Assessing and Enhancing Quality using Toolkits

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Abstract

"Toolkits" are decision-making frameworks based on expert models. This paper outlines one toolkit, which provides support for practitioners involved in the process of embedding Learning Technology into their courses. Although the toolkit was created as a design tool, feedback from evaluations identified its value as a means of assessing Quality. This paper outlines the background of the creation and scope of the toolkit, examines how it can be used to assess and enhance the quality of courses and concludes by summarising how toolkits can be used as part of Quality procedures in other areas.

Introduction

Nationally policy has placed considerable emphasis on the embedding of new technology into the teaching and learning process (e.g. HEFCE, 1997). However, the process of embedding Learning Technology is not trivial, and uptake has been patchy (Laurillard et al., 1993). One reason for this is the considerable range of skills that need to be acquired if embedding is to be carried out in a professional way (Phelps et al., 1999). To address this skill gap, research was undertaken into the development of a resource that allowed professional educators with little or no prior experience of Learning Technology use to engage in the embedding process. This research is outlined below.

Toolkits: resources for supporting decision making
Early research into the requirements for the design tool showed that there was clear need for support in the process of designing or redesigning courses in order to take advantage of the opportunities provided by Learning Technology. In order to do this, it was essential that the toolkit contained an expert model of the process being supported. However, in recognition of the differences between pedagogic practice in

different discipline areas, this resource needed to be supportive, not prescriptive (Conole & Oliver, 1998).

These requirements positioned the resource between two more common types of support tool: conceptual frameworks and software Wizards (Oliver & Conole, 1999). A framework is taken to mean a theoretical overview of an area, which can be used as a point of reference in order to relate topics within the area. It is less restrictive than a toolkit, and, as a consequence, less supportive. By contrast, a wizard is taken to be a software tool that makes decisions on behalf of the user, based on solicited information and drawing on pre-defined templates. In most cases, the way in which these outputs are generated is hidden from the user. As a result, it is easier to use than a toolkit, but is far more restrictive in terms of potential outputs. To summarise, frameworks, toolkits and wizards lie at different points along a continuum, with open but unsupportive theoretical maps at one end, and restrictive but easy to use software 'black boxes' at the other. No value judgement is made about which of these points is 'best' for users; clearly, each is suited to supporting users with different needs and varying levels of expertise.

The pedagogic toolkit

In order to ground the resource in existing Best Practice, a conceptual framework was developed that drew on existing cases, models and educational theory (e.g. Maier et al., 1997; Laurillard, 1993). This was then repeatedly tested to assess its utility and identify revisions to the resource (Oliver & Conole, 1998; Kewell et al., 1999a). This resulted in a resource that contained a series of activities that practitioners could engage with to structure the process of embedding technology. These activities were structured around the following model of the embedding process:

1) A review of current course structure
2) An examination of the current course structure to establish areas of learning that could be enhanced
3) Working through the media comparison tables to establish possible replacements or additions to the learning situations in the course (Practitioners should customise these tables to reflect their own practice)
4) A comparison between the original and enhanced course models to establish which should be adopted, to cover:
    i) Development/preparatory work requirements, aiming to minimise these
    ii) The educational interactions each supports, aiming to maximise these
    iii) The delivery constraints, specifying the time and location requirements of each option, aiming to make these as flexible as possible
5) Building a new course by integrating the elements from the final shortlist of techniques

Media Advisor

Evaluations with groups of practitioners confirmed the utility of this toolkit, but also highlighted that the resource (currently presented as a series of web pages) would benefit from being implemented as an interactive software tool (Kewell et al., 1999a). Specifically, this would automate some of the modelling processes, and allow the introduction of immediate visual feedback to supplement the decision-making process. This process led to the development of Media Advisor (Kewell et al., 1999b).

Media Advisor consists of a series of linked software tools, three of which are illustrated here. The first (Figure 1) provides a tool that allows practitioners to model and compare their teaching strategies in terms of a recognised educational model (Laurillard's conversational framework; Laurillard, 1999).

Media Adviser

Description
Selector
Rater
Modeller

Help
Home
Exit

Media Rater

Medium	Delivery	Discussion	Activity	Feedback
Lectures	3	0	0	1
Seminars	0	3	1	2
Lab work	0	1	3	1
Web pages	3	0	0	0
Course notes	3	0	0	0
Progress test	0	0	1	3
Hypnotism	3	0	0	0

Audio cassette
Audio conferencing
Broadcast TV
Bulletin board

Learning media

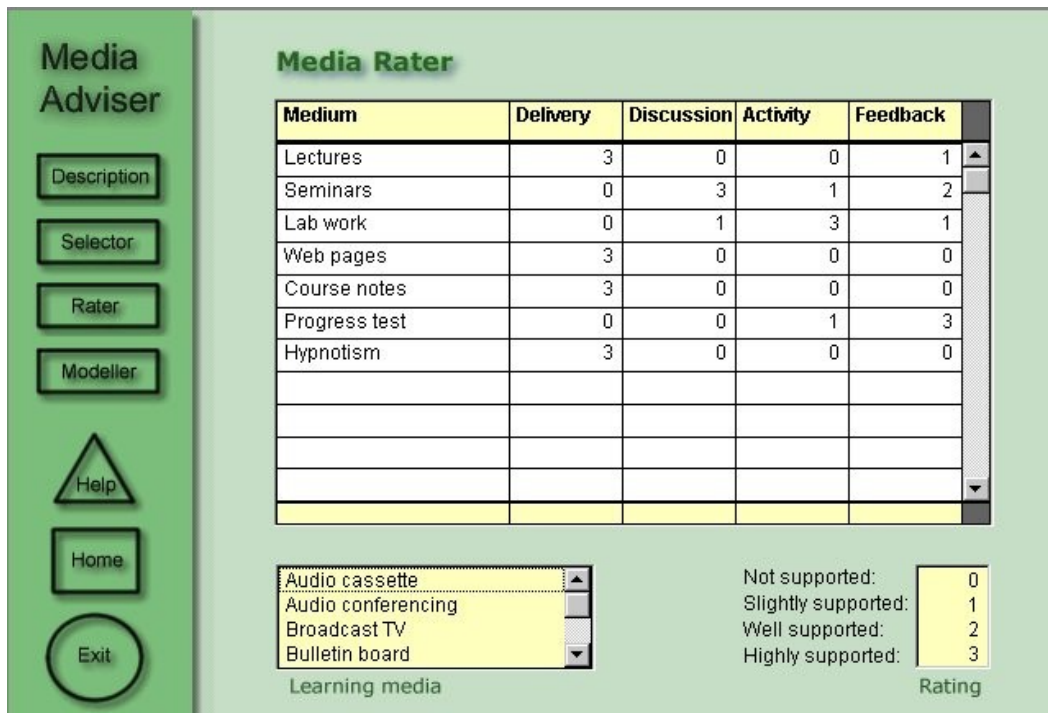|	
Not supported:	0
Slightly supported:	1
Well supported:	2
Highly supported:	3

Rating

Figure 1: Media Rater

The second tool, Course Modeller (Figure 2), allows models of courses to be created by specifying how many hours students are expected to spend experiencing each teaching technique.

Media Adviser

Description
Selector
Rater
Modeller

Help
Home
Exit

Course Modeller

Medium	Hours	Delivery	Discussion	Activity	Feedback
Lectures	4				
Seminars	2				
Lab work	2				
Web pages	3				
Course notes	2				
Progress test	1				
Hypnotism	1				
Total	**15**	**9**	**1.4**	**1.8**	**2.9**

Lectures
Seminars
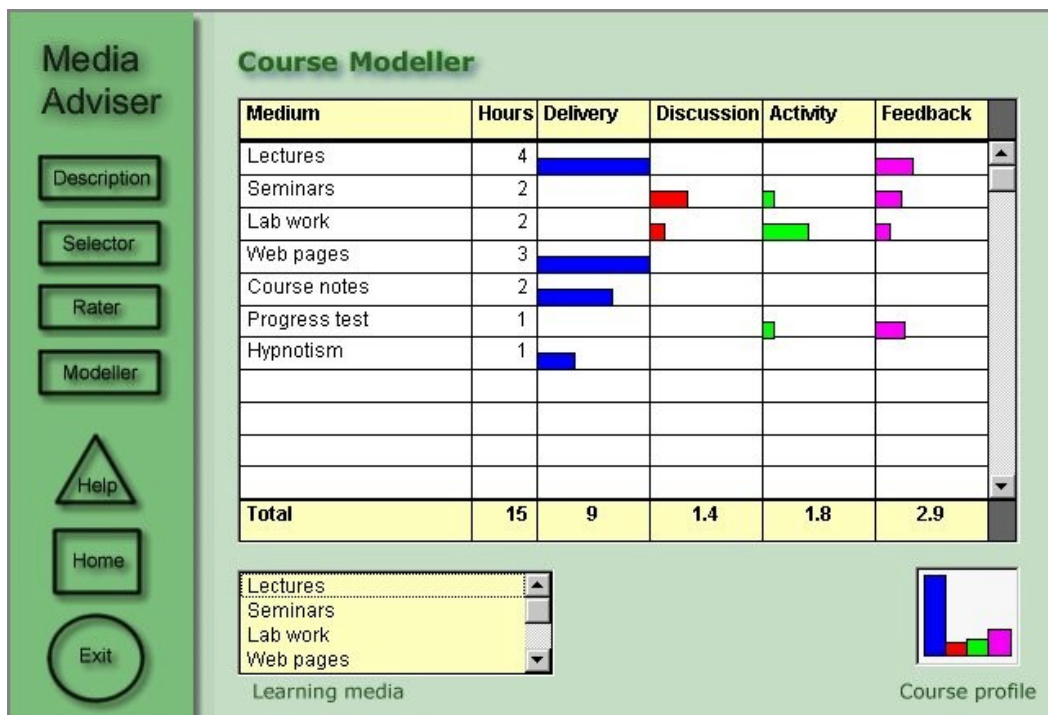Lab work
Web pages

Learning media

Course profile

Figure 2: Course Modeller

The third tool, Media Selector (Figure 3), allows practitioners to describe and cost the process of developing a course in terms of money and time.
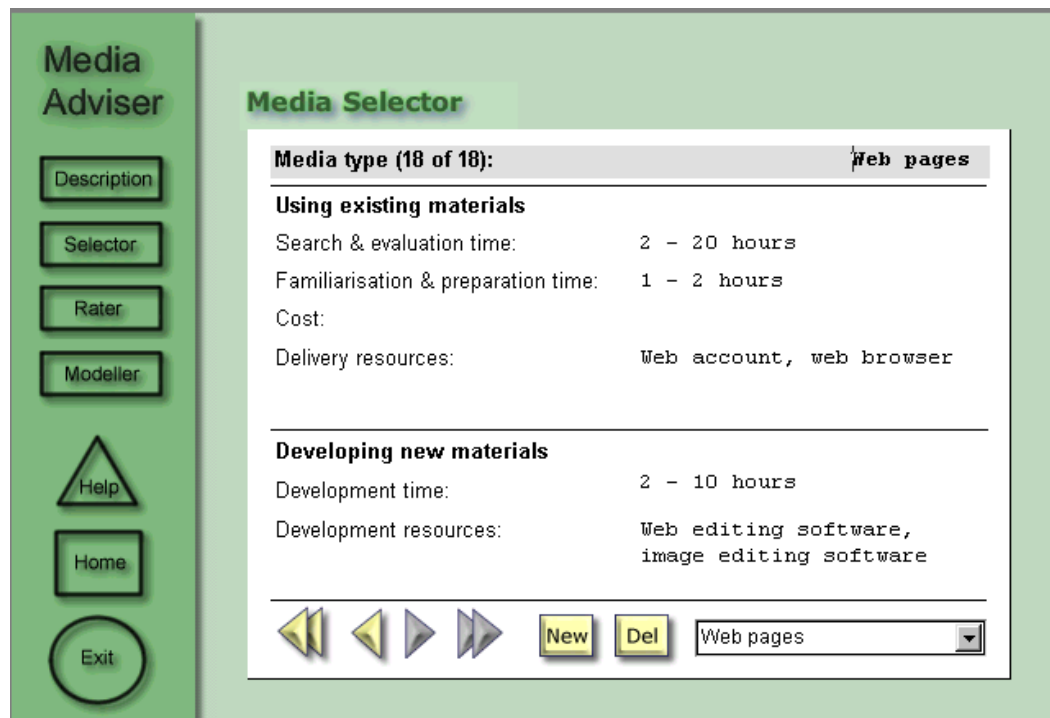

Figure 3: the Media Selector

Assessing the Quality of courses using Media Advisor

Evaluation of the use of Media Advisor identified its potential for Quality Assessment (Kewell et al., 1999c). These uses concentrate on the notion of Quality as fitness for purpose (Green, 1994).

Media Advisor's primary application is in the provision of a framework that makes explicit assumptions about the role and nature of different teaching techniques. Evaluation has shown (Kewell et al., 1999a), for example, that:
- practitioners find it hard to articulate the suitability or relative merits of, say, web pages over lectures
- practitioners have difficulty assessing the suitability of unfamiliar teaching techniques (with most practitioners, Learning Technologies provide a vivid illustration of this)
- agreeing on the meaning of even common terms such as "lecture" is problematic when dealing with a range of subject disciplines
- gaining an overview of the suitability of a mix of teaching techniques is an abstract and conceptually difficult task

These problems are all facilitated through the use of the descriptive and modelling framework provided by Media Advisor (ibid).

Use of Media Advisor allows these implicit assumptions and tacit knowledge to be made explicit, and hence inspectable. It also provides a shared framework and language that enables practitioners with differing assumptions to identify and discuss

different assumptions and practices. In this role, Media Advisor can be used to provide common understanding either in preparation for or as part of a Quality Assessment process. The impact of this is that a common, agreed definition of Quality in teaching can be achieved – something which is of prime importance to the development of Quality Assurance systems (Martens & Prosser, 1998).

Moreover, as illustrated in Figure 2, Media Advisor provides immediate visual and numerical feedback on the 'profile' of courses (the relative importance of different components of the learning process). This allows practitioners to make judgements as to the fitness for purpose of their current mix of teaching techniques. Since this judgement consists of documented assumptions and models, this represents an extremely useful piece of evidence for Quality Assessment and Assurance purposes.

The creation of a Quality Enhancement strategy using Media Advisor

Strategies for Quality Enhancement rely on the identification of areas of potential improvement and the specification and implementation of plans to address these. Media Advisor's model of embedding resources is ideally suited to supporting this process. As described in the outline of the expert model underlying the pedagogic toolkit, the embedding process requires practitioners to identify strengths and weaknesses, to shortlist alternative strategies that address these weaknesses, and construct a course model that incorporates these elements.

A standard application of Media Advisor to date has followed and extended this pattern. Practitioners start by rating the teaching techniques they currently use to deliver their course, then input the student hours allocated to each in order to produce a course profile. This allows them to make judgements as to the suitability of their current course in terms of the balance between different parts of the teaching and learning process. Their next activity is to consider how alternative teaching techniques, particularly those that incorporate Learning Technology, could address these weaknesses. This leads to a revised course plan with a profile better suited to the course aims.

With a map of the current course and an alternative that demonstrates enhancements to Quality, the next part of the activity process involves making use of the Media Selector tool. This is used to identify costs and resources that are required to implement the changes needed to move from the current provision to the enhanced course. As a final step, this information can be used as the basis of a project plan.

The application of toolkits in other domains

As outlined above, the pedagogic toolkit can be used to fulfil a variety of roles in the Quality Assurance process, including acting as part of the Quality Assessment process or as a structure for devising Quality Enhancement plans. Similar benefits can be obtained by developing and applying other toolkits. In this section, a range of Quality-related applications of toolkits will be outlined.

By definition, all toolkits include an expert model of a process derived from recognised theory and Best Practice. This provides a manageable process, supporting the implementation of performance monitoring systems.

Furthermore, by providing a common conceptual framework (particularly one in which multiple interpretations of terms can be negotiated and agreed), it becomes possible to define and establish standards. Through this, common practice can be developed and service thresholds agreed.

By providing activities that require recorded outputs, the toolkits produce documentary evidence of assumptions, processes and outputs. These provide a rich source of evidence for Quality Assurance and Assessment purposes, and are of value to individuals seeking recognition for professional development through assessed reflective portfolios.

Specific applications of toolkits, such as that outlined above for the pedagogic toolkit, can be designed to contribute to Quality Enhancement procedures. In general, this could be achieved for any domain by asking practitioners to work through the toolkit in terms of their current practice, assessing the strengths and weaknesses highlighted by this process, and then devising alternative approaches that redressed these.

Finally, toolkits contribute to the traditional notion of quality as excellence, by bringing Best Practice within the reach of all practitioners in a usable format. This allows widespread innovation and improvements to Quality, in marked contrast to the implicit and tacit expertise that frequently remains with the 'early adopters' within communities.

Conclusions

Toolkits are a specialist type of resource that fall between conceptual frameworks and automated software tools. Because of this position, they are ideally suited to supporting decision-making processes.

What makes toolkits particularly relevant in the context of Quality Assurance is the importance of sound procedures and documentary evidence for decision making. As illustrated in this paper, the pedagogic toolkit has been demonstrated to be extremely versatile. In addition to allowing practitioners to embed Learning Technology into their courses, but also provide a mechanism for generating a range of evidence and outputs that can be incorporated into Quality procedures. In particular, its relevance as a focus for negotiation as part of Assessment procedures and its role as a structure for Quality Enhancement planning have been outlined. These roles have then been set against a wider range of Quality-related benefits that can be identified for toolkits in general.

In conclusion, this research has demonstrated the value of toolkits to management and to personal development through improved practice. However, such tools currently remain outside mainstream Quality procedures. Clearly, further work is required in order to develop toolkits for a range of other domains, but also to incorporate them more closely into everyday practice. Not only will this allow their use to be recognised through Quality Auditing procedures, but more importantly, Best Practice and expert models will be made available to all practitioners in a flexible and easy-to-use format.

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