

Cognitive Apprenticeship and Writing in Distance and Online Learning

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INTRODUCTION

As online learning has matured, it has increasingly used Web-based technologies to support communication and interactions among participants (e.g. students, instructors, and mentors) in addition to content delivery. Many online learning experiences depend heavily on text-based interactions to support learning, practice, and assessment activities. Threaded discussions forums are particularly useful learning activities, as is the exchange of word-processed documents for formative and summative assessments. These activities are a natural result of the desire to connect people via technology while taking advantage of asynchronous communication's convenience.

An important question for the next evolution of online learning is to how to go beyond these text interactions. For example, can web-based environments be designed to support cognitive apprenticeship processes? And if so, how? Given the communication capabilities of the Internet, various forms of social learning have become possible. A cognitive apprenticeship (CA) is one form of social learning. It is much like a trade apprenticeship, in which learning occurs via observation of and guidance from others who are more experienced, with the difference being that a cognitive apprenticeship focuses on the cognitive and metacognitive domains (Collins, Brown and Newman, 1989). Learners are challenged to complete holistic, authentic tasks, such as conducting an evaluation or creating a web site, that are more difficult and complex than previous tasks and which are slightly out of reach given their current knowledge and skill sets. Thus, they must rely on assistance from and collaboration with more experienced peers in order to approximate and ultimately achieve success. Research supports the use of cognitive apprenticeship in online learning: Wang and Bonk (2001) propose using the cognitive apprenticeship model as the basis

for constructing a groupware environment, and pilot tests demonstrated their groupware tool's effectiveness for facilitating learning. Seel and Schenk (2003) found that a multimedia-based system with a cognitive apprenticeship approach was effective for promoting development of learners' mental models.

This article describes how online environments can be used to support online learning via a cognitive apprenticeship using the two most common text-based activities in online learning: reading and writing. Reading and writing are essential skills in online learning environments, necessary for even the most basic communication. In a cognitive apprenticeship these skills become tools for experts to share their thought processes and knowledge, and to provide learners with advice and feedback. For learners, reading helps them seeing how experts think and work, and writing helps them engage in reflection and articulation, which in turn makes it possible for them to receive helpful feedback. The cognitive apprenticeship model provides an anchoring context for exploring rhetorical considerations within text-heavy online teaching environments.

BACKGROUND

Cognitive apprenticeships occur naturally as people teach each other new skills and practices. For example, a new employee who is matched up to an experienced employee to initially shadow the activities of the experienced employee and then gradually assume responsibility for doing these activities is engaged in a cognitive apprenticeship. Cognitive apprenticeships are not limited to in situ experiences. However, these shadowing and in situ experiences are less common in formal learning settings such as schools, that historically have tended toward receptive learning methods (e.g., those relying heavily on information dissemination as

an instructional strategy) over social or experiential ones. Schools with a high teacher-student ratio, in particular, often use other methods for the sake of efficiency and expediency.

Cognitive apprenticeships can readily be designed into either formal or informal learning situations. Widely accepted as the norm, Collins et al.'s (1989) five-stage model of cognitive apprenticeship consists of the following instructional sequence of strategies:

1. Modeling: Demonstrating the thinking process
2. Coaching: Assisting and supporting student cognitive activities as needed including scaffolding of tasks
3. Reflection: Engaging the learner in self-analysis and assessment.
4. Articulation: Requiring verbalization of one's cognitive activities and reflection
5. Exploration: Encouraging learners to form and test their own hypotheses

As learners progress through the stages of this model, they gradually assume greater responsibility for performing the desired cognitive skill or task. Initially, they may largely take the role of observer or legitimate peripheral participant. Throughout the cognitive apprenticeship learning process, both learner and instructor are iteratively engaged in observations of each other; and continuously adjusting so that the learner can approximate the desired performance. Part of the process includes verbalization or other techniques to make visible those processes that are typically unseen or unheard in cognitive learning such as thoughts and decisions.

Cognitive apprenticeships involve learning that takes place in situated contexts. In classroom-based cognitive apprenticeships the learning tasks should be authentic (Lave & Wenger, 1991), and should be influenced by the rich set of potential cultural, historical, and institutional factors that would affect one's real-world practice (Rogoff, 1990; Wertsch, 1998). One might simulate a complex, practice-based problem for learners to solve, anchoring potentially decontextualized concepts such as mathematical operations or grammatical constructions in a foreign language in rich settings that allow the learner to see the importance and application of these concepts. These problems are greater than simple word problems or brief cases, typically extending across days and weeks and requir-

ing the learner to become immersed in the presented situation.

In online learning, situatedness is typically simulated with activities like group work, case studies, and process-oriented tasks that closely resemble the applied setting and actual demands of the eventual practice setting. That is, business students in an online marketing class might work in groups as faux corporations to create a comprehensive dossier of documents for a marketing campaign with the guidance of the instructor and worked examples. Following through with this example of situatedness in a cognitive apprenticeship, these online students might spend the beginning of the course learning about the types of documents appropriate to various marketing goals and settings and the ways in which those documents are produced, distributed, used, and evaluated. This transition from observer to actor signifies the learner's change in roles from a legitimate peripheral participant to an inbound member now visibly engaged in a community's practice.

Cognitive Apprenticeship and Online Learning

In many online courses, cognitive apprenticeships often are heavily dependent on the written word to convey both instructional content and to engage the students collectively with the instructor in the act of learning a new practice. Communication between instructor and student may be private, occurring via email and through individually submitted assignments; or public, appearing on discussion boards and in presented assignments. Instructors must not only craft assignments that will engage the learners in elements of cognitive apprenticeships, but given the social nature of this approach they also must plan their own words carefully and determine the best way to help students learn to communicate effectively within the course.

Planning Online Writing Activities to Support Cognitive Apprenticeships

A rhetorical situation is commonly accepted as the constellation of three elements: the purpose for a writing act, the audience for the writing, and the context in which the writing takes place. The development of writing activities that support a cognitive apprenticeship instructional strategy can be guided by this definition. That is, online assignments should consider and com-

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