INTRODUCTION

It seems undeniable that the choice of activities to be carried out by learners has some positive or negative effect on their learning. It also seems reasonable to assume that they can be characterised and grouped into structures which can be usefully exchanged between teachers as a basis for planning activities. These structures are known as learning designs (typically in Europe) or instructional designs (typically in North America) and the groupings are often referred to as patterns (following the approach established by Alexander, Ishikawa and Silverstein (1977)).

Over a number of years work has been done to bring rigour to the choice of learning designs and their evaluation. Reigeluth refers to 'design theories' which “describe methods of instruction and the situations in which those methods should be used, the methods can be broken into simpler component methods, and the methods are probabilistic.” (Reigeluth, 1999). This was developed further by Koper, who used the term 'learning design rule' rather than 'instructional design theory': “…learning design knowledge consists of a set of prescriptive rules with the following basic structure: if learning situation S, then use learning method M, with probability P.” (Koper & Tattersall, 2005). In his analysis Koper both summarized existing work and inspired a renewal of effort in the field by providing a language which could be applied in creating formal representations of learning designs, and so make it possible to evaluate learning designs more effectively, and to propose explicit and reproducible learning design rules. This language was Educational Modelling Language (EML) (Jochems et al., 2004) later adapted to create IMS Learning Design (IMS-LD) (IMS Global Learning Consortium Inc, 2003a).

It was also hoped that IMS-LD would provide a basis for more flexible systems for the orchestration of learning activities. The specification states that “the objective of the Learning Design Specification is to provide a containment framework of elements that can describe any design of a teaching-learning process in a formal way” and that it was intended to “support mixed mode (blended learning) as well as pure online learning” (IMS Global Learning Consortium Inc, 2003a).

These objectives led some educationalists to believe that IMS-LD could be a useful tool in overcoming the constraints that educational technology was seen to place on teachers, especially those who took a constructivist position (see for example (Dalziel, 2003) and (Buzza, Bean, & Harrigan, 2004). From this perspective the specification was seen as a way of formalising the description of learning designs and patterns, and also of extending the range of possible learning designs which could be implemented with technological support. Consequently, when the IMS-LD specification was published in 2003, it created substantial optimism about its potential for moving forward our understanding of individual learning activities and patterns of activities. Griffiths and Liber (2008) reviewed the ‘Opportunities, Achievements, and Prospects for Use of IMS-LD’ and concluded that while it had been used as a modelling language by a substantial number of research projects, it had not been adopted extensively by the education community at large, and that the exchange of elearning materials in contexts other than research projects and trials of applications was extremely low.

By 2012 it was clear that although there had been extensive work with the specification, on the whole the aforementioned hopes for IMS-LD had not been fulfilled, and it seems unlikely that
widespread adoption of IMS-LD, at least in its current form, will be achieved. If we seek to make progress with the research agenda related to learning designs and patterns, it seems essential to answer the question “Why has the major investment in IMS-LD by educational researchers, teachers, developers and funding agencies not led to the advances which were hoped for?” The work reported in this chapter seeks to shed light on why this has been the case, by capturing and analysing the experiences and explanations of some of those who have worked most closely with the LD specification in a variety of roles.

METHODOLOGY

In responding to our question, it is tempting to conclude simply that the enthusiasts were fundamentally mistaken, and that IMS-LD was not a good specification. Despite the lack of adoption, there is substantial ongoing work to evaluate the goodness or otherwise of specific aspects of the specification (Derntl, Neumann, Tattersall, & Verpoorten, 2009; Derntl, Neumann-Heyer, Griffiths, & Oberhuemer, 2012), and to identify shortcomings which might be remedied (Durand, Belliveau, & Craig, 2010; Konig & Paramythitis, 2010; Monfort, Khemaja, & Hammoudi, 2010). While much of this work is valuable, and can provide useful data, conflicting views of the goodness of the specification do not in themselves enable us to draw conclusions which can help us cumulate our research conclusions and plan future work.

Our approach is broadly influenced by the Realistic Evaluation methodology of Pawson and Tilley (1997). They argue that it is counterproductive to classify social science interventions as ‘good’ or ‘bad’ in themselves. Rather it is necessary to understand the mechanisms whereby an intervention functions within a context, leading to the observed results. The contexts within which IMS-LD has been deployed are very complex, and the data we have gathered is from diverse perspectives. We do not, therefore, aspire to carry out a comprehensive realistic evaluation as described by Pawson and Tilley. Rather we seek to identify candidate explanatory mechanisms, by interviewing people who have been involved in the IMS-LD specification, have developed applications, or who have used the specification in research or teaching. The interviews sought to elicit the 156 interviewees’ theories about the failure of the intervention made by IMS-LD in their area of professional activity. These theories are then formulated as explanatory mechanisms.

Thus the goal of this study is not to reach a definitive judgment about the strengths and weaknesses of IMS-LD, but rather to collect and contrast informed hypotheses from key researchers which can be tested in further work on learning designs and patterns.

In selecting interviewees the principal criteria were that they should include people:
– who had engaged with the specification in many different ways (e.g. developers, educationalists, instructional designers);
– from both public and private organisations;
– from a range of geographical locations around the world; and
– from a range of research communities.

The interviews were carried out in July and August 2011. The target length of the interviews was 45 minutes. Information gathering commenced with a request for background information on the interviewee’s work with IMS-LD. This was followed by discussion of five topics:
– original hopes for the specification;
– experiences of researching into or with IMS-LD;
– satisfaction with the results;
– explanations for the successes and failures; and
– opportunities for the future (with or without the specification).
Each topic was addressed by:
– closed questions requiring a Likert scale response, for example: On a scale of 1 to 5, how helpful was IMS-LD to you in achieving your goals in your own work, where 1 is ‘it was an obstacle to be overcome’ and 5 is ‘it was the key to success’; and
– semi-structured interview questions eliciting each interviewee’s reflection on their experience, for example: From your experience of your own work, how did IMS-LD help you or hinder you in achieving your goals? Why do you think this was?

Finally the interviewee was asked for any other comments. Once the interview had been concluded, it was transcribed and sent to the interviewee for feedback and correction.

In managing some 60,000 words of transcripts the WEFT Computer Assisted Qualitative Data Analysis Software (CAQDAS) was used. The intent of using CAQDAS was to code the explicit responses to focused questions contained in the transcripts, so that they might be merged into equivalent explanatory mechanisms and to track the evidence for these.

This initial analysis resulted in interviewees’ comments on IMS-LD being assigned to about 50 classifications. This was deemed too many to allow a coherent analysis of the problems of IMS-LD and so further analysis was required. To obtain a manageable set of explanations the authors transcribed the 50 classifications onto paper slips, and arranged these into groups. Through a process of experimentation, five principal explanatory themes were identified which covered the great majority 157 of the comments made in the interviews. These generated clearly contrasting explanations and provided a manageable focus for this discussion.

ABOUT THE INTERVIEWEES

Of the 40 people the authors asked to take part in this work, the following 14 people agreed to be interviewed.
– Full Professor Dr Daniel Burgos: Vice-chancellor for Research & Technology, UNESCO Chair on eLearning, Universidad Internacional de La Rioja (UNIR).
– Fabrizio Cardinali: Chief Executive Officer, Skillaware Performance Support Platform; Chief Strategy and Marketing Officer, SedApta Group; former Chair of European Learning Industry Group.
– Dr Michael Derntl: Research Associate, Advanced Community Information Systems (ACIS) Group, RWTH Aachen University.
– Professor Dai Griffiths: Professor of Educational Cybernetics, Institute for Educational Cybernetics, University of Bolton.
– Dr Davinia Hernández-Leo: Professor, Information and Communication Technologies Department, Universitat Pompeu Fabra.
– Professor Patrick McAndrew: Professor of Open Education, Institute of Educational Technology, The Open University.
– Dr Bill Olivier: Professor in Educational Technology, Institute for Educational Cybernetics, University of Bolton.
– Dr Abelardo Pardo: Lecturer, School of Electrical and Information Engineering, University of Sydney.
– Dr Griff Richards: Manager, Technology, Teaching and Learning Resources, African Virtual University.
– Dr Hubert Vogten: Senior Technical Scientific Designer, Open University of the Netherlands.
The list of invited interviewees inevitably reflects the authors’ knowledge of the IMS-LD landscape and their personal contacts. Nevertheless the range of participants is wide. The interviewees have consented to being named in this chapter.

RESULTS OF OPEN QUESTIONS

The five principal explanations which were identified during the analysis of the transcripts were:

– IMS-LD’s purpose as an interoperability specification became sidelined;
– IMS-LD tries to be all things to all people;
– IMS-LD has not provided teachers and their institutions with compelling reasons to use it;
– IMS-LD places too many demands on teachers, in their practice and in their relationships with institutions and students; and
– IMS-LD’s origins in distance learning limit the potential for its widespread adoption.

We now address each of these explanations in turn, discussing some of the comments made, and summarising the context and mechanism which it proposes for the observed failure of IMS-LD to achieve adoption. In doing this we identify the ascribed context within which IMS-LD was to have had an impact; the hoped for mechanism whereby this would be achieved; and the mechanisms which we identify from the interviews which we have carried out.

In this analysis, when we refer to a named source without a citation this indicates that the reference is to one of the interviews which we carried out.

1. IMS-LD’s purpose as an interoperability specification became sidelined

The fact that EML was adapted as the IMS-LD specification indicates that there was, in 2003, a perception within the educational technology industry that such an interoperability specification was needed. However, several interviewees discussed the way in which the goal of interoperability had not been realised. Wilson suggested that with only a small number of reference implementations fully supporting IMS-LD the interoperability issue has become irrelevant. This raises the question of why there have been so few fully IMS-LD compliant systems.

Two interviewees had experience of successfully integrating IMS-LD into their companies’ commercial products. However they experienced no demand from customers and so IMS-LD either became an optional feature (Cardinali) or did not warrant the resources needed to maintain its inclusion in future releases (Zimmerman). From a commercial standpoint Zimmerman also suggested that customers have little desire to exchange content with other companies which in turn reduces the need for interoperability in this market. This raises the question of how appealing the idea of content exchange is for educational institutions and practitioners and the resulting need for interoperability that this might encourage. It could be that teachers want to engage at a deeper level than a sequence of activities and resources. Pardo speaks of the issue that “there is no way for the receiver to visualise the ideas the other person had” when they created a Unit of Learning. Cardinali and Hernández-Leo suggested that if one or more of the widely adopted Virtual Learning Environments (VLE), including open source, had incorporated IMS-LD then this might have prompted others to follow suit. Given the influence of community input into such systems, it seems
reasonable to suggest that there was insufficient demand to drive this development. Highlighting one national example, Wilson points out that in the UK when BECTA (the now defunct public body promoting the use of ICT in education) defined the essential components of a VLE (BECTA, 2004) there was no reference to the ability to import and export content packages. As Wilson puts it “IMS-LD as a possibly interesting optional quality isn’t going to be looked at [by suppliers]” and there was therefore no incentive for commercial VLE suppliers seeking BECTA approval to include IMS-LD or any other kind of interoperability with competitors’ platforms. 159 This does not address the issue of widespread adoption outside the UK but does question the value attached to interoperability in one market.

Griffiths argued that the need for interoperability had changed since the publication of the specification.

Very few people are shifting courses between institutions. They do not seem to find a need to move activities between systems. This may just be a signal that they use pretty straightforward activities. If you took the universities in the UK I would guess that 90% of them are using either Blackboard or Moodle. When the specification was passed we expected that there would be an increasing number of VLEs rather than this massive concentration of the market. The use case for LD being an interoperability specification has kind of disappeared.

There may also be issues of interoperability when diverse systems make demands of IMS-LD that the specification cannot support. Derntl spoke of the difficulty of maintaining interoperability in customised environments and of problems encountered when a Unit of Learning (UoL) contained additional metadata outside of the specification. Attempting to translate the needs of such a customised environment into something supported by IMS-LD could present an onerous or unfeasible task. Addressing this issue, respondents spoke about the lack of IMS-LD compatibility in existing VLEs and that, where this functionality is included, it feels like a plug-in rather than being smoothly integrated.

The above comments focus on the lack of effective interoperability as a cause for the lack of adoption of IMS-LD. In terms of realistic evaluation, we can distinguish the following explanation.

Context
A perceived need for an interoperability format for elearning courses.

Hoped for mechanism
Once the capability for exchanging UOLs becomes available, users will demand this functionality in their VLEs, and providers will seek to obtain competitive advantage by providing it.

Observed mechanism
IMS-LD implementation was complex (Derntl; Zimmerman), and so there was resistance to adoption from providers. From the other side VLE customers did not express a strong need to exchange courses (Cardinali; Zimmerman; Wilson). Increasing concentration of the VLE market meant that interoperability was a less urgent need for users and providers. Therefore the hoped for demand for interoperability did not materialise, and consequently IMS-LD did not achieve adoption.

2. IMS-LD tries to be all things to all people
The IMS-LD Specification document (IMS Global Learning Consortium Inc, 2003b) states that it constitutes “a generic and flexible language” which enables 160 “many different pedagogies to be expressed.” It is stated that this approach has the advantage that “only one set of learning design and runtime tools then need to be implemented in order to support the desired wide range of pedagogies.” However, there are indications from the interviews that this generality may also cause difficulties. Pardo reported that IMS-LD’s neutrality increased the difficulty of creating a runtime environment. Vogten also spoke of the issues he faced in creating a reference implementation of IMS-LD, in this case the CopperCore runtime engine, and how he felt that integrating IMS-LD into an existing system might be simpler.

It's trying to make a design starting with the first metadata, ending with the whole process and describing everything in between. This makes it a strong specification because when you have a finished design everything you want to achieve is captured in its manifest which is nice. But it makes integration with existing systems very difficult because it has an expectation of how a system should work rather than taking a system as it is and bolting on some new things which other specifications were doing.

Griffiths argued that the desire to make the specification as expressive as possible may have made it unmanageable.

We have got a great big specification which includes environments, activities, resources and people management. It might be that if you were starting today you might not put all those elements inside a single server or even inside a single specification. You might have a little family of specifications which work together, each or which have their own servers.

Discussion of complexity extended beyond tools and into conceptual issues. Interviewees questioned whether, by attempting to satisfy all possible needs, simple and complex, IMS-LD fails to address either of these particularly well. Derntl found that, despite the sophistication and completeness of IMS-LD it still did not support all his needs. Hernández-Leo also saw “the complexity for some and the incompleteness for others” as a barrier to the use of IMS-LD. Derntl also questioned “where does all the sophistication help if it doesn't support some of the very simple things?” Wilson felt that a lack of clarity about IMS-LD’s purpose meant that “by addressing such a broad range of potential uses you actually made it more difficult for any of them.” Wilson also felt that compromises in IMS-LD’s design, carried out to appease political pressures, increased the complexity of the specification and also suggested that the origins of IMS-LD may have contributed to the lack of adoption.

When you have a very principled view you can end up producing a specification that can’t be implemented but which embodies your principles. I think IMS-LD embodies a lot of those principles but didn’t in my view produce anything that is commercially implementable.

Richards and Wilson both spoke of the merits of starting with simple systems with a more limited set of features. Simpler alternatives to IMS-LD have been suggested, for example by Durand, Belliveau and Craig (2010) and Wilson (2010). While further exploration of alternatives to IMS-LD is beyond the scope of this discussion, Derntl raised the possibility of using a subset of IMS-LD in the design of tools to support specific use cases. Pardo also reported success obtained by a PhD student using a modified version of IMS-LD to suit their purposes. However, this kind of development, which reduces the compatibility of systems, seems to further undermine the relevance
of IMS-LD as an interoperability specification. Derntl’s experiences, as outlined earlier, reflected this.

Context
A perceived need for a specification which would enable a wide range of pedagogic structures to be expressed.

Hoped for mechanism
A highly expressive specification would lead to the implementation of systems which could implement any pedagogy. These would provide attractive functionality which would drive adoption.

Observed mechanism
The goal of supporting any pedagogy in a single specification resulted in barriers to implementation and usability which had not been anticipated, and so generated barriers to adoption.

3. IMS-LD has not provided teachers and their institutions with compelling reasons to use it

IMS-LD was intended to “support mixed mode (blended learning) as well as pure online learning” (IMS Global Learning Consortium Inc, 2003a). It was posited that teachers would be helped by computerising some of the task of classroom coordination; Koper and Olivier (2004), drawing on Howell, Williams and Lindsay (2003) state that “faculty members demand decreased workloads, especially while working with learning management systems or online collaborative and conference environments. More automated support in the work process of faculty members is needed.” Similarly Griffiths reflected on his own engagement with IMS-LD, saying that he was trying to achieve an “enhancement or transformation of elearning where things would be more flexible and we would have new opportunities for elearning.” However, the interviews indicate that teachers have not recognised benefits in the use of IMS-LD. The lack of IMS-LD success stories and good example content that might motivate teachers to engage with IMS-LD was discussed by several respondents, for example Burgos:

You cannot highlight any proof of concept or actual outcome and say ‘you can do this, if you put all this effort in then you will have something amazing here in front of you’. And the teachers or instructional designers can answer that maybe it is worth it even when the learning curve is steep, long and rough. However, you cannot show anything really attractive and useful enough for them to invest so much time and effort to make it.

Derntl also supported the need for success stories and stated the importance of identifying the best use cases for IMS-LD as part of this process.

What is needed is a testbed where IMS-LD is tested in different institutional settings and in different pedagogical settings to reach an empirically supported recommendation on where to use IMS-LD and where not to use it. Cardinali further suggested that too much focus has been placed on producing IMS-LD tools and that “this meant that little investment of time, capacity and skills was made in the front end richness of content production.”

Derntl described the lack awareness he encountered amongst managers in Higher Education (HE) both of IMS-LD specifically and more generally “the opportunities of describing teaching practice.” This suggests that the problem could extend beyond IMS-LD to any specification or application
which sets out to document teaching practice. Similarly Zimmerman said that businesses are not interested in documenting their detailed learning processes.

They [businesses] don’t want to talk on this level and so it’s too much overhead which does not reflect scenarios where you have ad-hoc learning. Everything must be predefined at a too granular level and that’s also an issue for businesses.

Context
A perceived need for technology to support teachers in their practice.

Hoped for mechanism
By demonstrating more flexible and effective elearning, teachers and institutions will be drawn to IMS-LD.

Observed mechanism
It proved too difficult to make convincing demonstrations of the functionality of IMS-LD, and the level of analysis of learning activities required in authoring was more detailed than that which teachers were comfortable with. Consequently they did not engage with IMS-LD.

4. IMS-LD places too many demands on teachers, in their practice and in their relationships with institutions and students

The previous section identified the lack of a motivation to use IMS-LD among teachers and other actors. Additional barriers were identified which stood in the way of adoption. In 2003 one of the present authors wrote, it now seems with excessive optimism, that

The ease of use of applications and pedagogic support for teachers is gradually improving, and we are confident that this trend will continue in the future. The ultimate goal is to enable users to focus purely on learning and teaching, perhaps being completely unaware that they are using Learning Design and other specifications.

(Griffiths, 2003)

Comments in the interviews and our own observation indicate that this has not come to pass. Vogten related this to IMS-LD’s assumption of “a kind of publisher model where you have a very structured thing but also a very structured way of 163producing courses,” and expressed some doubt whether it was possible to implement a powerful and easy to use IMS-LD editor that supported all the richness of the specification. Similarly Pardo reported that teachers struggled to work with the specification even when provided with “tools that hid most of the details.” Hernández-Leo felt that runtime tools were a particular cause of problems, and were not mature enough to be used in real settings.

The result, according to Richards, was that

When you document using any process it is because you are hoping that the documentation of the process is going to give you some return on investment at some point in the future. ... But to actually do anything with it or use any of the tools it became increasingly complex and it just became one of those things where we said ‘well, there must be a simpler way of doing this than going through all these things’.
This was echoed by Vogten: “if you have that heavy process on a fairly simple course you don't get a return on investment.”

Olivier, suggested that, to be adopted in mixed mode learning, IMS-LD requires a considerable change to the ways in which teaching staff operate within and are supported by their institutions.

You've got to be able to say members of staff ‘I want you to stop teaching for the next semester and prepare a module and when we do that we are going to use it intensively with a lot of students afterwards.’ We don’t get the time. We're not set up to do that.

Looking now at end users, this comprehensive approach might also affect a teacher wanting to use IMS-LD in their teaching practice. Pardo suggests that IMS-LD requires teachers to work at too granular a level.

A useful analogy is that if we asked computer programmers to write computer programs in zeroes and ones again they would tell us that this is not feasible. This analogy is a little bit extreme but it is just to point in the direction that I like to highlight, which is LD can be very expressive. The problem is that expressing an everyday learning experience in the terms of LD is too complex.

There is a question of whether end users should see the complexity of the specification at all. Olivier spoke of the need for a graphical authoring tool with complete IMS-LD support and that tools such as RELOAD and ReCourse could be easier to use. However Vogten felt that producing a powerful, easy to use and fully IMS-LD compliant authoring tool was “a contradiction in itself” and would be a difficult undertaking.

Interviewees also raised the issue of how IMS-LD challenges the role of teachers. Olivier suggested that IMS-LD shifts teachers from “being the source of wisdom for students to being their learning facilitator” instead. Johnson identified a similar, but perhaps opposite challenge, in balancing the formal requirements of education with the rich relationships they form with pupils.

So basically you’ve got a whole education system moving into this very engineered world. Naturally enough the teachers, whose job is not actually to work the formal system but to do the soft stuff, rebel against it. They don’t recognise their job as the one that’s being prescribed for them in the tools.

Context
Substantial resources were dedicated to the development of IMS-LD infrastructure.

Hoped for mechanism
The complexity of the specification would become irrelevant if sufficiently well designed tooling was available, which would enable UOLs to be created and run easily.

Observed mechanism
The development of IMS-LD systems proved more challenging than anticipated, and UOLs time consuming to document and create. The use of technology in teaching activities did not prove
neutral, and provoked resistance among some teachers. The investment of time and effort was not compensated by benefits to teachers and institutions. Consequently levels of adoption remained low.

5. IMS-LD’s origins in distance learning limit the potential for its widespread adoption

As stated above, IMS-LD was intended to “support mixed mode (blended learning) as well as pure online learning” (IMS Global Learning Consortium Inc, 2003a). Its origins, however, were in the Open University of the Netherlands EML, and some respondents felt that this had constrained the potential adoption of IMS-LD. Firstly although the specification makes no statement about how it should be implemented, many interviewees identified issues with the available implementations of IMS-LD which might be associated with distance learning approaches.

More fundamentally, the separation of design and runtime was suggested as a problem. As Derntl says, “at design time you have to be over specific for things you probably don't even know yet and at runtime you cannot do anything.” This statement highlights two separate issues. First there is what Pardo identified as “the convoluted process to create a UoL,” and Vogten’s observation that “the tools that are available are quite heavy and still very production like; preparing, pre-publishing, finally publishing and reviewing a lot.” Secondly, interviewees identified a lack of flexibility at runtime which makes it difficult for UoLs to be easily adjusted by teachers during lessons, as illustrated by Pardo.

For example if I have my class organised in teams but half way through the class I have to change the teams because three people just left the class and dropped the course I need to change that in a matter of five minutes' work. In a UoL that is a major re-organisation.

Derntl felt that these constraints corresponded to the needs of distance teaching, but limited the breadth of appeal of IMS-LD.

This restricts the potential users significantly. I would say it's only useful if you are a distance university where you have a broad body of teachers and tutors and you want to do a massive rollout of new or existing courses which are highly structured and standardised. Then it's probably perfect to use it. But for most HE teaching contexts, like classic universities, it's difficult because teaching is more or less a back and forth process introducing new things and being flexible at runtime.

One possible response is that these issues are caused by the available tools. Olivier felt that, from a runtime perspective, the problem lies in the implementations of IMS-LD and that this issue might be resolved “if you were just interpreting the unit of learning as you go along and you got to a certain point where you wanted to change something, then you could.” However Pardo talked of the “difficulty of changing the UoL significantly and trying to maintain the internal structure.” Indeed, no system was mentioned by our respondents, or is known to the authors, which enables teachers to respond to unexpected events in the classroom by making spontaneous changes to a carefully crafted UoL.

Context
Extension of a distance learning methodology to a wider pedagogical context.
Hoped for mechanism
Pedagogically neutral and abstracted descriptions of learning activities would be equally applicable in distance and face-to-face contexts.

Observed mechanism
Many of the respondents believe that IMS-LD carries with it characteristics which make it less appropriate for face-to-face teaching. This has limited its potential adoption.

RESULTS OF LIKERT QUESTIONS

Given the small sample size it seems unwise to attach too much significance to the Likert responses. In addition to this some respondents were unable or preferred not to give answers to some of the questions. However, there were interesting responses to questions addressing the level of happiness with the results of their work, the extent to which IMS-LD helped them achieve their goals and the value of the introduction of IMS-LD. Several respondents were keen to score these questions separately for both their research contexts and for their ‘real world’ engagement with practitioners. The scores given were higher for research than for the ‘real world’.

It’s difficult. I’ll give it a 3 but with a qualification. It clearly provided a useful tool for researchers and it provided a very useful tool for a lot of PhD students in developing their work and for projects researching various areas related to group activity. So as a research tool I think it was quite successful. As a tool for education I think it wasn’t successful at all. (Wilson)

Given that this study hoped to uncover some of the reasons for IMS-LD’s lack of widespread adoption it should maybe not come as such as surprise that people did not think IMS-LD had fared as well with practitioners as it had in the research community.

We discuss a second pattern in the Likert question responses in the conclusions.

CONCLUSIONS

It seems clear from the interviews that there is no one answer as to why IMS-LD has not been widely adopted. Interviewees identified a range of often interconnected issues that they feel have limited the appeal of the specification. Some of these issues relate to technical issues, which might be ‘fixed’ with appropriate attention, although interviewees disagreed about the degree to which this might be possible. Interviewees also identified issues involving human interaction which are harder to address, such as the degree to which IMS-LD can be adopted without asking teachers, students and their institutions to change their working practices. In areas such as this the problems raised by IMS-LD are less about the specification itself and its implementation, and more about the complexity of its effects on human interactions. This has implications that extend beyond issues of IMS-LD’s ‘completeness’ as a specification or the value of interoperability, and which are of wider relevance to the work on learning design and patterns.

The complex interactions between these wide ranging issues have resulted in more questions than answers and the extent of the conversations that fed into this study means that there is far more to unpack and discuss than we could hope to cover here. However in our analysis of the interviews, and the identification of the five theories about IMS-LD’s lack of widespread adoption which we most frequently encountered in them, we hope to have distilled the richness of this combined
narrative and provided a fair representation of the majority of points raised by interviewees. It is our hope that this insight will provide not only a forensic analysis of what went wrong with a promising line of research and development, but also a starting point for discussion of current work in related areas, including that which is described in this volume.

Even eleven years after the publication of the specification, it is not possible to offer a final judgement on the value of IMS-LD. When respondents were asked to score the current prospects for the adoption of IMS-LD, several were keen to differentiate between IMS-LD’s immediate prospects and its potential use for an as yet unknown purpose at some point in the future. For example, Richards commented:

That’s a difficult question to answer because times will change. Just because we don’t have the capabilities to implement it today doesn’t mean that it will not become relevant tomorrow. In the 19th century there was a professor at the University of Cork who was playing around with a very theoretical mathematics and everybody thought it was interesting but nobody thought it was useful. It wasn’t until decades later that somebody said ‘these electronic valves, maybe we could use this guy Boole’s algebra to help resolve some of 167the issues we are having with these electronic computers.’ Of course all of a sudden off the back plate we find Boolean algebra everywhere. So just because it’s been a big investment and it may not be the time to make it go forward, given the recession and the economy and this particular date, I think that as an intellectual notion it is very important. I think that it has a future; I just don’t know when that future will be.

Whether or not there proves to be future potential for IMS-LD, it remains the case that the specification has not gained widespread traction, and that as researchers in the field of educational technology we will find it valuable to establish why not. Our work reported here is a modest step in this direction. Nevertheless, Richards and other respondents’ comments suggest that we would be wise to maintain an open mind as to the future value of the significant achievements of IMS-LD.

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