Mitchel 2000; Conole *et al.* 2004)
- *Emphasis on process and management rather than people.* How do we ensure that the individual teaching skills and excellence remain valued, particularly when they are anachronistic and different to the more "standard" styles? How do we ensure that innovation is encouraged, rather than suppressed in order to maintain interoperability and simplicity?
- *Emphasis on institutionalisation rather than student outcomes.* Institutions need to see learning and teaching as a human system and thus inherently chaotic and needing to be lead as such, while also obtaining the benefits of standardisation discussed above.
- *There is a lack of information about the dynamic context.* The rapidity of technological change is not likely to slow down in the foreseeable future so we need standards that reflect this, dynamic and flexible standards that can respond to a changing context, rather than static approaches to a context that is already outdated when the standard is first applied.
- *The use of standards introduces the risk of encouraging a focus on the success against the standards' measures rather than the outcomes that are directly desired.* The compliance agenda of Government and management can destroy effective learning no matter how benign the objectives.

In casting a skeptical eye over standards, this paper has adopted a more postmodern approach, a "… desire for fluidity of boundaries, a free play of information systems, and a suspicion of any form of reductionist tabulation" (Woods 1999) while using just enough structure to illustrate relationships. This is consistent with the observation that the current, lightly standardised, environment has generated a diversity of ideas and approaches as well as the concept of "flexible learning," embracing a range of different institutional and student needs (Ling *et al.* 2001). As noted by Kenny (2002), e-learning projects are highly uncertain and associated with a high degree of risk. Consequently, if they are to succeed they need to be executed in a way that is flexible and open to change. Rushing into standards introduces a constraint that may result in unnecessary failure. Current standards remain very difficult to integrate, even in the relatively well defined area of meta-data (Heery 1996; Godby 2003, Millea 2003; McLean 2003) where many developments such as different modes of communication and concepts such as distributed meta-data are liable to be excluded through a lack of openness and flexibility. Even SCORM with its substantial resource support does not interoperate with many of the standards listed in Table 1 and projects such as COLIS (http://www.colis.mcq.edu.au/projects.htm) are still needed to understand many practical details. On the other hand, standards that are too flexible present their own problems. In this case, the standards process depends entirely on the exercise of judgment by experienced practitioners, rather than supporting the work of teachers who are not e-learning specialists.

## Conclusion

> …a truly practical standard is one that will be used because it is simple enough to follow
> and flexible enough to allow for creativity … a tool that allows you to do more, rather than
> a grim necessity to which you must adhere. (Welsch 2002)

The initial quote in this paper, while amusing, is not just a joke, rather it must be a requirement for the development and growth of e-learning as an effective supporter and enabler of learning. Education, and e-learning within it, encompasses such a range of creative and human activities that many standards are going to be needed, cognitive, pedagogical, technical, HCI, accessibility, disciplinary. If e-learning standards are to support this vast creative complexity then they need to be more than a means of demonstrating compliance or supporting technology:

- Standards must reflect the diversity of student learning capabilities and desired outcomes;
- Standards must evolve to meet the challenges of new forms of technology, and new types of pedagogy, and ideally they should stimulate the discussion, application and research that result in that evolution;
- Standards must be enablers of effective practice rather than constraints on the creativity and burdens to the passion of teachers;

- Standards must reflect an evidence base of effective teaching practice and research into ways of improving student learning;
- Standards must be expressed in a way that enables efficient determination of compliance and an ability to "benchmark" or document that compliance;
- Standards must support the management of institutions in identifying areas in need of development and strategic decisions about e-learning directions for the institution as a whole.

Standards must support the development of e-learning capability across entire sectors of tertiary education, rather than encouraging piecemeal and isolated initiatives. Unless standards are developed in an open way that enables learning, not only for students, but also for institutions and teachers, most e-learning standards will be a strait jacket of compliance and rigid management which will be lost in a history of forgotten and ignored 'fads'. Responsibility for seeing that this happens must lie with all practioners, not just those directly focused on the development of e-learning resources, if we are to see standards that work with thoughtful and informed pedagogical design to generate effective and compelling educational experiences.

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