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Investigating the quality of student approaches to using technology in experiences of learning through writing

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Abstract

This study reports on the student experience of learning through writing in an undergraduate science subject. During their writing experience, 52 first year university science students used a writing database, bulletin board and word-processor. Using quantitative questionnaires developed from student learning research, this study investigates the quality of the approaches adopted by students to the use of the technologies and how this related to the quality of their whole experience and performance measures. The results show that students who adopted a surface or reproductive approach tended to achieve relatively poorer learning outcomes and lower performance measures than students who adopted approaches which reflected understanding. The findings have important implications for teachers introducing technologies into writing processes for the purpose of improving students' learning outcomes.

Keywords: Learning through writing; Technologies; Student learning research; Quantitative analyses

1. Introduction

Research into the benefits of writing for learning has been on the international educational agenda since the 1970s (see for example Britton, Burgess, Martin, McLeod, & Rosen, 1975; Emig, 1977). Interest is this area of research has been taken by a wide-ranging number of researchers

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in higher education (Bazerman & Russell, 1994; Hounsell, 1984, 1987, 1997; McLeod & Soven, 1992; Reiss & Young, 2001). A key outcome of this research from many different theoretical paradigms has been that a quality experience of learning through writing is as much about developing an understanding of the knowledge being written about as it is about improving its written expression. When learning technologies are introduced into the writing process, their relationship to helping students achieve these learning outcomes remains relatively unclear. It remains relatively unclear because research into learning through writing to-date has largely focussed on other issues.

Technologies figuring in research into writing have mostly been word-processors and electronic networks. Word processors were the first technology to be systematically researched for its role (Balestri, 1988; Bridwell, Sirc, & Brooke, 1985; Collier, 1983; Hawisher, 1988; Kelly, 1987; Snyder, 1993a, 1993b). Early research focused on issues such as software (Collier, 1983), tasks (Kaplan, 1986; Snyder, 1994), writing as a social process (Baker & Kinzer, 1998), while other has focused on motivation (Yackanicz, 2000).

When it has come to evaluating the quality of the writing experiences with word-processors, problems have arisen. These problems have revolved around the ambiguity of the results (Snyder, 1993b). Part of the difficulty lies in the definition of quality. Quality in these studies is typically not related to a deep understanding of the knowledge being studied. It is often related to the performance of the students: did they get higher marks or write more words when they wrote with a word-processor (Snyder, 1993a)? Does the word-processor encourage them to revise their texts more often since revising is easier? How can we determine if the revisions they engaged in were just superficial spelling and grammar revisions rather than deeper conceptual restructuring of their texts (Hawisher, 1987)? More recent research has argued that there is evidence from meta-analyses of the positive impact of word-processors on quality (Goldberg, Russell, & Cook, 2003). However, definitions of quality in these analyses vary from one the one adopted in this study which emphasises a deep engagement with the knowledge being written about (Ellis, 2003, in press; Hounsell, 1997; Marton & Booth, 1997; Prosser & Trigwell, 1999).

Another problem of research into the quality of writing experiences using word-processors is that the studies have not been set up to take into account the fact that word-processors are often used for only part of the writing process and therefore it is difficult to draw conclusions about their contribution to the quality of the whole experience (Snyder, 1993b). In this study, the whole writing process begins with students receiving the writing task, brainstorming and sharing ideas, completing related pre-writing exercises such as text analysis described in Section 3.1, planning, drafting, receiving peer feedback and further revision before submission (Martin, 1999). The use of technology in part of this process, which will be discussed in detail in the following section, indicates a need to determine the part–whole relationship of the technology to the writing experience if we wish to investigate its contribution to the quality of the outcomes.

Problems with evaluating the effect of electronic networks on the quality of the student writing experience have yet to be fully realized as, to the best of the author's knowledge, there is no specific research on the topic where quality is defined as a deep understanding of the content matter being studied (Eldred & Hawisher, 1995). However, there has been interesting research into electronic networks in how it can extend the audience of the writer in at least three different ways: quantitatively by potentially creating more readers for the student writer; rhetorically, by introducing readers whose responses create new tasks for the student writer; and reciprocally, by linking writers together who can act as each others' audience (Payne, 1987; Reiss & Young, 2001;