Chapter 4
A Review of CALL and L2 Reading: Glossing for Comprehension and Acquisition

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ABSTRACT

This paper provides a comprehensive review of the present state of second language reading research and computer-assisted glossing for reading comprehension and vocabulary acquisition. Although computer-assisted language learning, in general, and computer-assisted glossing, in particular, are often cited as facilitative pedagogical and self-study tools for second language reading development (Chun, 2001; Al-Seghayer, 2003; Ko, 2005; Blake, 2007; Stockwell, 2011), the state of computer-assisted glossing research presents a much less compelling and far more nuanced picture of efficacy and facilitation (Ariew & Ercetin, 2004; Bowles, 2004; Taylor, 2006, 2009; AbuSeileek, 2008; Sato & Sazuki, 2010). Research on glossing for reading comprehension presents a mixed collection of findings suggesting facilitation (Leffa, 1992; Lomicka, 1998; Ko, 2005) and inhibition (Hegelheimer, 1997; Plass et al., 2003; Akbulut, 2005; Sakar & Ercetin, 2005), although affective and attentional benefits of glossing for reading comprehension are widely acknowledged. On the other hand, research on incidental vocabulary acquisition as a result of glossing – and particularly multimedia glossing – suggests significant effect and a compelling rationale for ulitization of glossing tools in classroom and self-study contexts (Ariew & Ercetin, 2004; AbuSeileek, 2008; Taylor, 2009; Stockwell, 2011; Aljabri, 2011).

INTRODUCTION

The role of computer technology in L2 reading pedagogy has long served as a significant and fascinating area of inquiry for many scholars of SLA. Indeed, the computer's ability to present multiple forms of media according to specialized and highly adaptable protocols—coupled with its capacity for dynamic interaction with users—substantiates its enormous potential as a mechanism for language learning. Moreover, such benefits of multi-modal input are also supported by models of composite information processing as in Paivio's (1971,

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1986) Dual Coding Theory and Mayer's (1997) Generative Theory of Multimedia Learning. Accordingly, Computer Aided Language Learning (CALL) has been a burgeoning component of SLA research in general and L2 reading pedagogy in particular since its advent in the 1960's (Singhal, 1998). Contemporary applications of CALL to L2 reading development have largely emphasized the potential for hypertext and hypermedia glosses (referred to collectively as *hyperglosses*) during reading practice. These non-linear electronic annotations[1] provide L2 readers with immediately accessible textual information (hypertext) and multimedia information (hypermedia) as they read. The present paper seeks to evaluate hypergloss annotations as a pedagogical tool for L2 reading comprehension and development. It will therefore critically survey and evaluate the evidence for hypergloss efficacy as a means of aiding concurrent reading comprehension and incidental vocabulary acquisition and in reference to models of both multi-modal information processing and interactive L2 reading. The claim for hypergloss reading as a tool for longitudinal and cumulative reading development will be advanced alongside current implications for both research and pedagogy.

READING AND MULTIMEDIA PROCESSING

Models of Interactive Reading Processes

Contemporary models of interactive reading are the summative result of a tenuous affirmation of the roles for both bottom-up and top-down language processing in reading development. While traditional bottom-up accounts of reading have emphasized the need for linguistic competence of vocabulary and syntax in order to decode text linearly (Gough, 1972; LaBerge & Samuels, 1985), top-down reading has stressed the importance of background knowledge and schema development in cognitive inferencing through contextual cues and hypothesis testing (Goodman, 1967, 1988; Smith, 2004). With early attempts by Rumelhardt (1977) and Stanovich (1980) to promulgate an integrated model of bottom-up and top-down reading, contemporary reading research largely acknowledges the necessary application and interaction of these two reading processes (Grabe, 1991, 2002, for a review). As a result, current reading pedagogy highlights such concern just as these same foci have largely served to direct the research and pedagogy of hyperglossing by aiding in the development of both decoding and cognitive inferencing. Thus, hyperglossing provides textual/pictorial translations of vocabulary or phrasal units for improved decoding alongside extratextual media (text, imagery, sound and/or video) that provide background knowledge necessary for schema development and top-down inferencing. In addition to such appropriate placement within current approaches to L2 reading pedagogy, however, hyperglossing also exploits an acquisitional-learning mechanism unique to the interactive multimedia reading platforms of CALL.

Models of Multimedia Perception, Processing and Retention

In an important and influential contribution to models of information processing and instructional conceptions of CALL, Paivio's (1971, 1986) Dual-Coding Theory proposed two fundamental routes for the cognitive perception, processing and storage of information: 1) a verbal-linguistic route that includes both oral and written language stimuli and 2) a visual-sensory route that internalizes images, sounds or events via the sensory system. Framed within a semiotic perspective, the verbal-linguistic route corresponds to *symbolic* stimuli that do not directly represent their signified representation—i.e., the letters [*m-a-n*] indirectly symbolizing a conceptual representation for { }—while the visual-sensory route parallels