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Bridging the Gap: Workforce Literacy for an Electronic Age

Heather Hemming, Sonya Symons, and Lisa Langille

Acadia University

Wolfville, Nova Scotia

Canada B0P 1X0

(902) 585 - 1229

heather.hemming@acadiau.ca

Abstract

With the increasing presence of technology, the demands of the workforce are also changing. Thus, there is a growing need for workforce literacy programs to reflect these transformations. The study is conceptualized within a social practice view of literacy, which considers literacy to be best understood as a set of social practices associated with different aspects of life. This paper discusses the development and assessment of an instructional approach designed to support adults enrolled in a workforce literacy program in learning how to effectively communicate in electronic contexts. Rather than teaching the skills in isolation the goal was to embed the instruction in the types of electronic writing that might occur in the workforce outside of the classroom. The instructional approach developed is based on a reciprocal teaching framework with the goal to situate the instruction within a meaningful, work-related context. Changes in writing quality were assessed using a modified version of the TOWL-3 and a scale designed to assess quality of argument. Quality of writing was rated more highly following instruction.

Bridging the Gap: Workforce Literacy for an Electronic Age

The need to send effective e-mail communication, to seek out important information electronically, and to communicate with others in electronic spaces is becoming essential for most workplaces. For those attempting to find employment and prepare for entry into the workforce, the speed with which these changes are taking place can be overwhelming. Electronic communication in the workplace is quickly overtaking other forms of communication including the telephone. With this, the social context of work involves demands for electronic communication/literacy. E-mail technology has increased the speed of personal transactions; in many instances, e-mail has effectively replaced the hand – or typewritten - note and letter of memorandum (Kovach, Conner, Livneh, Scallan, & Schwartz, 2000). Further, a poll conducted by the Gallup Organization, Inc. estimates that ninety per cent of large companies, sixty-four per cent of mid-sized companies, and forty-two per cent of small firms currently use e-mail systems (Kopp, 1998). 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.

With the proliferation of electronic writing in the workplace, it is important from a social practice view of literacy that workforce literacy instruction reflects the changing demands of today's workforce to enable adult learners to gain experience and skill with the types of literacy events they are likely to encounter in the social context of the workplace. Researchers (Barton & Hamilton, 1998; Purcell-Gates, Degener, Jacobson & Soler, 2002; Street, 1989) have argued the importance of conceptualizing literacy instruction within broader social purposes rather than on isolated skills to be practiced. Recognizing that the workforce is changing and that e-literacy is a social practice often regarded as a basic skill leaves individuals without computer experience with feelings of inadequacy, often doubting their ability to cope with the electronic demands of

the workforce. Both the workplace and the worker identify that new barriers to employment will emerge unless attention is directed toward preparing for the social presence of electronic-based literacies.

The term Digital Divide gained 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 in workforce preparation programs are participating in these programs because of barriers to maintaining employment. Although barriers may occur for various reasons, generally those attending the programs are often dealing with issues of unemployment and poverty. Research suggests that patterns of technology access often replicate existing inequalities rather than reduce them (Schofield & Davidson, 1998) and if corrective steps are not taken, technology may worsen rather than solve inequities (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). Facilitating the development of literacy with adult learners may contribute to their overall role within a broader social context; for example, adults may develop new ways of communicating and understanding the world in which they live, which further enables them to participate to their desired potential (Au & Raphael, 2000). Within the technologically-advanced societies of the 21st century, many adults are beginning to require additional literacy practices such that they may fully participate in previously unnecessary ways. Thus, workforce literacy programs need to play a pivotal role in providing literacy education that is both relevant to adult learners and reflects today's literacy demands.

In an effort to bridge the gap between the literacy learning of adults enrolled in work preparation programs and the electronic demands of the workplace, it is important that instruction is embedded in the types of literacy demands they are likely to encounter in the workplace. Purcell-Gates et al. (2002) found that authenticity of class literacy activities and texts had a statistically significant effect on adult literacy practices resulting in increases in frequency of reading and writing and/or types of texts read and written. Authentic literacy instruction generally refers to teaching which includes the real-life activities and texts participants are likely to encounter in life outside of the classroom (Purcell-Gates, Degener, Jacobson & Soler, 2001)

Askov and Gordon (1999) offer e-mail as an effective mode of communication for adults in workforce literacy programs, suggesting that e-mail is a demand of the workplace. They suggest that the integration of work-related materials and instruction in basic skills builds on workers' background of experience and knowledge while developing their abilities to use communication and computational skills more effectively in the workforce. The use of work-related materials and literacy practices within literacy programs tends to result in higher increases in job-related and general literacy when compared to programs that primarily focus on general literacy (Sticht, 1988). Further, literacy instruction must account for the increasing proliferation of technological forms of text (Au & Raphael, 2000); this is essential whereas forms of electronic reading and writing are resulting in new ways of approaching literacy practices, communicating and disseminating information, and the overall teaching and learning of literacy (Reinking, 1995).

Basic to the framework of literacy practices as social practice is the rationale that adults enrolled in workforce literacy programs should be exposed to literacy events similar to that which they are likely to be encountered at their future workplaces. Further, it is important they have opportunities to learn writing strategies necessary for effective communication in electronic

environments. McIntyre and Pressley (1996) and Purcell-Gates (1996) have demonstrated that important skill instruction can be woven into literacy teaching developed from the perspective of having students engage in authentic, life-like learning events.

The primary goal of many workforce literacy programs is to have participants successfully enter or re-enter the workforce so they may no longer require the attainment of social assistance. According to Mikulecky and Lloyd (1997) the structure of instruction in workplace courses tends to be brief, involves a small group of learners, and typically employs a mixture of off-the-shelf general skills material, custom-designed materials drawn from the local workplace, and materials selected to connect with learner interests and goals. Although some workforce literacy programs ultimately assist adults in gaining some form of employment, many programs' instruction and curricula have not adapted to reflect the ever-increasing reality of technology within today's workforce, which may thereby reduce participants' ability to successfully maintain employment.

The incorporation of computers into adult literacy programs has been heralded by many (Ginsburg, 1998; Hopey, 1998; Stites, 1998). This study focuses on developing and assessing the impact of instruction on writing quality in electronic contexts. In an effort to situate the teaching/learning on skills necessary to meet the electronic demands in the workforce an instructional approach was designed to teach strategies important for writing effectively in electronic contexts.

Fundamental to the design of the instruction was a grounding of the methodology in the theories of reciprocal teaching and situated learning. A reciprocal teaching framework was adopted due to research that examined the effectiveness of teaching cognitive strategies (Collins, Brown & Newman, 1990; Lysynchuk, Pressley & Vye, 1990; Palinscar & Brown, 1984). Results suggest that reciprocal teaching is potentially an effective instructional approach to

teaching workforce literacy skills (Rosenshine, Meister & Chapman, 1996; Spivey, 1995). Reciprocal teaching involves providing instruction over several sessions beginning with the instructor modeling strategic approaches to tasks. Gradually, from session to session, the instructor shifts more of the responsibility to the learners for using strategies. The gradual transfer of responsibility allows learners to ask questions, clarify the approach, and receive feedback before completing the task independently. Reciprocal teaching supports an ongoing dialogue between student and instructor; various instructional strategies including teacher-led discussion, explanation, and modeling of strategy use may be effective ways of scaffolding participant attempts to employ strategies.

Since situated, contextualized learning involves instruction based on real-world knowledge and experiences, it encourages transfer of knowledge, skills, and literacy practices from the classroom to other areas of life, including the workplace (Askov & Gordon, 1999; Purcell-Gates et al., 2002). Further, Stites (1998) maintains that learning environments for adults should integrate technology in ways that facilitate opportunities for learner-centered, problem-focused, discussive, and contextualized learning. Central to the instructional design was a goal to situate the learning within a meaningful, workforce-related context using a reciprocal teaching approach and to assess the impact of an instructional protocol, developed to teach adult learners how to express or explain a viewpoint, ask pertinent questions, and write effective responses, on the quality of writing.

Method

Participants

The twenty-two participants in this study, ages 18-48, were enrolled in various programs offered at the Annapolis Valley Work Centre (AVWC) to develop skills that may lead to

increased access to educational, vocational, and employment opportunities in the community.

The AVWC is a non-profit community organization, which provides participants with actual on-the-job training in real kitchens, offices, and shops. Electronic literacy practices needed within the real-life work contexts include asking questions to others, providing information in response to a question asked electronically, and explaining an idea to others in the workplace. In addition to job skills training, participants also attend personal development and academic upgrading classes. To qualify for programs offered at the AVWC, participants must be at least 18 years of age, have an identifiable barrier to employment, and be referred by either a community service organisation or a professional. The participants of this study have had difficulty finding and/or maintaining employment, due to academic, emotional, or behavioural obstacles. All participants were unemployed and receiving some form of social assistance at the time of this study. As the goal of most participants enrolled in this program entailed finding and maintaining employment, they were very motivated to gain any skills that they felt would assist them with this process, such as learning how to communicate through technology. Although many participants had opportunities to use computers within a small lab at the centre, these visits did not always include instruction. Therefore, only students with prior computer knowledge or those enrolled in the Basic Office Skills program were making use of computers within their program.

Computer usage surveys revealed information regarding participant experience with and attitude toward computers. Fifteen of twenty-two (68%) participants had used e-mail while 9 (41%) had used chat groups prior to this study. Eight (36%) participants categorized themselves as heavy computer users (once per day); another 4 felt they were light computer users (1-4 times per week); and 10 of 22 (45%) considered themselves to be infrequent users. Although 13 (50%) participants had used a computer seven days prior to the study, 8 of them had used a computer

for playing games while only 5 had used a computer for word processing and 6 for writing an e-mail message. Overall, participants expressed some level of discomfort with the writing process. As one participant expressed, “It’s one thing to think it and another thing to write it down”.

Materials

Participants used personal IBM Thinkpads throughout the study, working in heterogeneous small groups in a controlled environment during regular class hours at the AVWC. The instructional protocol was developed and accessed through IBM Lotus QuickPlace, an online collaboration workspace tool.

Hypothetical case studies were created to reflect real-life situations and provide the context for electronic writing. After meeting, talking with, and observing participants workplace issues surfaced as interests to participants. Work ethic, searching for employment, interview preparation, time management, setting priorities, and tolerance of differences were common concerns among many participants. Thus, the case studies were based on real-life issues relevant to participants’ experiences; this facilitated the use of prior knowledge and experience throughout the instruction.

Procedure

Development of the instructional protocol began with the examination of a variety of electronic written communication. Three skills were identified as essential for effective communication and became the foci of the instructional protocol development. To communicate one’s ideas effectively it is important to have a strategy for explaining or expressing a viewpoint. Further, when asking for information it is necessary to pose pertinent questions. When responding to others, it is important to be able to make connections between the initial message and the response being written to it. Thus, the three writing strategies that formed the focus of

the instructional protocol included explaining / expressing a viewpoint, asking pertinent questions, and writing effective responses.

Each participant was asked to complete a written sample based on the content of a case study, without the use of a computer. To assess the writing quality, a baseline score was assigned to the written samples using a modified version of the TOWL-3. This same instrument was used to measure the quality of the case study responses following instruction.

Basic computer instruction was provided using the IBM Thinkpads. 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 based on a case study. The instruction consisted of eleven 40-minute sessions that focused on the three specific writing strategies used when making electronic discussion entries: explaining/expressing a viewpoint, asking pertinent questions, and writing effective responses.

Each writing strategy was taught during three sessions: an introduction to the strategy where the strategy was modeled, a first application session where the participants received some guidance, and a second application session where the participants used the strategy independently. After the participants completed the nine sessions, there were two additional sessions during which participants worked through a case study using all three of the writing strategies. The first of those sessions included guidance and support from the researcher while the second session required the participants to use all three strategies independently. Each of these sessions consisted of the opportunity to use worksheets and study guides during the entry of the participants' responses into the electronic discussion group.

The eleven sessions of instruction began with an introduction to the overall purpose of the program through explicit comments: "Have you ever heard of email and chat groups? Both of

these involve putting your ideas into writing. In the work that we are going to do together the goal is to help you learn strategies that will help you in writing messages using the computer. In many workplaces employees might be asked to write to one another about something that may be happening in the workplace. In our work you will be given a pretend case that will be the focus.” The goal of the introduction was to provide participants with a broader context for the strategies and to assist them in understanding the importance of the strategies.

As mentioned above, teaching the writing strategies involved three sessions for each of the three strategies. During the first session for each strategy, the researcher provided an overview of the strategy, a rationale for learning the strategy, and a thorough modeling of the strategy.

Participants were introduced to expressing/explaining a viewpoint: “Being able to express your ideas and viewpoints to others is important to effective writing because then others will be able to understand what you think and why you think it.” Participants then took part in an in-depth discussion led by the researcher, who began by reading a case study aloud while participants followed on their laptop screens. Next, questions posed created a stimulus for the writing. Steps involved in the strategy, outlined below, were verbalized and discussed by the researcher so participants became increasingly aware of various steps and procedures involved.

For example, when modelling the strategy of expressing/explaining a viewpoint a number of key procedures were identified: 1) the need to think about questions asked at the end of the case study; 2) the need to pose the question to oneself, “What do I think?”; 3) the need to look over the case to think about one’s ideas and how they relate to the case; 4) the need to re-read sections of the case; 5) the need to ask, “What reasons do I have to support my ideas?” and / or “Is there evidence to support my position?” As the researcher talked through the steps, a worksheet was completed through open dialogue with the participants. Once the worksheet was

completed, an electronic discussion group entry was made while the researcher talked through the steps involved, stressing the need to ask oneself monitoring questions like 1) “Do I need to go back over the case to clarify anything?” 2) “Do I need to reread anything?” and, 3) “Will others understand what I am saying?” The second session consisted of a strategy review, where participants were reminded of steps involved with the strategy, before the participants worked through the strategy using a case study with guidance and support from the researcher. Participants were invited to ask questions as they worked, as feedback and suggestions would be provided. The third session involved participants using the strategy independent of the researcher, although they were able to ask for assistance. This three-session format previously outlined was used with the other two strategies.

The rationale given for the importance of asking pertinent questions was as follows: “Asking questions encourages us and others to search for answers. Asking relevant questions improves understanding because it encourages us to focus and also checks our understanding of the content.” When this strategy was modelled, the researcher focussed on the need to think about different kinds of questions and to think about what is really important to know. The researcher demonstrated how the 5W’s might be used to think about the types of questions that could be posed. The researcher modelled the need to ask herself 1) “Is this a question that is important for me and others to think about?” 2) “Do I need to reread anything?” and, 3) “Will others understand what I am asking?” Participants then had an opportunity to use the strategy of writing pertinent questions in the second and third sessions with there being more guidance and direction given in the second than the third.

The third strategy of writing effective responses to others followed the same three-session framework. The importance of writing effective responses was stressed by pointing out that

many forms of electronic communication including e-mails, chats/discussions require writing back and forth to others. The participants were encouraged to think of e-mail and electronic discussions as putting conversations into writing. The researcher introduced the strategy: “When we write responses we need to carefully consider the ideas others are writing and think about the questions that might be asked to help understand what is being discussed and to think about how to respond to the questions others are asking us.” Modelling began with reading a response someone else had written, outlining that “before I write my response, I must think about what I want to write. I will make a short list on a worksheet. I will decide whether I agree with the points made in the initial response or not and why. Next, I will think of the questions I want to know more about. I will ask myself 1) “Do I need to go back to the text to clarify anything?” 2) “Do I need to reread anything?” 3) “Do my responses link to the response already posted?” 4) “Is my entry clear?” 5) “If asked, did I answer questions?” and, 6) “Did I make my entry in a way that encouraged someone else to write back?”

After the participants completed the nine sessions, three for each of the three strategies, two additional sessions required participants to work through a case study using all three writing strategies. The first of those sessions included guidance and support from the researcher while the second session required the participants to use all three strategies independently.

Pre- and post-instruction case study responses were scored to assess whether participants stated and explained a viewpoint. Any statement that explained why the person stated a viewpoint was counted as an explanation. Nine of the writing samples were scored by two coders and indicated that the coding of the responses was reliable (Spearman’s $\rho = .90$).

Results

Comparisons were made between written samples prior to and following instruction. The means and standard deviations for all writing measures are included in Table 2. First, the quantity of writing was assessed by counting the number of words written in the responses to the case studies. The pre-instruction and post-instruction means did not differ reliably, although the difference approached statistical significance ($t(20) = 1.77, p = .092$). Participants used significantly more sentences, however, after instruction than they did before instruction ($t(20) = 3.24, p = .004$). This suggests that writing processes were changing; it appears as though participants were writing more concise sentences following instruction.

Scoring of participants' case study responses pre- and post- instruction indicated an improved quality of writing. Participants stated a similar number of viewpoints about cases before and after instruction ($t(19) = 1.70, p = .11$), but provided more explanation of their viewpoints following instruction ($t(18) = 4.46, p = .001$). These data suggest improvements to participants' written communication as viewpoints were explained rather than simply stated.

A modification of the Test of Written Language – Third Edition (TOWL-3) was used to examine overall writing quality. The maximum score that could be attained was 29 points. The scoring scheme determined whether responses were relevant to the case, answered questions posed and included explanations or evidence to support their statements, shared personal opinion or experience related to the case, offered solutions or suggestions with regard to the case, and presented information in a logical sequence using correct grammar and punctuation. Results suggest significantly higher scores following instruction ($t(20) = 2.43, p = .024$). The explanatory quality of the participants' arguments was also compared using a 5-point scale; participants' arguments were stronger after instruction than before ($t(19) = 12.58, p = .001$).

After receiving the reciprocal model of instruction, 95 percent of the online discussion entries showed evidence of worksheet and study guide use. Study guide use was a step built to measure whether or not participants were actually using the strategies independently. The use of worksheets and study guides was an important component of the learning throughout this study. Study guides provided a step-by-step protocol for the strategy whereas the worksheets offered a structured space where participants could organize their thoughts and use as a basis for their electronic entries. One participant stated that she liked using the worksheets because they allow her to work through the strategy using specific steps and are “not as overwhelming as a blank page”. Although all participants agreed that the worksheets and study guides were very useful, they acknowledged some difficulty with their use as many participants found the worksheets to be challenging. One participant claimed that the worksheets made him “think too hard” when he had difficulty separating his viewpoints from reasons supporting his viewpoints. Another participant stated that worksheets “might be hard because they will make you think about stuff that you don’t normally”. Another participant agreed with this statement but added that she “can think better with the worksheets”.

Qualitative data gathered through observation during the entire phase of instruction were documented in the researcher’s journal. There was evidence of change in attitudes toward writing during the 11 instructional sessions. Prior to the study, thirty-six percent of the participants specifically identified writing as a significant barrier for them with regard to finding and maintaining employment. During the pre-instructional session that involved the completion of writing samples without using a computer, eighteen percent of written responses did not accurately reflect thoughts verbally expressed in a group discussion; many written responses were brief, used limited vocabulary, and contained unconventional spelling and letter formation.

Participants' literate behaviours throughout the duration of the project also revealed change, as many participants began to think more about their writing, as well as conventions of writing such as spelling, punctuation, and capitalization. One participant, for example, stated that she now read her work "over and over again" to make sure that "it makes sense" before she posted it. Further, participants began to use each other as resources while writing. When reading the entries of others, participants often made editorial comments. As a result of this feedback, participants began to consider their writing processes differently; for example, one participant gained increased awareness of the importance of spacing between words.

During the introduction of the study, many participants showed enthusiasm toward using computers for discussion as opposed to face-to-face class discussion. For example, one participant shared a personal story from his childhood about being ridiculed in front of an entire class for not knowing the answer to a teacher's question; since then, he did not enjoy participating in class discussions. However, he showed interest in the alternative form of discussion through the use of computers. Also, personal thoughts and feelings may be more readily offered through the less threatening form of electronic communication. Many participants expressed concerns surrounding their comfort level with speaking in front of others; many were concerned about their ability to speak fluently and experienced difficulty pronouncing many words they would otherwise use. After stating that this problem was often avoided by remaining quiet in various situations, including workplaces and classrooms, many participants reconnected with their voices through electronic discussion groups.

Discussion

There is evidence that both the literacy practices of participants and their attitudes toward literacy changed over the duration of the study. Although many of the participants had no

experience with computers prior to the study, there were opportunities for them to gain hands-on learning with computers as well as communication through the use of computers. One participant noted, “I didn’t like the idea of computers before the study but since I’ve used them more, I like them enough to want to keep using them.” Other comments from participants included “I feel more confident about writing with a computer now than I did before”, “I didn’t realize that writing on a computer was easier than writing without one” and “I like writing with a computer and I want to keep using them”.

Issues of computer access arise within discussions around adult learners and literacy. For many individuals, computers are not accessible within their everyday lives. This is supported by the fact that several participants’ first experiences with computers occurred at their workforce literacy program. As noted in the participants’ voices “ I never touched a computer before I came to the centre,” and “ I don’t want the study to end because I will lose my writing ability if I don’t get to use the computers”. Had they not been enrolled in such a program, it is likely that they would not have gained access to computers. Exclusion from opportunities to learn about computers maintains various implications for these individuals; for example, without education around computers or communication through computers, many adults may become further separated from the realities of finding and maintaining employment, something that many feel is necessary to support the livelihood of themselves and their families. However, the social and cultural practice within the workforce often requires workers to bring and use a set of e-literacy skills without opportunities for continuous development of the skills attended to in this program.

There was an improvement in writing quality after instruction; there was also evidence of participants’ ability to use the strategies taught and to explain their opinions. Considering the importance of being able to communicate electronically in today’s workforce, such gains are

meaningful, especially as this population of learners has experienced barriers to communication in the past. It is important to recognize that the cognitive demands of literacy are relative to the contexts in which they exist (Purcell-Gates et al., 2002); therefore, it is essential that adult literacy learners have multiple opportunities for engaging in contextualized learning activities, such as those described in this study. Of course, this research represents only the first step in the process of effective adult workforce instructional program development for electronic communication. Future research will include a control group in the design, particularly since current participants were involved in a multi-faceted workforce preparation program; it would be interesting to discern whether the current instructional program is an effective addition to the workforce preparation program by comparing students enrolled in the program with program students who are also involved in the electronic discussion instruction.

In reflecting on the creation of a context for the instruction it appears that electronic discussion groups (EDGs) have the potential to promote a collaborative learning environment that enables participants of various abilities to exchange ideas and thoughts, extend their learning, and ultimately grow as a community of learners. Electronic discussions provide an environment for reflective responses as they enable participants to work at their own pace. Electronic discussions offer flexibility given their asynchronous capability; this makes the learning medium one that may be provided at a time when the adult learner is available and able to participate. Further, this environment allows learners to use their prior knowledge, reflect, and revise their writing within the context of an electronic learning community. Research has found that quality literacy instruction occurs in meaningful contexts (Raphael & Brock, 1997), as adult learners may learn most efficiently when they interact with materials that reflect and activities that incorporate their own life experiences (Fingeret, 1991; Scribner, 1997). Further, the aspects

of electronic writing may perhaps be especially well-suited for adult participants as this type of learning atmosphere allows for the diversity of adults enrolled in workforce literacy programs.

Whereas most workforce literacy programs are offered within settings other than actual workplaces, attempts must be made to provide instruction that incorporates actual workplace tasks using materials and methods that most closely reflect those used within authentic workplaces. The instructional approach used throughout this study recognizes situated learning as being a fundamental component for approaching authenticity within workplace literacy education. However, it is recognized that while there is an effort made to increase the degree to which the instruction is based on real-life literacy activities there are obvious limitations in terms of the degree to which reflects authentic literacy is reflected. Since many workforce literacy participants will be required to utilize electronic communication in their future workplaces, writing instruction was offered within an electronic writing environment similar to those used in actual workplaces. This allowed participants to gain experience using electronic discussion groups while improving their written communication skills also needed within the workplace. Further, the case studies used during the study were relevant to the lives of participants and reinforced the need for a meaningful writing context where participants were encouraged to use their prior knowledge and experience. In addition, the focus on writing strategies in the reciprocal instruction allowed that important skill instruction was embedded in literacy tasks.

While this research has shown gains in terms of participants' writing quality within electronic contexts, it remains unclear whether these individuals will have adequate access to computer technology which would allow for the continued engagement of these electronic communication skills during the time between program completion and employment. As identified earlier, authentic literacy instruction is aimed at engaging in the real-life demands for

literacy which occur outside of the classroom. While the goal of the instructional protocol developed and assessed in this study was broadly designed to prepare for the electronic writing demands of the workplace, it is important to recognize that the presence of these demands are in many ways contingent on employment and the accessibility of the computer. Without preparing for the needs of the e-literacy demands of workplace barriers may be in place in terms of confidence and skill-sets that deny access to meaningful employment. There is a need to understand the nature of effective instruction aimed at bridging the gap between the existing literacy skill sets and the demands of the workforce they are preparing to enter. If participants are to be prepared for the demands of electronic communication, instructional approaches must reflect the authentic process of communicating electronically to promote growth in the areas of literacy. Adult participants require an instructional approach that will address their diverse needs and will guide them to independent use of the writing strategies so they can then be transferred to future situations. The integration of technology in workforce preparation programs is essential if participants are to be adequately served so they are better prepared to successfully find and maintain employment.

References

- Askov, E.N., Gordon, E.E. (1999). The brave new world of workforce education. *New Directions for Adult and Continuing Education*, 83, 59-68.
- Au, K.H., & Raphael, T.E. (2000). Equity and literacy in the next millennium. *Reading Research Quarterly*, 35(1), 170-189.
- Barton, D., & Hamilton, M. (1998). *Local literacies: Reading and writing in one community*. London: Routledge.
- CNET News.com. (1997, March 14). *Society's digital divide*. Retrieved June 7, 2002, from <http://news.com.com/2100-1023-278007.html>
- Collins, A., Brown, J.S., & Newman, S.E. (1990). Cognitive apprenticeship: Teaching the crafts of reading, writing, and mathematics. In L. Resnick (Ed.), *Knowing, Learning, and Instruction: Essays in Honour of Robert Glaser* (pp.453-494). Hillsdale, NJ: Erlbaum.
- Fingeret, A.H. (1991). Meaning, experience, literacy. *Adult Basic Education*, 1, 1-11.
- Ginsburg, L. (1998). Integrating technology into adult learning. In C. Hopey (Ed.), *Technology, basic skills, and adult education: Getting reading and moving forward* (pp. 37-45). Columbus, OH: ERIC Clearinghouse on Adult, Career and Vocational Education.
- Gowen, S.G. (1992). *The politics of workplace literacy: A case study*. New York: Teachers College Press.
- Hopey, C. (1998). Making technology happen in adult education. In C. Hopey (Ed.), *Technology, basic skills, and adult education: Getting reading and moving forward* (pp. 3-6). Columbus, OH: ERIC Clearinghouse on Adult, Career and Vocational Education.
- Kopp, K.P. (1998, Summer). Electronic communications in the workplace: E-mail monitoring and the right of privacy. *Seton Hall Constitutional Law Journal*, 1-30.

- Kovach, K., Conner, S., Livneh, T., Scallan, K., & Schwartz, R. (2000, July). Electronic communication in the workplace – something's got to give. *Business Horizons*, 43(4), 59-64.
- Lysynchuk, L., Pressley, M., & Vye, G. (1990). Reciprocal instruction improves reading comprehension performance in poor grade school comprehenders. *Elementary School Journal*, 40, 471-484.
- McIntyre, E., & Pressley, M. (Eds.). (1996). *Balanced instruction: Strategies and skills in whole language*. Norwood, MA: Christopher-Gordon.
- Mikulecky, L. & Lloyd, P. (1997). Evaluation of workplace literacy programs: A profile of effective instructional practices. *Journal of Literacy Research*, 29(4), 555-585.
- Palincsar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction*, 1, 117-175.
- Purcell-Gates, V., Degener, S.C., Jacobson, E., & Soler, M. (2002). Impact of authentic adult literacy instruction on adult literacy practices. *Reading Research Quarterly*, 37(1), 70-92.
- Purcell-Gates, V., Degener, S.C., Jacobson, E., & Soler, M. (2001). Taking literacy skills home. *Focus on Basics*, 4(D) Retrieved December 13, 2002 from <http://www.gse.harvard.edu/~ncsall/fob/2001/gates.html>
- Purcell-Gates, V. (1996). Process teaching with direct instruction and feedback in a university-based clinic. In E. McIntyre & M. Pressley (Eds.), *Balanced instruction: Strategies and skills in whole language* (pp.107-128). Norwood, MA: Christopher-Gordon.

- Raphael, T.E., & Brock, C.H. (1997). Instructional research in literacy: Changing paradigms. In G.K. Kinzer, K.A. Hinchman, & D.J. Leu (Eds.), *Inquiries in literacy theory and practice: 46th yearbook of the National Reading Conference* (pp.13-36). Chicago: National Reading Conference.
- Reddick, A., Boucher, C., & Grosseilliers, M. (2000). *The dual digital divide: The information highway in Canada*. Ottawa: The Public Interest Advocacy Centre.
- Reinking, D. (1995). Reading and writing with computers: Literacy research in a post-typographic world. In K.A. Hinchman, D.J. Leu, & G.K. Kinzer (Eds.), *Perspectives on literacy research and practice: 44th yearbook of the National Reading Conference* (pp.17-33). Chicago: National Reading Conference.
- Rosenshine, B., Meister, C., & Chapman, S. (1996). Teaching students to generate questions: A review of the intervention studies. *Review of Education Research*, 66(2), 181-221.
- Schofield, J. and Davidson, A. (1998). The Internet and equality of educational opportunity. In T. Ottmann and I. Tomek (Eds.), *Proceedings of ED-MEDIA and ED-TELECOM 98-World Conference on Educational Multimedia and Hypermedia and World Conference on Educational Telecommunications* (pp.104-110). Charlottesville, VA: AACE.
- Scribner, S. (1997). *Mind and social practice: Selected writings of Sylvia Scribner*. New York: Cambridge University Press.
- Serim, F. (1999). Beyond Y2K: Bridging the digital divide. *Multimedia Schools*, 6(5).
- Spivey, N.R. (1995). Reciprocal teaching of lecture comprehension and comprehension monitoring skills in college students. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, 55 (9-A).

Sticht, T.G. (1988). Adult literacy education. *Review of Research in Education, 15*, 59-96.

Stites, R. (1998). Adult learning theory: An argument for technology. In C. Hopey (Ed.), *Technology, Basic Skills, and Adult Education: Getting Ready and Moving Forward* (pp. 51-56). Columbus, OH: ERIC Clearinghouse on Adult, Career and Vocational Education.

Street, B. (1989). Literacy: "Autonomous" vs. "ideological" model. In M. Taylor & J.A. Draper (Eds.), *Adult literacy perspectives* (pp.57-69). Toronto, Canada: Culture Concepts.

Table 1

Description of Instructional Protocol

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

Table 2

Descriptive Statistics of Pre- and Post- instruction Writing Measures

Measure	Period	
	Pre-instruction	Post-instruction
Number of words in writing sample		
<i>M</i>	79	68
<i>SD</i>	39	22
Number of sentences in writing sample*		
<i>M</i>	3.5	4.9
<i>SD</i>	1.9	1.4
Writing quality (TOWL –3 revised) (maximum 29)*		
<i>M</i>	19.2	22.3
<i>SD</i>	4.4	4.0
Number of viewpoints stated		
<i>M</i>	2.5	3.1
<i>SD</i>	1.0	0.7
Number of explanations of viewpoints**		
<i>M</i>	1.4	2.3
<i>SD</i>	0.7	0.6
Quality of argument (maximum 5)		
<i>M</i>	1.5	4.7
<i>SD</i>	0.9	1.0

p < .05
 ** p < .001