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Content-independent learning objects developed for the DART project

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Running head: Content-independent learning objects

Abstract

Learning objects are intended to be sustainable by virtue of their reusability, but they tend to be designed within a specific learning context and may not be appropriate when moved to a new context. A more sustainable solution could be achieved through the design of generic learning objects, or ‘learning classes’, that enable a specific learning activity and allow the teacher to plug in whatever content they require. The DART project at the London School of Economics has developed two such learning classes. Although originally designed for teaching anthropology, the content of the learning classes can be taken out and replaced, so that the same class can be used to create a new learning object for a completely different subject.

In this paper, I shall describe two such learning classes that DART has developed. The first, called “What’s Going On?”, is a video-interpretation exercise that allows the teacher to annotate a piece of video with synchronised subtitles, hotspots, and links to other resources, which the student can use to interpret the content of the video clip. The second, called “Investigator”, allows students to explore a map (or any other image) and ‘collect’ resources from pre-defined locations into a personal portfolio. I shall demonstrate the anthropological applications of these tools, and show how they have been applied to other subject areas.

Content-independent learning objects developed for the DART project

Introduction

The reusability of learning objects is intended to achieve sustainability in learning technology, but learning objects tend to be designed within a specific learning context and may not be appropriate when moved to a new context (e.g. when used by a teacher at a different university). A more sustainable solution could be achieved through the design of generic learning objects, or 'learning classes', that enable a specific learning activity and allow the teacher to plug in whatever content they require.

DART (Digital Anthropology Resources for Teaching) is a joint project between the London School of Economics (LSE) and Columbia University in New York, aiming to address problems in the undergraduate teaching of anthropology through the development of digital learning tools, and other learning activities. At Columbia, the focus is on the large-scale, through the development of digital library technologies, whereas we are working on the small-scale, building digital learning tools to tackle specific teaching problems in anthropology. The tools we have developed are designed to be completely customisable, so that their content can be replaced, and the tool re-used for teaching a different subject.

In this paper I describe two of these tools, and explain how they may be converted to use new content, in new subject areas. I go on to suggest that such customisable tools may be more useful than a proliferation of fixed-content learning objects.

Tool 1: What's Going On?

At the start of the DART project, the LSE Department of Anthropology held an away-day to try to identify the key problems in the teaching of undergraduate anthropology. The main issue that emerged was

the paradox that, while anthropological knowledge is constructed by means of ethnographic fieldwork, our students never actually get to do any fieldwork themselves. Therefore they are always reading other people's interpretation of the data, and tend not to critically question the conclusions that those people come to. We wanted, therefore, to find a way to give students a sense of what it means to collect and interpret data in an unfamiliar environment.

In What's Going On, a student watches a 6-minute video clip of an event involving a Mbendjele hunter from Congo-Brazzaville. The video is enhanced by way of subtitles and 'menu links' to relevant background information that appear at certain points during playback. At first, the subtitles and menu links are consistent with what might be available to a fieldworker who has spent only 3 months in the field. The subtitles are therefore very incomplete, with only basic phrases translated, reflecting the poor grasp of language that a fieldworker has by this stage. The menu links to additional information are similarly sparse. After watching the video, the students write a 150-word analysis of the scene, explaining what they think is "going on".

After this first exercise is completed, it is repeated, this time with the subtitles and menu links enhanced to represent 9 months' experience, and the students submit a second, 300-word analysis in which they also reflect on any changes in their understanding. Finally, after a third viewing, representing 18 months' experience, they submit a final 600-word report. All pieces of work are assessed, and discussed in class after the end of the exercise.

You can try the Mbendjele What's Going On exercise at:

<http://clt011.lse.ac.uk:8383/Steve/wgo/wgoLevel1.html>

In this way, students learn first-hand how anthropological knowledge develops incrementally and is constantly revised, that no ethnography is ever 'complete', and they discover the extent of their own subjectivity and cultural biases. They do this exercise at the same time as reading an existing ethnography of the Mbendjele, leading them to critically question how the ethnographer arrived at his conclusions.

Evaluation of What's Going On

The tool has now been used and evaluated with two successive years' cohorts. We did not make any substantial changes either to the tool itself, or to its implementation, as a result of the first year's evaluation results, so we were effectively evaluating the same thing in each year.

The main instrument of evaluation was a student questionnaire. In 2004, we used a single, online questionnaire at the end of term, which gave us a 30% response rate. In 2005, we changed to using a series of short, paper-based questionnaires that were completed in class. This raised the response rate to 100%.

The results showed that students enjoyed the exercise, that they felt it helped them to engage with the text and to understand the analysis of ethnographic data, and that they felt that the exercise was an effective way to learn. When asked what the point of the exercise was, and what they thought they had learned from it, their answers corresponded well with our intended outcomes. Few technical problems were reported, the principal complaint being an occasional slowness of the video – either to load or to play back. When asked how they would improve the tool, the most popular suggestion was to make the video image larger. There is an obvious tension between this suggestion and the problem of slow downloads! At present we have no plans to make major changes to the tool before the next cohort use it.

Customisability of What's Going On

What's Going On is a Flash movie which loads up all its content from external files, based on the settings specified in a configuration file. All the data is stored as XML, and the video clip itself is converted to Flash (figure 1). So, changing the content is a matter of editing the configuration file to point to a new piece of video, and creating new subtitle, menu and hotspot* files to accompany the new video.

(* "Hotspots" are highlighted areas of the video image that appear at specific moments during playback. When clicked, they bring up a piece of text or a hyperlink that relates to the highlighted area. This feature has not yet been used in teaching at LSE, as we didn't think it especially useful for this particular exercise.)

Insert Figure 1 about here

When creating new content for What's Going On, the hard part is writing the subtitles and menu links, and calculating their timings – once this is done, converting them to the XML format is quite straightforward.

New content for What's Going On

To demonstrate this customisability in practice, we are working with the University of Waterloo in Canada, will be using What's Going On in their anthropology course in autumn 2005, based on studies of the Chukchi people of Siberia. Staff at Waterloo will also carry out an evaluation of students' use of the tool.

You can access the Chukchi version of What's Going On below. Note that this is not complete, and also includes the use of a hotspot which is not part of the Waterloo version.

<http://clt011.lse.ac.uk:8383/Steve/wgo/pegtymel/wgo.html>

To encourage further use, I am developing an authoring system for the tool. So far this only covers subtitles, but we plan to develop similar facilities for the menu links and the hotspots. The subtitle authoring tool allows the teacher to type the subtitles straight onto the video image at the appropriate point during playback, and automatically generate the corresponding XML.

Try the subtitle authoring tool here:

<http://clt011.lse.ac.uk:8383/Steve/wgo/wgoAuthor.html>

Tool 2: Investigator

The second tool I will describe has its origins in a course on the Anthropology of India. This course aims to take students from the analysis of village life and the origins of the caste system, through to the modern, urban context. The aim of Investigator is to give students an experience the process of collecting ethnographic data in an urban environment, and to challenge their skills in evaluating and discriminating between different data sources.

While the tool itself is called Investigator, this particular instance of it is called 'Kolkata Explorer'. As we will see, different content can be used, to address different subject areas. Using the tool, students can explore the city of Kolkata (Calcutta), and visit a range of different locations where they will find resources that act as evidence for their study. This evidence may consist of anything that can be put on a webpage – so there are texts written by the teacher, scholarly articles, external websites, images and video clips.

When a student finds a resource that is relevant to their study, they can add it to their personal portfolio, together with an annotation that explains its significance. This portfolio can be saved to a database, so the

student can come back and retrieve their work later. Eventually they use their collection of annotated resources as the basis of a marked assignment.

You can try the ‘Kolkata Explorer’ exercise (using Investigator) at:
<http://clt011.lse.ac.uk:8383/Steve/investigator/index.html>

Investigator has been used in teaching at LSE, but it was introduced very late into the course as an optional element, and the evaluation results are too sparse to draw any meaningful conclusions. We will need to wait till next year to implement and evaluate it properly.

Investigator customisability

As with What’s Going On, Investigator is a Flash movie that pulls in its content from external files – JPGs for the maps, and XML for configuration, the locations and the links (figure 2). Also, there is a link to an open-source database system to allow students to save their work between sessions.

Insert Figure 2 about here

So, once again, the tool is completely customisable in terms of content and can be re-used for teaching different subjects. The images could be anything, not necessarily maps; one might replace them with a photo of a geological formation, or an anatomical diagram.

Since Investigator is a fairly new development, we do not yet have any practical demonstrations of its re-use in teaching a different subject, but we are keen to see this happen soon. Both Investigator and What’s Going On are freely available for use in education, and we will support teachers who wish to use the tools.

Conclusion

I have demonstrated examples of tools that can be customised for use in any subject area. What's Going On is a generic learning template, from which the Mbendjele video exercise has been built to address a specific learning objective. Similarly, Investigator is the template from which the Kolkata Explorer has been built. If we consider the Mbendjele exercise and the Kolkata Explorer to be types of learning object, then to follow the same computing metaphor, these objects are instances of abstract learning classes: i.e. What's Going On and Investigator.

This concept seems to me to be quite important. In the UK at present there is a lot of work going on to build repositories of learning objects, with the idea that teachers will be able to search for the objects they need to build a customised course. I am not convinced that this idea is realistic. Learning objects have fixed content, and depending on their granularity, they risk being either inappropriate for the specific learning objectives the teacher wants to achieve, or else too limited in scope to make a meaningful contribution. I think that, where possible, it makes more sense to develop learning classes, templates, frameworks, tools (or whatever), which perform a fixed learning function, but leave the content completely up to the teacher.

I hope that what I've demonstrated here shows that this sort of thing is possible in practice, and, with better authoring tools, such classes could be picked up and used by teachers with limited access to technical know-how.

If you are interested in using either of the tools described in this paper, please contact me at s.bond1@lse.ac.uk. Further information about the DART project is available at the project website:

<http://www.columbia.edu/dlc/dart>.

Figure captions

Figure 1: Schematic diagram for *What's Going On?*

Figure 2: Schematic diagram for *Investigator*

Figures

Figure 1:

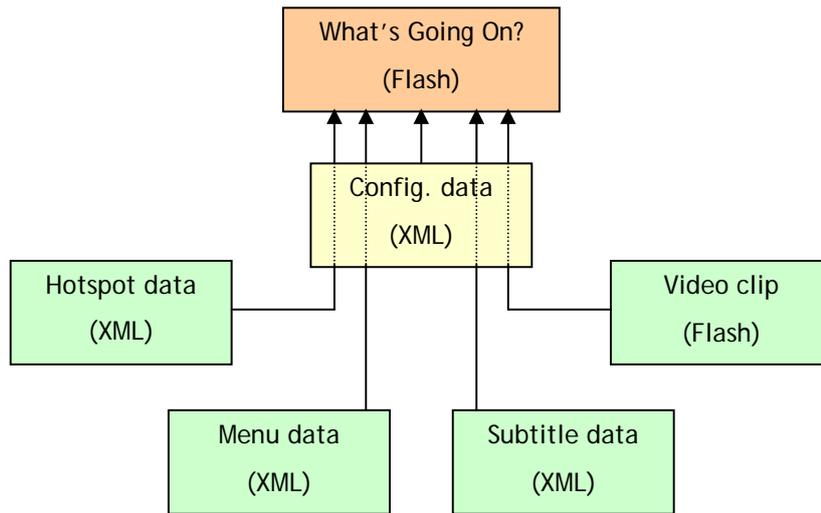


Figure 2:

