openlearn

Title   **Knowledge Mapping for Open Sensemaking Communities**

Authors   **Simon Buckingham Shum and Alexandra Okada**

Affiliations   Open University - Knowledge Media Institute & OpenLearn Project
sbs@acm.org
a.l.p.okada@open.ac.uk

Abstract   By analogy to cartographic representations of spatial worlds, Knowledge Maps provide an 'aerial view' of a topic by highlighting key elements and connections. Moreover, just as spatial maps simplify the world and can fuel controversy, maps of conceptual worlds provide vehicles for summarising and negotiating meaning. In conjunction with the UK Open University's Open Educational Resources *OpenLearn* project, we are investigating the role of such maps for both learners and educators to share -- and debate -- interpretations of OERs. In this brief update, we describe how a mapping tool (*Compendium*) has been integrated with OpenLearn's e-learning platform (*Moodle*), in order to support tasks such as concept analysis, problem-solving, literature review, learning path planning, argument analysis and OER design.

Body   ## 1. Seeking coherent patterns in an ambiguous information ocean

OpenLearn [www.open.ac.uk/openlearn] is the UK Open University's Open Educational Resources project, publishing thousands of hours of distance learning materials on the Web for free access and remixing under a Creative Commons license. Designed originally for students paying for tutor- and peer-supported distance learning, the materials are structured from the start to promote critical reflection on the part of the learner. In an open learning context, however, learners do not have ready access to an expert tutor or cohort of peers, and may be drawing on diverse other OERs, blogs, wikis, newsfeeds and so forth, some of which may be superior, complementary, contradictory or of dubious authority. What support for managing this information ocean can we provide in the learning environment in which our OERs are embedded, in order to move learners towards knowledge construction and negotiation? Users need intuitive, powerful tools to manage, share, analyse and track information, ideas, arguments and the connections between them.

Our specific concern within OpenLearn is to investigate support for what we call Open Sensemaking Communities [www.kmi.open.ac.uk/projects/osc - Buckingham Shum, 2005], a concept we are using to investigate the next step after publishing OERs, namely, *designing for sensemaking*: embedding OERs in an environment that supports end-users (both learners and educators) in engaging more deeply with the material and with each other in self-organising communities of interest. The focus on *[sense][making]* reflects our perspective on giving shape and form to interpretations, and the individuals/communities articulating them, after Weick (1995):

> *"Sensemaking is about such things as placement of items into frameworks, comprehending, redressing surprise, constructing meaning, interacting in pursuit of mutual understanding, and patterning."*   (Weick, 1995, p.6)

We propose that a primary challenge is to assist self-organising learners and educators in assessing, extending and contesting OERs. This requires access not only to the *text,* but to the *context* (e.g. annotations, argumentation, and the people behind them). This rationale shapes the selection of the software tools that we are evolving, which are designed to make visible and manipulable the connections between ideas, and between the people behind them. The focus of this paper is on mapping conceptual networks, although we touch briefly on social networks at the end.

2. Knowledge Mapping

By analogy to cartographic representations of spatial worlds, Knowledge Maps (Okada et al, 2008) provide an 'aerial view' of a topic by highlighting key elements and connections. Moreover, just as spatial maps simplify the world and can fuel controversy, maps of conceptual worlds provide vehicles for summarising and negotiating meaning. There is extensive empirical evidence from the learning sciences on the value of Mind Maps and Concept Maps in promoting meaningful learning about a domain. In recent years, there has been growing interest in the pedagogical affordances of discourse-oriented mapping techniques that scaffold deliberations in a structured way, under the headings of Dialogue Maps and Argument Maps (Andriessen et al, 2003; Kirschner et al, 2003; Conklin, 2006).

Building on this foundation, we have integrated knowledge mapping functionality into the OpenLearn platform, the open source *Moodle* system [http://moodle.org]. The OU's *Compendium* tool [http://compendium.open.ac.uk] provides a visual user interface for users (e.g. learners, educators or software developers) to cluster, connect and tag icons representing issues, ideas, concepts, arguments, websites or any media document. They can use this represent their personal reflections as they study or work on a problem, or share their maps with others. Knowledge maps can be useful as a summary of a topic, or to share a learning path through the maze of the Web. Text, images, URLs, documents and ideas can be dragged and dropped into a map and structured. In addition to Compendium, we have also released open source the code enabling system administrators to add the Knowledge Map block to their own Moodle installations, with the facilities to upload and download maps linked to a given course [http://compendium.open.ac.uk/openlearn/moodleblock.html].

Space precludes illustrations of all the different genres of map that can be created in Compendium, but examples are provided in the Knowledge Mapping QuickStart Guide [http://openlearn.open.ac.uk/course/view.php?name=KM] and in the Open Sensemaking Communities Phase 1 report [http://kmi.open.ac.uk/projects/osc/docs/Phase1_Report.pdf].

3. Adoption patterns

Diagnostic reports of Compendium downloads, and map uploads/downloads are generated as part of the Moodle Knowledge Map block. In the nine months from our Oct. 2006 launch, there were 1179 downloads of the Compendium tool, in part from the different internal OU communities as shown below, but largely from elsewhere.

Non OU	@open.ac.uk	@student.open.ac.uk	@tutor.open.ac.uk	Total
839	116	198	17	1179

We find this an encouraging level of interest in the tool, although given the established role of concept and mindmapping tools within learning and business,

we are not surprised that a free tool offered by the OU (which has been quite widely blogged) should prove popular. What we are not yet seeing is large scale uploading of maps, with only 118 maps, largely from OU staff and OpenLearn project members. The relatively low level of public activity (mirrored with other tools) suggests that while technically literate open learners may be relatively quick to test personal tools they can install on their own machines (downloads of Compendium), there is a further threshold to cross before they are ready to engage in public behaviour of any sort. We do not find this surprising. It takes time for learners to digest new material, build confidence with new tools, and find peers.

An open research question that we will be investigating is to assess firstly, the extent to which individuals are using Compendium privately (the critical first step), and secondly, when we remove the need to install software, and make it easier to embed interactive maps within websites, this promotes map creation and sharing by learners and educators (see ongoing work, below). The willingness of web users to add FaceBook applications, HTML snippets and other JavaScript widgets to their websites points to a cost-benefit threshold that non-technical users can and do choose to negotiate.

4. Ongoing work

As we move into the second year of OpenLearn, we are working on a number of new developments:

- OpenLearn knowledge maps can be integrated with FlashMeeting (Okada,Tomadaki, Buckingham Shum & Scott, 2007), which provides replayable web videoconferencing and social software tools, moving us towards integrated socio-semantic networks.
- Our first year's work focused on maps for learners. We are now considering how OER providers could benefit from Compendium, with attention on visual templates for Learning Design Patterns (Conole, 2008). Feedback to date indicates educator interest in these as OERs in their own right.
- We will be releasing a web-centric "knowledge map exchange" which will enable direct annotation of maps, plus search and visualization tools across multiple maps from multiple authors.

5. References

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