E-Literacy for the Workforce: Designing Effective Instruction

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Abstract: To address the increasing demands placed on adults entering today's workforce, this study involved the development of an instructional approach designed to teach adults strategies for writing effectively in an electronic context through a combination of face-to-face and electronic-based tutorial sessions. The instructional approach was developed based on a reciprocal teaching framework and a goal was to situate the learning within a meaningful, work-related context through electronic discussions. Specifically, the objectives of this study were 1) to understand the experiences of participants enrolled in workforce literacy programs, 2) to assess the impact of an instructional protocol, developed to teach how to express or explain a viewpoint, ask pertinent questions, and write effective responses, on the quality of writing, and 3) to examine if changes occurred in participant attitudes toward writing using computers.

Introduction

Writing in electronic spaces has changed most workplaces. For example, a poll conducted by the Gallup Organization, Inc. estimates that ninety percent of large companies, sixty-four percent of mid-sized companies, and forty-two percent of small firms currently use e-mail systems. The same poll found that more than forty million employees correspond via e-mail, and the number is expected to increase by about twenty percent each year (Kopp, 1998). Further, "e-mail has become the most-used communication tool on the job" in the United States and in Canada (Merrick, 2000, p.17). In addition to the steady increase of e-mail in today's workplaces, there also has been an escalation in the need to write in electronic contexts.

With the continual increase of electronic writing in various workplaces, it becomes evident that workforce literacy programs must begin to reflect the changing demands of today's workplaces to more adequately assist adult learners in finding and maintaining employment. However, given the growing need to communicate effectively within an electronic environment, it must be recognized that computer exposure is not adequate preparation for adults entering the workforce. Research is needed to establish an instructional design that may support individuals in learning how to use literacy skills effectively within a technological context.

The term Digital Divide came to public attention after a 1995 study by the Markle Foundation revealed that the "same divergence found in society along cultural and racial lines is found online and

offline" (CNET News.com, 1997). Many participants in workforce preparation programs are involved in these programs because of barriers to maintaining employment. Although these barriers may occur for a variety of reasons, those attending the programs are often dealing with issues of unemployment. Research suggests that patterns of technology access often mirror existing inequalities rather than mitigate them (Schofield & Davidson, 1998) and if corrective steps are not taken, technology may worsen rather than solve equity disparities (Serim, 1999). Thus, it is essential that workforce literacy programs address these issues and provide opportunities for this gap to be lessened. Reddick, Boucher, and Groseilliers (2000), in their report on technology in Canada, stated "the levels of awareness and the use of these new technologies and services are highly polarized along social class and generational lines, creating the digital divide" (p.1).

Technology integration within workforce preparation programs is needed, especially after long-term repercussions are considered in the case that adult learners are not given adequate preparation for electronic environments in the workplace. For many adults attempting to enter or re-enter the workforce, the addition of new technological demands within workplaces only further multiplies the obstacles to overcome. Unfortunately, many workforce literacy programs typically have not adapted their instruction and curricula to reflect the ever-increasing presence of technology within today's workforce, which therefore may impact participant ability to successfully maintain employment. This study involved the development and assessment of an e-learning context designed to provide instructional support for developing strategies for effective e-literacy writing to adults enrolled in workforce preparation programs.

The Study

The goal of this research was to design and assess an e-learning instructional context aimed at facilitating the development of skills for writing in electronic spaces. This study involves the development of an instructional approach designed to teach adults strategies for writing effectively in an electronic context through a combination of face-to-face and electronic tutorial sessions. The instructional approach was developed based on a reciprocal teaching framework and the goal was to situate the learning within a meaningful, work-related context through electronic discussions. The objectives of the study include the following: to understand the experiences of participants enrolled in workforce literacy programs; to assess the impact of an instructional protocol (developed to teach how to express or explain a viewpoint, ask pertinent questions, and write effective responses) on the quality of writing and; to examine if changes occurred in participant attitudes toward writing using computers.

Twenty-two participants (ages 18-48, mean 29.8) from the Annapolis Valley Work Centre took part in this study. All participants had some form of barrier to employment; further, all had been either out of employment for a significant period of time or had never been employed and were receiving social assistance. In all cases, participants felt they would be better prepared for employment if they could improve their ability to communicate electronically.

Basic computer instruction was provided to the participants using IBM Thinkpads, which they used throughout the study. When participants felt comfortable using the laptop computers, they completed an introductory session prior to instruction, which involved making an entry into the electronic discussion group after examining a case study.

Instruction was based on a reciprocal model of instruction and consisted of eleven forty-minute sessions, summarized in Table 1, which focused on three specific writing strategies used when making electronic discussion entries. Instruction was also founded in context pertinent to workforce preparation. Strategy modeling tutorials were primarily grounded in face-to-face interaction. Guided practice sessions involved both face-to-face and electronic instruction and strategy use. Independent practice tutorials consisted of electronic instruction and strategy implementation. Session 10 entailed face-to-face guidance in addition to electronic strategy use while session 11 involved electronic, independent strategy use.

During the instructional phase, participants worked in heterogeneous small groups with a research assistant during their regular class hours at the Annapolis Valley Work Centre. Throughout this time, participants received a protocol for instruction for the three writing strategies. The gradual shifting of responsibility in reciprocal teaching (Palinscar & Brown, 1984) was embedded in the nature of the sessions. Participants used worksheets and study guides prior to making their electronic discussion group entries throughout the tutorial sessions.

Table 1

Description of Instructional Protocol

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Session #	Strategy	Description
1	Explaining/Expressing a Viewpoint	Modeling of Strategy
2		Guided Practice
3		Independent Practice
4	Asking Pertinent Questions	Modeling of Strategy
5		Guided Practice
6		Independent Practice
7	Writing Effective Responses	Modeling of Strategy
8		Guided Practice
9		Independent Practice
10	All 3 Strategies	Guided Use of Strategies
11		Independent Use of Strategies

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Findings

A computer usage survey completed prior to instruction reflected participant experience with, and attitude toward, computers. Sixty-eight percent of participants had used e-mail while 41% had used chat groups prior to this study. There was also diversity in the frequency of computer use among participants. For example, 14% of the participants categorized themselves as heavy computer users, another 14% felt they were light computer users while another 14% considered themselves to be infrequent users. Additionally, although 59% of the participants had used a computer within seven days prior to participating in the study, 62% of those participants had used a computer for playing games while only 38% used a computer for word-processing and 46% for writing an e-mail message. These findings may suggest that although some participants are using computers, they are not necessarily gaining sufficient experience communicating with computers. Further, at the beginning of the study, 36% of the participants specifically identified writing as a significant barrier for them with regard to finding and maintaining employment.

The instructional protocol was based on reciprocal teaching, in which there was a combination of face-to-face and electronic tutorial sessions, as depicted in Table 1. This blend of instructional delivery proved to be an effective method for teaching adult learners writing strategies necessary for e-literacy. Throughout the sessions, participants consistently requested information regarding computer use. The prompts were aimed primarily at basic computer skills needed to participate in electronic discussions. This suggests that the participants' limited computer experience and comfort level may have prevented independent participation in the instruction, had it been offered without the face-to-face component. One participant's comment reveals the importance of the face-to-face interaction received throughout the instruction: "I liked that you didn't just throw us in there and expect us to know what to do right away."

To assess change in writing quality after instruction, the electronic discussion entries created during an introductory session and entries made during the final independent session were compared. Pre- and post-instruction number of words did not differ (pre-instructional mean 79 and post-instructional mean 68, $t(20) = 1.77$, $p = .092$). However, participants used an increased number of sentences after instruction than they did prior to instruction (pre-instructional mean 3.5 and post-instructional mean 4.9 ($t(20) = 3.24$, $p = .004$). This suggests that writing processes were changing; it appeared as though participants began to make more intentional, thoughtful decisions about their writing. Further, the comparison of these two

groups of entries showed that 95% of participant entries contained an increased amount of explanation to support viewpoints generated. These findings suggest improvements to participants' written communication; relevant viewpoints were explained instead of including irrelevant, isolated opinions. Overall quality of participants' writing was scored using a modification of the TOWL-3. Results suggest significantly higher scores following instruction (pre-instructional mean 19.2 and post-instructional mean of 22.9 with 29 being the maximum score, t (20) = 2.43, p = .024). Explanatory quality of the participants' arguments was also assessed using a 5-point scale. This reliable scale indicated that arguments were stronger after instruction than before (pre-instruction 1.5 and post-instruction 4.7, t (19) = 12.58, p = .001).

Participant attitudes toward writing also appeared to change. Prior to the study, some participants revealed hesitation surrounding the writing process, as they were concerned with the aesthetics of their handwriting (some experienced difficulty with the mechanics of letter formation). After participating in the electronic discussions as a part of the instructional protocol, those same participants described writing using computers as being much more enjoyable than writing via the more traditional methods.

Conclusions

Workforce literacy programs must provide opportunities for learners to gain experience using technologies that are prevalent in the workforce, as it may directly increase participants' chances of successfully finding and maintaining employment. However, it must also be recognized that adequate instruction is needed to assist learners in using these technologies effectively for communication, as a certain level of communication skills is essential to use various components of technology such as e-mail and electronic discussion groups. Due to the overwhelming population of adult learners who do not yet possess the necessary skills to independently participate in electronic instruction, it becomes evident that face-to-face and electronic instruction complement one another through reciprocal teaching and may provide adult learners with an optimum opportunity to gain experience using communication technologies within a meaningful, work-related context while engaging in the process of becoming e-literate for the workforce of the 21st century.

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