The presentation will introduce the Just-in-Time Teaching (JiTT) digital library, discuss the pedagogical nature of the resources that make up this library for educators, and describe a study conducted to evaluate the metadata scheme for representing the pedagogical resources. Finally, preliminary results of the study will be stated.

The resources being collected in the JiTT Digital Library are those that support the JiTT methodology. JiTT methods have been adopted in a number of high school and college classrooms throughout the United States: currently, there are approximately 400 instructors in 25 different disciplines at more than 100 different institutions who have implemented this pedagogical method. JiTT instructors represent a wide range of disciplines from the humanities (history and journalism), the social sciences (accounting, finance, economics and psychology), the hard sciences (astronomy, biology, chemistry, geology and physics), the applied sciences (nursing and engineering), and mathematics. Collectively, these instructors have amassed an impressive storehouse of several thousand JiTT-based resources, including digital simulations, follow-up classroom activities, assessment tools and instructional support materials as well as pre-class warm-up questions. In addition to these instructional materials, many JiTT instructors have also accumulated a wealth of examples of student responses to specific JiTT assignments; and these collections of student responses have frequently been analyzed and annotated by the contributing instructors to illustrate various levels of student understanding.

The JiTT Digital Library is intended both to provide a centralized storehouse or archive for storage and exchange of these JiTT resources and to serve as the platform for development of an interactive, online community where instructors can collaborate on the revision, enhancement and extension of existing resources as well as the development of new materials. In the JiTT digital library, each resource exists only as a metadata record; that is, a resource is stored in a relational database as a set of element-value pairs or statements. This mode of representation was chosen, in part, because it allows the individual instructor to tailor online presentation of retrieved resources by selecting only those elements of the metadata record that are relevant to her immediate need. For example, one instructor, having retrieved a set of resources dealing with a particular topic, might want to display nothing more than the description, audience level and required student reading(s) for each resource; another instructor, having already selected a particular warm-up question or in-class activity, might want to view previous student responses and comments from other JiTT instructors as to how student responses to this question were used to structure in-class presentation of the instructional content. Storing each resource in the form of a metadata record provides the flexibility of presentation necessary to meet the very different needs of JiTTDL users.

Because resources in this library are stored in the form of metadata records, the utility of the metadata scheme, its elements and its relationships is central to the ability of the library to address the pedagogical needs of instructors in the work domain of the classroom. The analytic framework provided by cognitive work analysis (CWA) is proposed as an innovative approach for evaluating the effectiveness of the JiTT metadata scheme.
Cognitive work analysis (Rasmussen, Pejtersen & Schmidt, 1990; Rasmussen, Pejtersen & Goodstein, 1994; Vicente, 1999; Sanderson, 2003) provides a theoretical and methodological framework for a work-centered approach to the design of large-scale information systems and the empirical investigation of how information technology changes human conditions of work. Because the CWA framework originated in the cross-disciplinary and problem-oriented international research environment of Risoe National Laboratory, Denmark, it has drawn on a diversity of theoretical backgrounds ranging from general systems theory to cognitive psychology and the sociology of work (see Rasmussen, Pejtersen and Goodstein, 1994; Albrechtsen et al., 2001; Hollnagel and Woods, 2005). In addition, field studies and field experiments addressing users’ work activities with information technology in a variety of work domains have contributed to the development of CWA as a generic approach to the analysis of work environments and the evaluation of complex information systems.

In order to evaluate the JiTT Schema, a study was conducted with 12 JiTT practitioners in various domains. Using CWA as a framework for inquiry, a series of semi-structured interviews were carried out. The transcripts from these interviews were analyzed using the CWA framework, thus providing insights into how JiTT practitioners used JiTT in the work domain of teaching. In the interviews, we emphasized how JiTT practitioners constructed JiTT questions, how they analyzed student responses and how they used what they have learned from the questions to prepare of class instruction.

Preliminary findings will be reported with emphasis on aspects that have informed the creation and refinement of the metadata scheme. Insights gained as to how JiTT practitioners used JiTT questions and how they might search for resources have allowed the developers of the JiTT schema to further refine the schema for the benefit of JiTTDL end users.

References