



Individual and team annotation effects on students' reading comprehension, critical thinking, and meta-cognitive skills [☆]

Tristan E. Johnson ^{a,b,*}, Thomas N. Archibald ^c, Gershon Tenenbaum ^b

^a Learning Systems Institute, Florida State University, USA

^b Educational Psychology and Learning Systems, Florida State University, USA

^c ADL Co-Lab, USA

ARTICLE INFO

Article history:

Available online 11 June 2010

Keywords:

Computer-supported collaborative learning
Web 2.0
Social annotation
Small group collaboration
Learning technology
Reading comprehension
Critical thinking
Meta-cognition

ABSTRACT

Many students enter college without the needed skills to be successful. Colleges and universities are seeking instructional interventions to address these needs. Various classes are leveraging web-based social media to provide new instructional technologies that will help students learn. This paper reports on two studies related to the potential of online social annotation for improving teaching and learning in second-semester Freshman English classes. The approach, referred to as the Social Annotation Model-Learning System (SAM-LS), combines various instructional strategies, team-based learning, and a social annotation computer-supported collaborative learning tool, HyLighter, to increase student engagement with selected essays and with classmates. SAM-LS stimulates students to actively monitor their thoughts and compare them to both peers and the instructor (or domain experts). Study 1 showed no significant difference between the SAM-LS approach and a control; however, results appear to be related to confounding factors. Study 2 showed that students achieve better outcomes on measures of reading comprehension and meta-cognitive skill, but not critical thinking, when SAM-LS activities include small team collaborations. The two studies suggest future directions for research and development of SAM-LS and the HyLighter tool.

© 2010 Elsevier Ltd. All rights reserved.

1. Introduction

In order to learn, and later, to perform well in the work place, students need the skills to gain knowledge from written language. When it comes to academic success, reading, writing, and critical thinking are key skills that students need in order to be successful in the college classroom. The ability to read and ultimately learn from reading is a basic skill fundamental to scholastic success in any discipline of study (ACT, 2005). The acquisition and understanding of idea from text require various learning strategies, meta-cognitive skills for regulating the use of learning strategies, as well as the desire to use them.

Various studies have shown that high school graduates entering college lack essential skills for academic success. The American College Testing Program (ACT, 2005) has reported that only a quar-

[☆] This studies reported in this article were funded as part of the US Department of Education Fund for the Improvement of Post-secondary Education Grant through Florida State University: PR/Award No. P116B060460.

* Corresponding author. Address: Learning Systems Institute, Florida State University, C4600 University Center, 296 Champions Way, P.O. Box 3062540, Tallahassee, FL 32306-2540, USA. Tel.: +1 850 644 8770; fax: +1 850 644 4952.

E-mail addresses: tejohnson@fsu.edu (T.E. Johnson), archibald.tom@gmail.com (T.N. Archibald), gtenenbaum@fsu.edu (G. Tenenbaum).

URL: <http://www.lsi.fsu.edu> (T.E. Johnson).

ter of high school graduates were adequately prepared for college-level work in English, math, science, and reading comprehension. ACT also reported that only 51% of students who took their college entrance exam met college-readiness benchmarks in reading comprehension.

Regardless of the cause, students are coming to colleges and universities under-prepared. The three areas wherein students are lacking sufficient skills necessary for success in post-secondary education include reading comprehension, critical thinking, and meta-cognitive skills (ACT, 2005; Adelman, 1996; Hartman, 2001; Mendelman, 2007). Between 1970 and 2000, while college enrollments expanded at an annual rate of 1.98%, students' reading comprehension skills remained unchanged (Cox, Freisner, & Khayum, 2003). In a longitudinal study of the post-secondary educational experiences of under-prepared students, Adelman (1996) concluded that a deficiency in reading skills is a symptom of comprehensive literacy problems, which in turn significantly decreases the odds of a student completing any degree. The 2002 Condition of Education report suggested that a reading deficiency is the greatest barrier to under-prepared students' success in college (Wirt et al., 2002).

College freshmen need to develop and enhance their academic skills beyond their typically used passive learning strategies such

as memorization and simple rehearsal (Anderson & Armbuster, 1984; Simpson & Nist, 1990). There is evidence that college students have a decreased tolerance for long reading assignments, and a declining ability to read critically and to extract meaning from what they read (Donahue, Voelkl, Campbell, & Mazzeo, 1999). Research shows that students perform better in post-secondary education when they have sufficient reading comprehension, critical thinking, and meta-cognitive skills (Cox et al., 2003; McCabe, 2000; Oudenhoven, 2002). Thus, if students are to be successful in college, it is vital that they gain these essential skills.

In response, colleges and universities are attempting to bridge this gap by seeking to identify and implement interventions to help students become more proficient as learners. The debate of how to help students improve these skills varies (ACT, 2005; Adelman, 1996; Boylan, 1999; McCabe, 2000; Oudenhoven, 2002). Universities spend resources, money, and time enrolling students in remedial training courses. Students take extra time to complete courses that are usually not counted toward graduation and incur extra expenses (Boylan, 1999; Oudenhoven, 2002). McCabe (2000) showed that annually more than one million US students enter college under-prepared and enroll in remedial courses (20% of the students in reading, 25% in writing, and 34% in math). It is evident that the challenge of helping prepare students for post-secondary education deserves more effort and attention, and most likely will require multiple solutions to deal with this comprehensive challenge. The common solution of offering remedial courses still leaves room for improvement and for other innovative solutions.

A possible alternative to remedial programs is to embed within students' regular first-year college curriculum training that focuses on the development of basic reading comprehension, critical thinking, and meta-cognitive skills. The training would require providing students with sufficient, effective, deliberate practice to help individual students progress along a trajectory from novice to proficient learner (Ericsson, 2002). This approach must be multi-faceted, incorporating the latest learning technologies to teach students about the skills they need to acquire, but of most importance, this approach needs to facilitate practice with feedback. Through appropriate interventions, under-prepared students may possibly achieve success in post-secondary education comparable to that of their adequately prepared peers (Boylan, 1999).

There are a number of ways to approach the challenge of designing a solution to address this skills-development need for many college students. For colleges and universities, the main vehicle for change would be to better structure courses so that there is better learning. Better learning strategies would make use of new technology and new pedagogical approaches. For our research, we have decided to focus on collaborative learning (learning in teams) as the key approach for enhancing student learning.

For this project, our main objective was to find a way by which students may gain essential skills for academic success through the appropriate implementation of social annotation technology. Specifically, we aimed at developing good pedagogical models using the social annotation tools with university students by investigating different instructional approaches. In this paper, we present the findings from two studies: Study 1 considered different instructional methods, whereas Study 2 evaluated the effect of working individually or collaboratively. Given these two settings, we studied student-learning outcomes based on the various experimental treatments.

1.1. Learning system framework

With increased access to computers and network technology, students and teachers are acquiring new means of dramatically improving teaching and learning techniques by leveraging recent

findings from different disciplines. Based on the thinking in several fields, the Social Annotation Model-Learning System (SAM-LS) was created with the intent to develop a learning model for development of student skills, specifically reading comprehension, critical thinking, and meta-cognitive skills. This intervention was created based on research from the areas of social annotation, instructional design, team-based learning, and computer-supported collaborative learning.

1.1.1. Social annotation

Using HyLighter,¹ SAM-LS not only shares information with the user, but also allows the user to highlight and annotate in an electronic medium (usually text). The use of HyLighter allows individuals to share their conceptual understanding of a text document with others.

Historically, a type of low-tech shared annotation process was widely practiced by medieval scholars who used the margins and spaces between lines of manuscripts to engage in dialogue with others. The same physical copy of a manuscript was passed around a community, and selected annotations (often including comments of readers on the remarks made by other readers) were customarily retained when scribes made new copies (Wahlstrom & Scruton, 1997; Wolfe, 2002). Today, social annotation systems allow students to engage in collaborative conversations in the margins of digital pages that are tied to specific sections of the pages. Integrating social annotation software into instructional materials seems an ideal approach for building on the social networking phenomenon. By making reading a shared experience, students may be more likely to engage with the text.

Today, social media are being used for educational purposes. Most wikis and blogs have provisions that enable contributors to have discussions either at the bottom of the page, below each paragraph, or through a separate tab, and to add links to other web pages or documents. In general, wikis and blogs lack a mechanism for engaging contributors in threaded discussions tied to specific sections of the page. Arguably, the provision of a highly granular discussion mechanism (i.e., the capacity for several or more readers to engage in threaded discussions tied to any section of a page without visually overwhelming the page or margins) has important implications for education.

Scientific evidence emphasizes the effectiveness of annotations (readers making comments in the margins of the text as they read) in increasing memory and student learning (Anderson & Armbuster, 1984; Bradley & Vetch, 2007; Glover, Xub, & Hardaker, 2007; Lavagnino, 1997; Porter-O'Donnell, 2004; Simpson & Nist, 1990). Clear evidence exists as to the effectiveness of annotations in increasing memory and learning of students (e.g., Anderson & Armbuster, 1984; Bradley & Vetch, 2007). In addition, proponents of active reading have advocated that students prioritize information by highlighting important points and adding comments (Adler & Van Doren, 1972; Brown & Campione, 1990). On the other hand, research on the effects of highlighting (and underlining) as a study technique provides evidence that many students are not skilled at identifying what is relevant in a text. Several studies have found that students in high school and the freshmen level of college generally make poor choices in deciding what information to highlight or underline (Peterson, 1992; Schellings & van Hout-Wolters, 1995).

Lavagnino (1997) argued that marginal annotation both clarifies and fixes the initial reaction to the text, and thereby, can contribute to the person's process of interpretation. Bradley and Vetch (2007) have even suggested that the digital age has not produced the expected transformation in scholarship because the capacity for end-users to annotate digital pages is not widely available. As a result, readers tend to be passive and not deeply engaged.

¹ www.hylighter.com.

Download English Version:

<https://daneshyari.com/en/article/351496>

Download Persian Version:

<https://daneshyari.com/article/351496>

[Daneshyari.com](https://daneshyari.com)