EDITORIAL
Volume 7 No. 1

Problem spaces in learning design

The six papers in this issue — from differing countries and institutional settings — are loosely connected to the idea of a **problem space,** first described by Allen Newell in his seminal 1990 work, *Unified Theories of Cognition.* The original definition of a *problem space* was the abstraction concerned with how people engage in solving a problem described in terms of:

    (a) set of states of knowledge;
    (b) operators for changing one state into another;
    (c) constraints on applying operators; and,
    (d) control knowledge for deciding which operator to apply next.

The authors in this issue of the *Journal of Learning Design* are, in fact, looking for models of cognition that are specific to their disciplines and how learners respond to differing stimuli and how they acquire and represent knowledge.

Our first paper, by Ahmad, Lahonde and Omhover (with the former from CECOS University, Peshawar, Pakistan and the latter two authors from CPI, Arts et Métiers, Paris) offer an original game methodology to deal with the problem space of their discipline which they have dubbed *Design Game Matrix of Tool Selection (DG-MOTS).* It cleverly represents its problem space as a snakes and ladders game. This approach encapsulates the iterative nature of design decision-making and embeds the notion that the process is not always linear nor is it always on an upwards trajectory! The DG-MOTS model is a representation of the problem space where designers operate with a particular focus on providing operators for changing one state into another and perhaps, more importantly, offers users advice on which operator to apply next.

The second paper, by Lahti and Seitamaa-Hakkarainen from the University of Helsinki, Finland, moves the design problem space online. As with the authors in the first paper in this issue, Lahti and Seitamaa-Hakkarainen offer a model which describes the "problem space" in their area of teaching and learning, that is, industrial design. It is known as *Learning by Collaborative Design* and this paper shows how it makes sense in differing teaching situations.

The third paper, a reflective piece by Jones from the Open University, represents the whole discipline of design education and how it rests within institutional "tick box" cultures, particularly in the apparent dichotomy between what he describes as "the subjective of nature of design" and "objective measures or criteria of assessment." A complication arises from the view of design education as "one of the most deterministic forms of pedagogy because it requires indoctrination into a way of behaving and thinking in itself." This paper is grounded in an Open University course, *Design Thinking,* which makes use of purpose-built software, *CompendiumDS*, a digital whiteboard which replicates a mind-map (visual mapping) using various media and allowing students' iterative design processes to be visible to others. In relation to the theme of this issue of the *Journal of*

Learning Design, the software gives a visible representation of the problem space. This, further, allows an assessment of process rather than of a complete disembodied artifact.

The fourth paper, by Gray and Howard, moves the "problem space" to social media, particularly to Facebook. They found, through an empirical study and analysis of student posts, that it was possible to describe the problem space posed by professional identity and membership of professional communities in fine detail. The authors have labelled the tangible form of the problem space as "designerly talk" and conclude that this allowed students to share a level of individual expertise not possible in a traditional classroom setting and to develop their discourses around tools in design, a requisite skill for emerging design professionals. What is of interest here, and with the other papers in this issue, is that educators have built and scaffolded ways of making the problem space visible and using the affordances of technology to make the space accessible.

The fifth paper, by Lowe and Stuedahl, respectively from the University of Tennessee and the University of Life Sciences (UMB, Norway) is situated in an intriguing juxtaposition of ancient and modern. Mobile and social media communication practices are used to help make sense of the distributed museum and the problem space sits across these two paradigms. The authors ask how the historical content of the distributed museum may be enhanced through the evolving communication practices of people within the contemporary city. They created installations along a river walk in Oslo – each representing an embedded problem space with prescribed operators for changing one state into another – and observed what happened. They concluded that "sense-making in social media-driven communication platforms within the context of the distributed museum are less about the devices themselves and more about the social and cultural activities that are performed with, around or through them as part of a mediated process." These authors are describing learning environments that are both real and simulated, real and imagined.

The sixth and final paper, by Baker from the University of Portsmouth (UK), provides an intriguing endpoint to this issue dedicated to the "problem space." It describes learning experiences in architecture that place students directly into real spaces and asks them to come to understand them through direct experience. It takes the "problem space" of architecture out of the machine, in this case, the confines of CAD software and libraries of "tasteful silver birches", and asks students to trade the abstract for the concrete, the simulation for the real.

The papers in this issue present fine examples of how innovative educators have redefined the "problem spaces" of their discipline. They have controlled the operators which students or the community can use and have defined the outer edges of spaces where students can explore and generate new knowledge.

Margaret Lloyd
Nan Bahr
Queensland University of Technology,
Australia

References

Newell, A. (1990). Unified theories of cognition. Cambridge, MA: Harvard University Press.