The Digital IdeaKeeper: Combining Digital Library Services with Support for Online Inquiry

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Background: Addressing Online Inquiry Challenges for Learners

Major science education standards call on students to engage in inquiry-based science learning where they pose driving questions and collect, analyze, and synthesize information (National Research Council, 1996). Along these lines, we are developing the *Digital IdeaKeeper*, a scaffolded work environment integrating digital libraries with services and scaffolds to address the challenges learners face in online inquiry. The IdeaKeeper incorporates three overarching areas of support for middle-school learners by providing them with an integrated online inquiry environment that incorporates support for analyzing and synthesizing information they find in digital libraries.

Providing an integrated online inquiry environment. Open-ended online inquiry can be challenging, demanding a range of skills to plan the inquiry and search for, make sense of, and synthesize information. The IdeaKeeper can integrate libraries from the National Science Foundation's National Science Digital Library (e.g., the *Digital Library for Earth System Education* at http://dlese.org) with workspaces for inquiry planning, library searching, information analysis, and information synthesis to connect digital libraries with the inquiry process.

Supporting information analysis. Digital libraries support information seeking, but lack the information analysis support learners need for productive reading (Wallace, Kupperman, Krajcik, & Soloway, 2000). The IdeaKeeper supports information analysis by displaying library resources (e.g., websites) in a "digital notecard", which is a browser window framing the website with a scaffolded "Skim-Read-Summarize" notepad containing prompted text areas informed by general reading and comprehension strategies (e.g., Brozo & Simpson, 2002).

Facilitating information synthesis. Students often fail to integrate multiple resources in a coherent argument, instead relying on a single resource for their argument (Oliver & Hannafin, 2000). The IdeaKeeper incorporates services for learners to compare, contrast, and summarize their notes *across* different digital notecards so they can consider multiple sources for their argument. The IdeaKeeper can also integrate different argumentation tools so students can link their digital notecards and develop a textual argument addressing their driving question.

Future Plans and Concluding Remarks

We have completed the initial IdeaKeeper design and pilot testing with middle school science students. Upcoming classroom testing will focus more closely on how students use the IdeaKeeper and the different scaffolding features to engage in online inquiry activities, especially focusing on information analysis and synthesis.

References

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