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Repurposing a learning activity on academic integrity: the experience of three universities

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Abstract:

There is currently great interest in reuse of digital learning resources, from single items to multi-task activities, to whole units or programmes of study. Associated with this interest is the ongoing development of tools to enable such resources to be placed in or recovered from repositories, to facilitate searching for them and their instantiation on different learning platforms. Many of these tools are highly technical, in terms of both technology and terminology, and they are the province of learning technologists and computer scientists, rather than teachers. Concentration on such tools begs the question as to whether teachers and learners will truly benefit from reuse of learning resources.

This paper describes the re-purposing of a learning activity created in a university in the US for use in two UK universities. The case study approach facilitates comparison of the technical and content issues that were addressed and resolved. The authors formulate and explore a proposition about the validity of an 'object based' approach to learning resources and conclude with a plea for better tools for teachers.

Keywords: online learning, repurposing resources, plagiarism

Interactive Demonstration:

The learning activities are available at http://www.dialogplus.soton.ac.uk/aig/index.html

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Introduction

Since 2003, the authors of this paper have been involved in the 'Digital Libraries in Support of Innovative Approaches to Learning and Teaching in Geography' (DialogPlus [1]) project under which geography teachers in two UK and two US universities are collaborating in the creation and sharing of reusable online learning activities. This paper describes one such learning activity, originally developed at Pennsylvania State University (PSU) for use by distance learning masters students and subsequently repurposed for campus based students at the Universities of Southampton and Leeds.

Within the project, learning activities are referred to as 'nuggets'. The term 'nugget' was initially adopted in recognition of the fact that definitions of 'learning object' varied widely, and connotations were problematic. A nugget was deemed to be broadly comparable to a reusable learning object as defined by L'Allier (1997), 'the smallest independent structural experience that contains an objective, a learning activity and an assessment.' During the course of the project, however, our definition of nugget has been expanded and refined to represent any online task, or sequence of tasks, addressing specific learning outcomes and involving 'various roles and interactions, plus access to specified resources and associated tools' (Bailey et al, 2006). The particular nugget discussed here is not concerned with subject matter specific to geography, but with the generic topic of academic integrity, specifically how to ensure that students understand the protocols of citation and referencing and thus avoid plagiarism in the work that they submit for assessment. It is known to us as the Academic Integrity Guidelines (AIG) nugget.

The paper describes the original development of the AIG nugget at PSU, take-up and repurposing firstly at Southampton and then at Leeds. Links to each of the versions are provided, where appropriate, to support description or comparison. After setting out the background to the original learning activity and its relevance to DialogPlus, a brief proposition is made about the likely extent and nature of repurposing. In the case studies section that follows, details are given of the overall approaches, technical and content repurposing, implementation and use of the Southampton and Leeds versions. Findings from the cases, both similarities and differences, are then discussed, the proposition is revisited, and general recommendations are offered with respect to the repurposing of online learning activities and tools for teachers.

Background

The original learning activity

The Department of Geography at the Pennsylvania State University began offering an online certificate programme in Geographic Information Systems (GIS) in 1999. Over five hundred students earned certificates of achievement from then until 2004, when the

programme was expanded to a complete Master of GIS degree. The combined programs now attract more than two hundred new students annually. Students are 40 years of age on average and typically study part-time whilst additionally in full-time employment. Most are practicing GIS professionals who lack formal education in geography and GIS and who seek career advancement. Others hope to break into the GIS field. All are distributed around the U.S. and to a lesser extent around the world.

The first course in both the Certificate and Master of GIS programs - Geography 482: The Nature of Geographic Information - is an orientation to the field and to the practice of online learning. Among other things, students learn how to create and maintain personal e-portfolios in which they chronicle their achievements throughout their courses of study. Over the years instructors discovered that approximately thirteen percent of projects included text passages that students evidently copied from other sources without proper acknowledgement (Jocoy and DiBiase, 2006). Discussions about such infractions revealed that these continuing adult students were typically unaware of how to properly paraphrase, quote, and cite source materials. Nor were they prepared for their instructors' vigilance in regard to these matters. To better manage student expectations, therefore, Penn State compiled guidelines for citations and references of text and graphics used in assignments to be published in e-portfolios.[2] To ensure that students attend to the guidelines, Penn State also developed an academic integrity quiz that students are required to pass before they can access project assignments in the Geography 482 class. The guidelines and the quiz together comprise the AIG nugget.

Relevance to DialogPlus

At a project meeting in January 2004, the AIG nugget was presented to the DialogPlus partners. Unlike specialist nuggets addressing learning in physical, environmental or human geography, it had immediate, widespread appeal. In the absence of standardised curricula in baccalaureate geography programs, as well as cultural and historical differences in academic geography in the UK and US, it has been challenging to identify nuggets that can be shared readily among the four universities. Despite these differences in the subject domain, teachers in the partner universities had very similar concerns about helping students with referencing, citations and avoidance of plagiarism. Adopting the AIG nugget thus addressed a real need and, additionally, allowed the team to tackle the necessary repurposing to facilitate student access to, and learning from, resources mounted in our different online learning environments. Subsequently, as described in this paper, the AIG nugget has been modified for use at Southampton, accessed via Blackboard [3], and at Leeds via Bodington Common [4]. The lessons learned from modifying this generic learning resource have informed our subsequent efforts to share discipline specific nuggets.

Proposition

As well as the geographers, the DialogPlus project involves computer scientists and educationalists. Both groups are aware of work in the field of repurposing learning objects

(see for example Boyle, 2003; Weller, Pegler & Mason, 2003) and contribute to the wider debates on standards to facilitate finding and reusing resources (CETIS [5], UNFOLD [6]). Object based approaches to developing courses or units of learning start from the premise that the learning outcomes declared for a learning object **will** be achieved, without investigating how they do so and what pedagogical stance underpins the design. Weller et al discuss the pros and cons of this approach and state that "In constructing a course from discrete objects it is difficult to maintain an overall perspective of how it will be experienced by students." (2003, p. 13).

All teachers create and repurpose learning materials - both on and offline. In so doing they revise content, and sometimes the sequence of presentation, in order to address the needs of their specific students and to achieve explicit learning outcomes. Our proposition, therefore, is that the approach to learning and teaching (pedagogy) adopted will have as much, if not more impact, on the viability of reusing online learning resources than the purely technical repurposing that facilitates implementation on, and access via, different managed or virtual learning environments. Detailed consideration of the Southampton and Leeds modifications to the original AIG nugget allows us to explore this proposition.

Case studies

PSU's original AIG nugget, delivered to learners through the Angel [7] virtual learning environment (VLE), consisted of a policy document on academic integrity, guidelines for citation and referencing as well as the online test, a multiple choice quiz (MCQ). While the narrative provided learners with help and instructions on academic integrity, the formative quiz allowed them to self-assess and, if necessary, improve their understanding of the problems surrounding poor referencing and plagiarism. This "reading and doing" approach had proved very effective and was enthusiastically adopted in the repurposed versions at Leeds and Southampton. All three nuggets, therefore, have the same structure: a set of narrative resources followed by an interactive test.

Once the common framework of the AIG nugget had been accepted, the next phase was to determine the extent to which the content and methodologies could be shared and reused. These decisions were made locally at Southampton and Leeds, based on analysis of the institutional settings, target audiences, existing local expertise and resources. While PSU's version was aimed at helping distance learners on Masters courses, the nuggets were to be deployed at different levels, for different groups of students, at both UK universities. The separation of the textual information from the interactive quiz allowed the substitution of context-specific resources relevant to each individual institution. Additional materials could also be included to alter the scope of the nugget and to provide linkages to resources held locally. In theory, the online testing component was less context-dependent and hence a greater degree of reuse should have been possible. However, it became apparent from the two repurposing exercises that substantial changes may well be required when sharing reusable learning objects. The two case studies, and the findings based on the experience of the teams at Southampton and Leeds in the following paragraphs, illustrate this point.

Like many other higher education institutions, the University of Southampton has a formal policy on academic integrity and a clear set of procedures to deal with plagiarism. Guidance on proper referencing is available from the central library and from individual teaching schools. Increasingly, this information can be accessed on the web. Students can also receive support from their tutors if they are unsure about a particular aspect of dishonesty and cheating. From 2005, academic integrity has been covered in a compulsory study skills unit in the first year of the undergraduate programme in the School of Geography. The timely availability of the AIG nugget not only supported the teaching of the curriculum but also connected all the resources mentioned above in a coherent and accessible manner. The first phase of the repurposing involved substituting Southampton's policy and guidance documents for the PSU equivalents. Unlike PSU's distance learners, who may enrol on a single unit of study, first year undergraduates are normally registered for a three year degree course and hence the university-wide policy document was included. To demonstrate why academic integrity is important in terms of an individual's personal development during and beyond higher education, a statement about how good referencing can lead to professional values was added as the front page of the nugget.

Once the narrative content of the resource had been established, the test object was modified through 'versioning'. This is the process of adapting any existing learning resource to a new context (Thorpe, Kubiak & Thorpe, 2003). The main hurdle was transferring the object between the institutions' VLEs, as all three, at this time, had limited or no question and test interoperability (QTI). The source quiz was embedded in PSU's Angel system. In order to reuse it in Blackboard and Bodington Common at Southampton and Leeds respectively, its content was disaggregated from the associated style sheet and other presentational elements and then the output was saved in plain HTML. Using a quiz authoring tool called Respondus[8], the team at Southampton managed to reversion the quiz in IMS-QTI [9] format which was also distributed to Leeds. As at Southampton, the file was then edited and JavaScript coding was added to enable the interactive components of the quiz. The number of questions was increased from nine to twelve in order to cover difficult areas such as referencing graphics or acceptable paraphrasing.

Instead of importing the whole AIG nugget to Blackboard, the team at Southampton opted to make it into an IMS-compliant learning object. The test version was then run from the School's server supported by ASP script, mainly for the purposes of recording and tracking. This IMS-compliant version was subsequently passed to Leeds for further repurposing. The next phase of Southampton's development will involve embedding the nugget in Blackboard when the full implementation of SCORM [10] 2004 runtime environment is made available through a new VLE application update (Blackboard, 2005).

Although Leeds took over the test "relay baton" on the final leg, wider repurposing work had started much earlier and ran almost parallel to the development at Southampton. The draft AIG nugget, completed towards the end of 2004, is aimed at both distance learning and Leeds campus-based undergraduate and graduate students in the School of Geography. The development complied with the institution's revised policy on plagiarism, under which all students are required to sign an academic integrity statement with every piece of

coursework submitted. In contrast to the two other versions, that were targeted at a specific course or group of students, the Leeds' nugget was designed to be implemented at the School, and eventually the institutional, level. This broader scope is evident in the choice of a wide range of resources useful for both learners and tutors. Among the additions, the most noticeable are the description of the online plagiarism detection service called Turnitin [11], introduction to Endnote referencing software and hyperlinks to other exemplary web resources related to academic integrity and plagiarism. It is intended that the Leeds' AIG nugget will be taken up by the University Learning and Development Unit and incorporated into an online university-wide development resource on plagiarism for both students and staff members. It is envisaged that the nugget will form the basis of the student resources, illustrated with discipline specific examples.

Like Southampton's quiz, new questions were added to the Leeds version of the test in order to provide better linkages with local resources and to reflect the institutional settings and requirements. The draft version of the nugget was written in HTML, as were PSU's and Southampton's. The main technical difference is that the interactive quiz was written using Bodington's own MCQ composing tool. Once approved at Institution and School level, the final version of the nugget will be available via the University of Leeds' VLE, Bodington Common. For ease of printing, the web pages, when resident in the VLE, will also be downloadable as a PDF file. The test object on the other hand will be delivered as a standard MCQ within Bodington Common with a printer-friendly option. The conversion will most likely make use of the adoption of the latest version of the IMS-QTI specification. The technical and content repurposing at Southampton and Leeds are summarised in the table below.

Technical Repurposing	
Southampton	**Leeds**
Implemented in Blackboard. Available as a set of web pages. Interactive MCQ test written in HTML supported by cascading style sheet (CSS). JavaScript server-side scripts written for recording and tracking the submission of quiz results.	Implemented in Bodington Common. Available as a set of web pages and as a PDF. Interactive MCQ test written in PHP script.
Content Repurposing	
Southampton	**Leeds**
Placed a stronger emphasis on the importance of professional values. Adopted a "minimalist" approach, only giving students the official documents and guidance that are locally produced by the University and the School of Geography. Modified or added questions to extend the quiz to cover other areas, e.g. citing graphics, acceptable paraphrasing and proper inline citation style. Introduced some local Southampton elements to the quiz. Changed feedback mechanisms and the tracking of results. All literature and external resources featured are properly referenced on a separate page.	As well as repurposing the PSU and Southampton versions, drew heavily on the School of Geography's documentation on plagiarism and a Leeds School of Computing online plagiarism quiz. Added the Leeds Declaration of Academic Integrity form. Added information about the JISC funded Turnitin plagiarism detection service. Added an introduction to EndNote, the reference management tool. Added new exemplar material for guidelines to referencing and quoting/paraphrasing. Added new questions to the AI quiz. Linked to about 20 useful resources relating to AI and plagiarism, within the School, within the university, and also including some very high quality external resources. Added acknowledgements and references.

Table 1: A Summary of Technical and Content Re-purposing

Interested readers are encouraged to visit http://www.dialogplus.soton.ac.uk/aig/index.html where they can access and compare the three versions.

Usage at the University of Southampton

A by-product of delivering the integrity test via an online environment is the possibility to track the student usage and progression. The nugget was made compulsory for all 142 first-year Geography undergraduates. It also formed a part of the formative assessment for an optional Level 2 unit which had 82 year 2 and 3 students. At the time of writing, all of the year 1 cohort and 99% of the year 2/3 students have taken the quiz. The high completion rate was largely down to a "friendly" email reminder which was generated and sent automatically to students who had not made a single attempt by the submission deadline. Those who had attempted but not passed the test were also reminded that they had to score 100% in order to fulfil the course requirement. Table 2 below shows some of the usage and results statistics.

It is clear that most students spent between 14 and 16 minutes taking the quiz and passed at their first attempt. However, the times must be viewed with caution, as they may include periods of non-activity.

	Year 1 students (Total =142, all passed)	**Year 2 & 3 students** (Total = 82, 81 passed)
Number of attempts at the quiz		
Minimum	1 (90 students)	1 (72 students)
Maximum	18 (1 student)	3 (2 students)
Average (standard deviation)	1.7 (1.7)	1.1 (0.4)
% of students passing at their		
1st attempt	63%	88%
2nd attempt	23%	10%
>=3rd attempt	13%	2%
Time (in minutes) taken by students who passed at the 1st attempt		
Minimum	1.6	2.6
Maximum	65.1	32.5
Average (standard deviation)	15.7 (10.2)	14.2 (5.5)

Table 2: Usage Statistics - University of Southampton - 2004/5

Over the next academic year, usage statistics should become available from PSU and Leeds allowing us to extend our comparative case studies and investigate whether the

different contexts and content, discussed above, result in different usage patterns and outcomes.

Findings and Recommendations

The AIG case studies appear to support our proposition that ' the approach to learning and teaching adopted will have as much, if not more impact, on the viability of reusing online learning resources than the purely technical repurposing'. Considerable attention was given to substituting local resources that would best inform specific groups of students about academic integrity standards, and to devising questions that tutors felt would effectively test their subsequent understanding. At Southampton, the approach adopted was minimalist and didactic with usage of the nugget restricted to specific students; whilst at Leeds it was more fulsome, enquiry-led and made available as an institutional resource. These decisions were made by teaching staff and implemented by technical developers as they resolved the platform dependencies.

Theoretically, it would have been possible to reuse the PSU nugget without changing any of the substance at Southampton and Leeds. Indeed, tools for automated technical repurposing between VLEs are with us now and the term 'repurpose' is used in the learning technologies community, at least in the UK, to cover migration from one system to another, rather than modification of resources for different contexts and purposes. This is likely to remain the case while there are barriers such as legacy systems (Milligan, Gordon & Christie, 2002) which prevent university IT departments from moving towards a standardised environment as fast as commercial organisations.

However, teachers want, and need, to examine the content and implicit pedagogic approach of any resources they consider adopting. They rarely, if ever, deliver another teacher's material completely unchanged. Even if the over-arching learning objectives are the same, different teachers will devise diverse paths and activities for their own students. In doing this they draw on their training, local knowledge and experience of what is likely to work well. This 'pedagogic repurposing' is part of a teacher's expertise.

Based on the Southampton experience and usage statistics, it appears that one-off institutional re-purposing is of limited value. There were differing expectations, behaviours and outcomes with respect to the AIG quiz for year one students compared to year two/three. Indeed, different question banks for level 1, 2 and 3 students have been proposed as a further enhancement. These would make it even more useful to students as they progress with their studies and understanding of academic integrity.

Our main contention is that work on digital repositories which concentrates on either depositing interoperable 'learning objects', or discovery of non-standard objects followed by automated technical repurposing, does not truly serve the needs of teachers and learners. Claims for time and cost savings based on such approaches are unsustainable in most cases because teachers simply will not use resources they cannot examine in fine detail and repurpose as they see fit. This is not an argument against reuse and repurposing of learning

objects *per se*. Although in suggesting that it must be done by teachers who understand the context, prior learning, characteristics and abilities of their students, we support the view of other authors such as Jones (2004) who says "one might claim that the ability to reuse the design aspects of a successful learning resource is of more value than reusing learning objects themselves."

Even with the generic learning activity discussed in this paper, considerable thought was given by academic staff to modifying context, target learners, learning outcomes, content and sequencing. Whether, learning resources are generic or subject specific, our view is that they have to be 're-engineered' so that the teacher understands and is confident in how they support the learning of their specific students. An 'object based' approach slots intact resources into modified contexts without that level of re-engineering. So the tools currently on offer address labelling, search, recovery and instantiation. They do not address the need to disaggregate and reaggregate the components of a learning activity. Even where standardised quiz tools exist they are still too complicated for many academics.

We recommend that more effort is concentrated on developing online learning activity creation and/or editing tools for teachers. Such tools should be as simple to use as document or presentation production packages are now. They should allow for import/export of learning activities from/to other 'formats' chosen from simple lists. They should support a 'cut and paste' approach to embedded, or hyperlinked, resources and the order of tasks within a learning activity, such that a teacher can add, replace or re-order these elements. They could incorporate any of the current generation of Internet search tools to facilitate finding resources to modify. Opinion is likely to be divided over whether they should include guidance on effective approaches to learning and teaching [12]. They will differ from learning object discovery and manipulation tools in that they must allow teachers to change content easily at any level of granularity.

Conclusions

In the case studies described here, teachers in two UK universities recognised the potential benefits of the original learning activity developed by colleagues in the US and wanted to use the approach with their own students. Initial technical re-purposing was soon subordinate to the content changes required to address local needs and context. Although this lengthened the process, each local instance of the activity became more robust and valuable for both staff and students. The initial impressions of the potential usefulness of the approach have already been fully substantiated.

However, it was not possible for the teachers themselves to make the required modifications. Technical expertise was required to resolve issues arising from the lack of standards and interoperability among course management systems or VLEs. While this remains the case, teachers will be less likely to search for and use pre-existing digital resources and computer based learning activities than they would be if a user-friendly

authoring and editing tool and a standardised run-time environment were available.
The experience of repurposing a particular online activity, developed in one university and taken up enthusiastically by two others, suggests that an 'object based' approach to teaching and learning resources is flawed. Teachers are highly unlikely to reuse materials created by others without extensive investigation and a varying amount of modification to satisfy their own perceptions of the context, learner attributes and motivation, aims and desirable outcomes. This is part of pedagogic expertise and goes to the heart of what it means to be a teacher. Recognition of this requirement should inform the design and development of new and better tools for teachers to create and edit their own and others' online learning activities.

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Footnotes

[1] DialogPlus: http://www.dialogplus.org/
[2] Penn State's academic integrity policy and guidelines are available for review at http://www.e-education.psu.edu/courses/geog482/policies.shtml#integrity
[3] Blackboard: http://www.Blackboard.com/
[4] Bodington Common: http://vle.leeds.ac.uk/site/
[5] CETIS: http://www.cetis.ac.uk/
[6] UNFOLD: http://www.unfold-project.net/
[7] Angel: http://www.angellearning.com/
[8] Respondus: http://www.respondus.com/products/respondus.shtml
[9] IMS-QTI: http://www.imsglobal.org/question/index.html
[10] SCORM: http://www.adlnet.org/
[11] Turnitin: http://www.turnitin.com/static/home.html
[12] Interested readers are referred to Conole and Fill (2005) for description of a toolkit developed at the University of Southampton which does offer such guidance. Bailey et al (2006) describes a mapping of this toolkit's metadata to IMS-LD.
[13] Joint Information Systems Council (JISC) website: http://www.jisc.ac.uk/index.cfm?name=home
[14] National Science Foundation (NSF) website: http://www.nsf.gov/