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## ISSUES IN TECHNOLOGY

## INTEGRATING LITERACY AND TECHNOLOGY: MAKING A MATCH BETWEEN SOFTWARE AND CLASSROOM

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There is an explosion of educational software and web pages that can be used to integrate literacy and technology. Elementary teachers, administrators, and parents are faced with the dilemma of foraging through the myriad of available resources in order to make purchases with (typically) limited funds. In order to address this dilemma, we propose an Evaluation Framework that is designed to help users determine whether software and web pages fit with their literacy goals.

A common format used to evaluate literacy software is to employ a series of criteria that can be used to determine the quality of the software. For example, McVee and Dickson (2002) proposed a rubric that can be used to examine literacy software for the primary grades. This rubric focused on such criteria as media presentation, navigation, built-in assessments, and fit with classroom needs. Similarly, Case and Truscott (1999) described an evaluation device that focused on the quality of software in relation to concepts about print, print skills, and comprehension.

In contrast, the Evaluation Framework presented here takes a more global approach by including various theoretical perspectives (Pearson

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& Stephens, 1994), stances toward integrating literacy and technology (Bruce, 1997), aspects of literacy (modified from Leu & Kinzer, 1999), and types of educational software (Bitter & Pierson, 2002). Users of the Evaluation Framework are not asked to judge whether software/web pages are good or bad; rather, they are asked to evaluate software/web pages from different perspectives and purposes. For example, does the software/web page highlight phonics games or syntax drills, or does it encourage children to use a range of aspects of literacy (for example, by corresponding with web authors or creating their own web pages).

## EVALUATION FRAMEWORK

The framework (see Appendix) involves four levels of evaluation: theoretical perspectives of literacy, stances toward integrating literacy and technology, aspects of literacy, and types of educational software.

### Theoretical Perspectives of Literacy

Pearson and Stephens (1994) discussed the historical evolution of literacy education by describing the contributions of various disciplines to current understandings of literacy. These disciplines include behavioral psychology, cognitive psychology, linguistics, psycholinguistics, sociolinguistics, semiotics, poststructuralism, and critical theory. This level of evaluation helps users think through how different theoretical perspectives on literacy can inform the evaluation of software and web pages.

### Stances Toward Integrating Literacy and Technology

Bruce (1997) argued that there are a variety of stances taken toward the integration of literacy and technology: neutral (sees no advantages or disadvantages to integration), oppositional (integration causes problems), utilitarian (technology is a useful tool), skeptical (technology may be useful but its usefulness is unproven), transformational (integration transforms the very nature of literacy), aesthetic (technology provides opportunities for creativity), and transactional (there is a transaction between literacy and technology).

## Aspects of Literacy

The framework uses a modification of Leu and Kinzer's (1999) list of aspects of reading: graphophonemics, syntax, semantics, pragmatics, affect, metacognition, and automaticity. For example, some software/web pages specifically focus on one aspect of literacy, such as graphophonemics. Others help teachers to integrate literacy instruction into authentic reading and writing activities and thereby incorporate all of these aspects.

## Types of Educational Software

Bitter and Pierson (2002) described eight types of educational software, which are included in the framework: drill and practice/instructional games, integrated learning systems, problem-based, reference, simulation, tool-based, tutorial, and web-based. These types are neither exclusive nor exhaustive.

## PRELIMINARY FINDINGS AND DISCUSSION

Findings from an observational pilot study indicated that the Evaluation Framework helped teachers in three ways: (a) to understand their own educational literacy goals, (b) to select technologies they considered useful, and (c) to understand that there are divergent but valid uses of educational software.

More specifically, we found that most of the participants switched from what we labeled as a "good vs. bad" approach to an evaluation of technologies to an understanding that one's viewpoint on the advantages and disadvantages of various technologies depends on perspective and stance. We found that the framework enhanced group evaluations of software by providing a common context for reviewers. For example, a web page that provided spelling games might be considered valuable by reviewers who took a behavioral psychology perspective and a utilitarian stance, but be deemed less valuable by those who took a poststructural perspective and transactional stance.

An Evaluation Framework that helps teachers, administrators, and parents select appropriate software and web pages fosters a broader analysis of software—one that recognizes divergent perspectives and stances as they apply to the evaluation of technology. Such evaluations help users make wise decisions about purchasing software and using web pages that fit their literacy goals.

## APPENDIX

## Software and Web Page Evaluation Framework

To help users determine whether software and web pages fit with their literacy goals, consider the following:

*Theoretical perspectives of literacy* (Pearson & Stephens, 1994): If I take the following perspective(s) of literacy, how well does this technology fit with my perspective(s)?

- Perceptual/Behavioral
- Linguistic
- Psycholinguistic
- Cognitive Psychology
- Sociolinguistic
- Semiotic
- Poststructuralistic
- Critical

*Stances toward technology* (Bruce, 1997): If I take the following stance(s) toward the integration of literacy and technology, how well does this technology fit with my stance(s)?

- Neutral
- Oppositional
- Utilitarian
- Skeptical
- Transformational
- Aesthetic
- Transactional

*Aspects of literacy* (modified from Leu & Kinzer, 1999): On what aspects of literacy does this technology focus?

- Graphophonemic
- Semantic
- Syntactic
- Pragmatic
- Metacognitive
- Affective
- Automaticity

***Types of educational software*** (Bitter & Pierson, 2002): What type of software does this technology best represent?

- Drill & Practice/Instructional Games
- Integrated Learning Systems (ILS)
- Problem-based
- Reference
- Simulation
- Tool-based
- Tutorial
- Web-based

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