Chapter 10
Knowledge Building in Online Environments:
Constraining and Enabling Collective Intelligence

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ABSTRACT

This chapter describes two conceptual frameworks for the analysis of online knowledge building: outsideness and developing adaptive expertise. The affordances of the metaphor of outsideness are outlined in relation to the construction of knowledge through the sharing and exploration of personal and cultural perspectives, asking questions to resolve doubt, and as a driver of purposeful academic conversation. Developing expertise is examined through the identification of the knowledge and skills for idea generation and evaluation in online environments, and optimal engagement in these learning contexts. A case study is provided of higher education students from three countries working together using a wiki to construct knowledge about teaching and learning. The authors present these two frameworks in order to increase understanding of the knowledge and skills needed by students in higher education to engage with the affordances of collective intelligence systems.

INTRODUCTION

Online social interaction is an engaging feature of current technology use among contemporary students in higher education. However, previous research has indicated that while students may be adept at using digital technology to stay in touch, arrange meetings or discuss the latest news; they are less likely to engage in academic purposes unless there is a genuine need to do so (Deed & Edwards, 2011).

While current dialogue in higher education emphasizes the potential of online learning environments to support learning, there remains uncertainty about how to use Web 2.0 technologies to help students learn (Starkey, 2010). A key concern is how to move higher education students from the potential chaos and idiosyncrasies of Web surfing to a coherent and rich learning experience resulting in generation and exploration of knowledge. Grace-Martin et al. (2001, p. 104) noted that the educational benefits of unfettered network access may exist "for some populations in some contexts, but that characteristics of the user and his/her educational environment may limit or even reverse these benefits when measured in terms of academic performance." Purposeful engagement in a virtual text-based context is likely to be dependent on the extent to which students recognize the distance between potential opportunities and actual capacity to engage in online interactions and the development and application of strategies and working practices to overcome these difficulties.

Two principal questions are examined in this chapter. First, what affords the active participation of higher education students in collective intelligence systems? Then, what knowledge and skills do students need to cope with the dynamics of collective intelligence systems? The first question is addressed through the metaphor of outsideness – engaging with distant peers using Web 2.0 tools. In particular, the affordances of outsideness are identified that support the development of higher education students' capacity to generate and engage with the concept of collective intelligence. Bakhtin (1986, p. 142) suggests this outsideness, which can result from the very act of trying to understand others "… results in mutual change and enrichment."

Here, outsideness is conceived of as a key influence in online environments where students have the potential to engage in rich, thoughtful, and purposeful conversational moments. Outsideness influences the construction of knowledge in online collaborative contexts through sharing and exploration of personal and cultural perspectives; asking questions to resolve doubt; and as a driver of purposeful conversation.

The second question is examined using the concept of adaptive expertise, a term first employed by Hatano and Inagaki (1986) and further developed by Schwartz et al. (2005). A distinguishing feature of adaptive expertise is the application of knowledge to novel or unusual situations. This concept is explored through identification of knowledge and skills for idea generation and evaluation in online environments, and optimal engagement in these learning contexts. A case study is then presented of collective intelligence, using preservice teaching students and others studying education related degrees from three countries working together using a wiki. Factors that constrained and enabled collective intelligence are identified and implications drawn for learning in higher education.

This chapter contributes to educational discourse about the need to provide a structure that balances providing scope for individuals to make decisive choices about their own learning, and supports students develop conversational capacity in online learning communities.

COLLECTIVE INTELLIGENCE

Collective intelligence generally refers to the seeking or creation of new knowledge at the intersection of the social and Semantic Web. In sum, the process is afforded through Web 2.0 tools and both draws upon and challenges the notion of the expert and expert knowledge.

The Web 2.0 tools that have enabled collective intelligence—for example: wikis and blogs, hyper-linking, Rich Site Summary (RSS) and Google—are essentially a set of philosophically similar practices and principles that aim to harness the power of the Internet (O'Reilly, 2007). Although the general features of collective intel-

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