LITERACY-BASED TECHNOLOGY SUPPORT

FOR POST-SECONDARY SECOND LANGUAGE LEARNERS

Daniel T. Yakimchuk, *Cape Breton University*

The academic performance of many international students admitted to Canadian universities is undermined by the students' English language proficiency. The goal of this study was to improve English language proficiency of post-secondary second-language learners (SLLs) through the use of literacy-based assistive technology. Fifty-four participants (32 SLL, 22 non-SLL) enrolled in a cross-section of Cape Breton University's Shannon School of Business courses participated in the investigation. Results determined a significant effect (9%) of the use of screen-reading software on academic performance of SLLs and a positive but insignificant effect (3%) of the use of screen-reading assistive technology on academic performance of non-SLLs. The article concludes with a discussion on the responsibility of educational institutions to provide additional language support services to international students studying in their non-native language.

Background

Evidence indicates that limited English language proficiency impacts academic

performance of second-language learners (SLL) at the post-secondary level. Pearson (2004)

linked eroding academic standards to inadequate English language proficiency levels of SLLs.

Olivas and Li (2006) connected low second-language proficiency levels and poor academic

performance of international students studying at both university and college levels in the United

States. Liu (2005) suggested a lack of language proficiency and task specific writing skills are the major reasons why SLLs resort to plagiarism.

Unsatisfactory English-language proficiency levels in second-language students are a global concern and an issue at all levels of post-secondary education. Fox (2005) found that freshman second-language students underperformed and were more at risk than non second-language students. Mathews (2007) found significant correlations between Turkish students' English language ability and their academic success while studying abroad. According to Mathews, poor language abilities prevented students from keeping up with the work requirements in PhD programs. Brown (2007) reported similar findings with international students studying at the masters' level in the United Kingdom.

Although traditionally treated as separate concerns, it now appears that some of the support issues relevant to international students studying in a second-language share common challenges with support issues relevant to students with learning disabilities. Burgstahler (2002) stated that reading challenges faced by international students studying in a second-language are similar to the reading challenges faced by students with reading related learning disabilities. According to Winzer (2005), cultural and linguistic differences are often mistaken for language related disabilities because the literacy characteristics of SLLs are similar to those attributed to persons with learning disabilities or communication disorders. Also, similar to students with disabilities, international students often suffer from unfair stereotyping as a result of cultural or language barriers. Kumaravadivelu (2003) discussed the persistence of cultural stereotypes in TESOL (Teaching English to Students of Other Languages) professionals towards Asian students. Similarly, students involved with assistive technologies often struggle with negative stigma associated with disability. Some students with learning disabilities chose not to declare

their disabilities due to the stigma that may be associated with the label (Parette & Scherer, 2004).

Eighty percent of students with learning disabilities require services for reading disabilities (Bryant, Young, & Dickson, 2001, as cited in Edyburn, 2004). Reading is the most prevalent form of academic disability but the challenge in diagnosing reading disabilities in SLLs is to differentiate cases where a limited language proficiency level is interfering with the learning process from cases were the language deficiency is actually masking an undiagnosed learning disability (Wagner, Francis, & Morris, 2005). Meskill and Hilliker (2005) argued that uninformed teachers often mistakenly label a learner as having a disability because of the student's limited ability to communicate in English. The disproportionate rate of non-whites in special education programs is often attributed to poor English language proficiency levels (Artiles, Trent, & Palmer, 2004). Ochoa, Kelly, Stuart, and Rogers-Adkinson (2004) claimed the current overrepresentation of Hispanics in special education classes is due to a failure to properly differentiate academic difficulties related to second-language acquisition from academic difficulties related to cognitive disabilities. Non-English speaking students are the fastest growing subgroup of students in US public schools but they are also the student subgroup with the highest dropout rate and lowest achievement scores (McCardle, Mele-Mccarthy, Cutting, & D'Emilio, 2005).

The education system is poised for a dramatic increase in the number of second-language students. According to the 2006 census, 23.9% of the Canadian population aged 15 and over were born outside of the country (Statistics Canada, 2006a). This compares to 18.4% as reported in the 2001 census (Statistics Canada, 2001). As a result of increased immigration, the percentage of allophone Canadians has increased from 13% in 1986 to 17% in 1996 and to 20%

in 2006 (Statistics Canada, 2006b). Likewise, in the USA it has been predicted that half of the United States' K-12 population will speak a language other than English on their first day of school by the year 2022 (Eubanks, 2002). In 2000-2002 there were approximately 4.75 million students with limited English proficiency enrolled in the United States' pre-K to 12th grade public school system (Meskill & Hilliker, 2005), representing a 95% increase within 10 years.

In addition to this increase in the K-12 population, many universities and colleges are looking to second-language international markets to curb declining student enrollments. The increase in the number of second-language students within the education system is not without challenge. Making the transition from one school system to another, such as from high school or community college to university, can be trying for some students. Ability and socio-emotional levels can vary widely within group cohorts, as do student abilities to cope with the organizational changes that occur during transitions (Schunk, 2004). SLLs are not only dealing with the usual transitional issues but also with moving from another country.

While educational transitions are considered part of the educational process for most students, excessively difficult transitions may jeopardize student success. As additional levels of complexity are added to the process, then the onus of responsibility should not be with the student alone but also with the institution that knowingly places students into the complex environment that challenges their potential to succeed. If educational institutions knowingly recruit students with language abilities that may impede their chance of success, then those institutions have the "moral duty to put in place systems of support to facilitate the acquisition of language skills" (Brown, 2007, p. 245).

Although there is a plethora of research on the efficacy of a broad range of assistive technologies for learners with disabilities, research on the use of assistive technology to support

literacy among second-language learners is scarce. In fact, Fox (2005) argued that the lack of language support resources for SLLs has reached a crisis point. Although inconclusive, there is some indirect evidence to suggest that assistive technologies designed to improve the literacy outcomes of learners with disabilities could also have a positive effect on the literacy proficiency levels of SLLs. Winzer (2005) draws a connection between the learner characteristics of SLLs and those with learning disabilities and communication disorders. If assistive technology is effective when used by students with learning disabilities, and if there are similarities between learner characteristics of SLLs and students with learning disabilities, then could assistive technology resources designed to support learning disabilities support second-language undergraduate students?

This research examined the role that assistive technology can play as a language support tool for second-language learners. The investigation explored the efficacy of literacy-based assistive technology as applied to undergraduate SLLs at Cape Breton University. The goal of the research was to improve the English-language proficiency levels in second-language undergraduate students through the use of literacy-based assistive technology.

Methodology

The Time Series Concurrent and Differential (TSCD) research design was adapted to test the effect of the selected assistive technology on second-language learners. TSCD is a design approach recommended by assistive technology researchers for testing the efficacy of assistive technology on the learning and performance of students with learning disabilities (Smith, 2000). TSCD involves the collection of a series of participant measurements both with and without the aid of assistive technology. The design, as initially described by Smith, measures the functional

performance of a student with and without the aid of assistive technology during a single point in time. The difference between the two measurements represents the impact of the assistive technology. A graphical and statistical analysis of the data also reveals patterns of performance over time that further determine the efficacy of the assistive technology intervention.

The adapted TSCD model was applied to a cross-section of business courses through a series of alternating structured reading exercises over a single 12 week academic term. Fifty-four participants (32 SLL, 22 non-SLL) enrolled in three separate business courses participated in the study. Participants were classified as SLL if they selected a language other than English as both their primary spoken and primary written language on a background information questionnaire. All other participants were classified as non-SLL. The intervention was applied to all class members, rather than just the SLLs, to allow for an additional comparison analysis between students whose first language is English and students whose first language is not English.

The reading assignments were adapted from the course textbook material covered in the lecture component of the specific course. In the non-intervention exercises, participants read and reviewed the assigned hardcopy textbook chapter. In the intervention exercises, participants read and reviewed digital copies of the assigned textbook chapter with the aid of PDF Equalizer. Requests for digital copies and permission to use the digitized texts were obtained from the appropriate textbook publishers.

PDF Equalizer is part of a suite of tools offered by Premier Assistive (http://www.readingmadeeasy.ca/) that is marketed as both a literacy tool and an ESL tool to support persons with reading and writing challenges. The software contains a number of accessibility features that provide access to PDF files to users previously restricted by existing PDF file format limitations or publisher-imposed security features. These accessibility features

include text-to-speech conversion, synchronized note taking, MP3 digital audio conversion, integrated built-in dictionary, language model summation, and language translation.

For the purposes of this investigation, students were instructed to focus on the text-to-speech function of the software. Text-to-speech can be especially beneficial in content areas that require a significant amount of reading or in content areas containing specialized vocabulary (Pisha & Coyne, 2001). Text-to-speech technology also fits well with universal design to serve not only the needs of learners with reading-related disabilities but also to provide bi-modal information input for all learners.

There are many different layout styles in PDF files, and PDF Equalizer has multiple ways of reading PDF files to accommodate the varying formats. The three main reading options are *Read, Selected,* and *Arrange*. The layout of the PDF file determines which method to use. The *Stop*, *Pause*, and *Rewind* toolbar selections provide basic user control over the current vocalization. Voice configurations allow the user to select from available voices and provide the ability to adjust both voice rate and voice pitch. The *Help* toolbar option provides a standard help interface, but also links to a short video demonstration of all major system functionality.

The *Read* option is optimized for documents that have a single column of text and no margin notes. The *Read* option simply starts reading the document from the start of the page. The *Selected* option is used for layouts with multiple columns, formulas, charts, graphs, and notes in the side margin (see Figure 1). The *Select* option allows the user to dynamically select the portion of the text to be read.
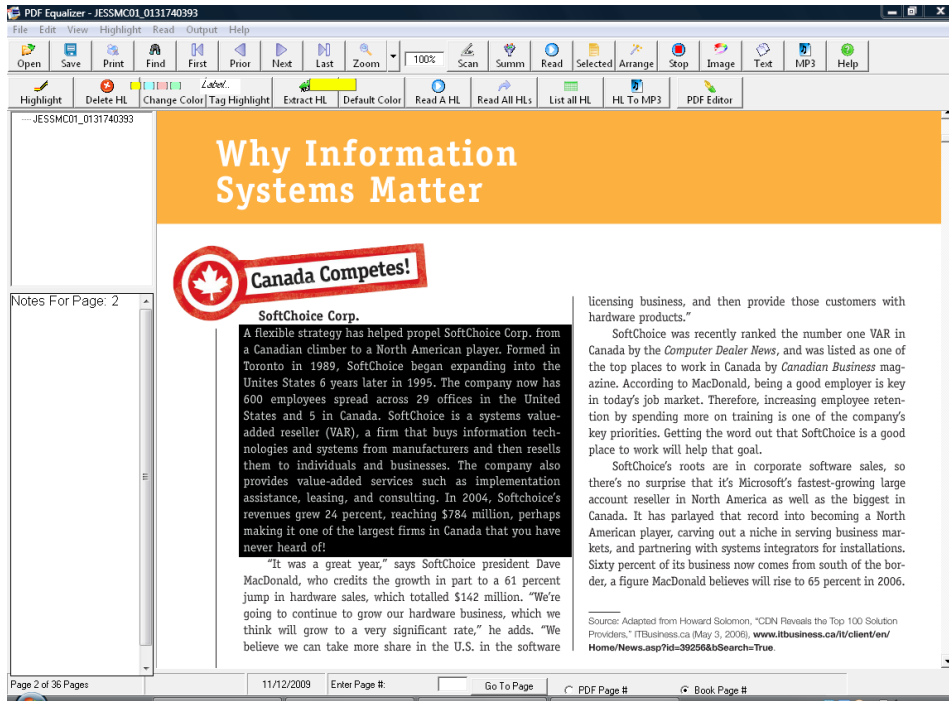
Figure 1. PDF Equalizer select option using text from course reading (Jessup, Valacich, & Wade, 2008).

The *Arrange* option is the recommended option for reading page text with more than one column. The *Arrange* feature will reformat dual column text so that it can be read without the need to select one column at a time. The *Arrange* feature will load the selected text into the *Notes* window (see Figure 2). In the *Notes* window, words are highlighted as they are read.
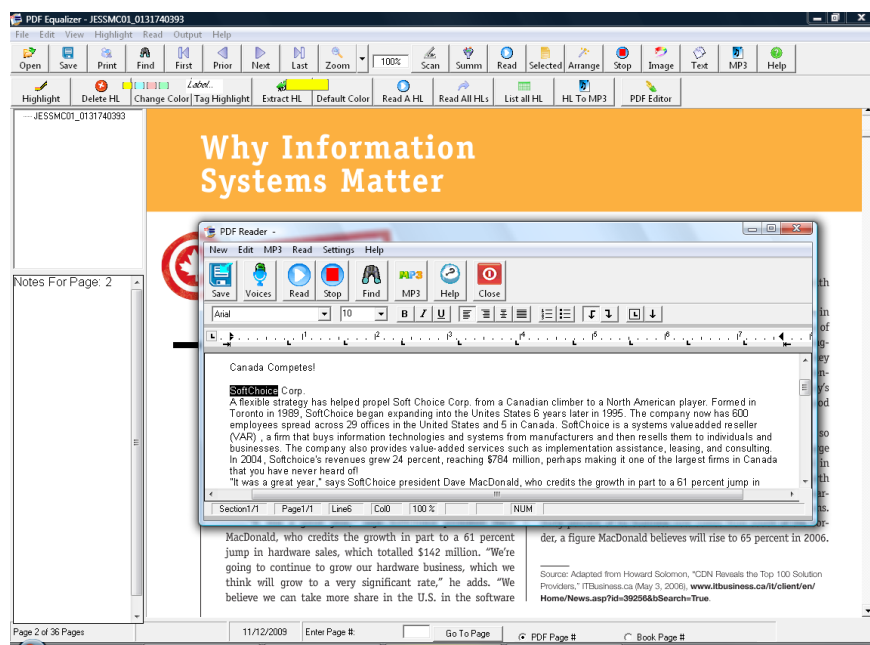
Figure 2. PDF Equalizer notes window using text from course reading (Jessup, Valacich, & Wade, 2008).

The chapter reading tests were developed in consultation with the course instructor. Each test consisted of 15 multiple choice questions randomly selected from the publisher-supplied question bank. The total number of potential questions per test varied depending on the particular test bank involved. The process alternated the intervention and non-intervention exercises. The non-treatment tests required participants to review the chapter text using the course textbook. The treatment tests required participants to review the chapter text using the supplied digital version of the textbook chapter and PDF Equalizer software. Access to the tests was controlled through the course website. Students were limited to a single test attempt per reading assignment, but were free to submit the test anytime within the configured timeline imposed by the course instructor. Students could also choose to take the test from home or in the university computer laboratory. To discourage potential sharing of test questions, current test scores and correct answers were not released for user review until after the test was closed. Also, each test was

configured with a 30 minute time limit and selected questions were randomly shuffled on the screen.

The number of tests per course was determined by the course instructor and varied depending on the material covered in class. Because all courses shared a minimum of eight tests (four treatment/non-treatment iterations) only scores from the first eight chapter tests were included in the data analysis. Participants alternated their study method between tests by using either the assigned hardcopy textbook chapter (Text_Review) or the digital copy of the assigned textbook chapter with the aid of PDF Equalizer (PDF_Review). The online tests accounted for a small percentage of the final course mark. Although not all participants chose to complete all of their scheduled tests, the actual test completion rate (88%) was high with a total of 380 test scores.

The PDF Equalizer software installation files, chapter reading tests, and the required digitized reading materials were delivered through a secure online site using CBU's Moodle course management system. The website also included a software support forum and web links to various project related resources. Additional participant data was collected including pretest/posttest grammar scores, background surveys, unstructured participant interviews, and end-of-class questionnaires.

Results

Preliminary analysis of the online test scores indicated a significant difference between the Text_Review and PDF_Review study methods but additional statistical analysis was required to determine the interaction between the online test scores and SLL participant status (SLL or non-SLL). A multivariate analysis of covariance (MANCOVA) was computed to test for

interactions between the two SLL status groups. The study methods (Text_Review and PDF_Review) were compared using a MANCOVA with pretest grammar scores serving as the single covariate and SLL status as the fixed factor.

The MANCOVA descriptive statistics are shown in Table 1. Results show a 9% increase in PDF_Review scores for SLL participants, an overall 6% increase in PDF_Review scores for all participants, and a 3% increase in the PDF_Review scores for non- SLL participants.

Table 1. MANCOVA Descriptive Statistics by SLL Status

	SLL_Status	Mean	Std. Deviation	N
Text_Review	SLL	9.1176	3.27853	119
	non-SLL	11.0000	2.83347	71
	Total	9.8211	3.24316	190
PDF_Review	SLL	9.8992	3.10657	119
	non-SLL	11.3099	2.75987	71
	Total	10.4263	3.05199	190

Note: Test score based on a maximum of 20 points.

Table 2 indicates a significant effect of SLL status on both the Text_Review ($F = 6.28$, $p < .05$) and PDF_Review ($F = 4.555$, $p < .05$) study options. All four multivariate tests (Table 3) report a significant effect ($p < .05$) of SLL status on both Text_Review and PDF_Review. Box's non-significant ($p > .05$) equality of covariance score (Table 4) indicates that the covariate matrices are relatively the same between the SLL status groups, and that the test for homogeneity was not violated.

Table 2. Tests of Between-Subjects Effects by SLL Status

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
SLL_Status	Text_Review	55.003	1	55.003	6.276	.013
	PDF_Review	39.082	1	39.082	4.555	.034

Table 3. Multivariate Tests by SLL Status

Effect		Value	F	Hypothesis df	Error df	Sig.
SLL_Status	Pillai's Trace	.041	3.979[a]	2.000	186.000	.020
	Wilks' Lambda	.959	3.979[a]	2.000	186.000	.020
	Hotelling's Trace	.043	3.979[a]	2.000	186.000	.020
	Roy's Largest Root	.043	3.979[a]	2.000	186.000	.020

a. Exact statistic

Table 4. Equality of Covariance by SLL Status

Box's M	6.450
F	2.123
df1	3
df2	780961.669
Sig.	.095

As compared to non-SLL participant*s,* SLLs reported a more positive response on virtually all end-of-class questionnaire items. Overall, more SLL participants reported that the use of screen-reading software improved their reading (84%), listening (75%), and writing (56%) skills as compared to their non-SLL counterparts (36%, 41%, and 27% respectively). The majority of SLLs (84%) also reported that the use of the screen-reader had a positive effect on their academic performance. This compares to less than half of the non-SLL participants (46%). In addition, 84% of SLLs reported that the screen-reader helped to improve their study skills as compared to 54% for the non-SLL group. Of particular note is the finding that 78% of SLLs

reported that the use of the screen-reader increased their confidence in their English language skills. This compares to only 9% of their non-SLL counterparts.

Trend Analysis

According to Field (2009), if researchers are interested in the nature of the relationship between dependent variables, then they should follow up a significant MANCOVA with a discriminate analysis. Although the TSCD methodology was adapted to diminish the potential of pretest sensitization, a post MANCOVA discriminate analysis was computed to determine if any relationship existed between Test_Review and PDF_Review scores for the SLL and non-SLL groups. The covariance matrices scores from the discriminate analysis are reported in Table 5. The reported scores for both the SLL (3.61) and non-SLL (3.96) groups indicate a positive relationship between Text_Review and PDF_Reviews. In other words, as Text_Review scores increase or decrease, then so do the scores for PDF_Review.

Table 5. Discriminate Analysis Covariance Matrices

| SLL_Status		Text_Review	PDF_Review
SLL	Text_Review	10.749	3.614
	PDF_Review	3.614	9.651
non-SLL	Text_Review	8.029	3.957
	PDF_Review	3.957	7.617

This result was not predicted, especially **c**onsidering participants did not repeat weekly tests covering similar material (as in the traditional TSCD approach) but rather alternated the study method to prepare for tests covering new material. The initial hypothesis predicted a one-way positive relationship between the two sets of scores rather than a bidirectional relationship. The results suggested a need to look for additional trends between the sets of scores.

Figure 3 plots the mean percent difference between Test_Review and PDF_Review scores in each of the four successive test iterations. The graph shows a continuing increase in PDF_Review scores over the academic term, presumably as participants become more familiar with both the software and the academic material covered in the class. The initial decrease (-4.5%) in Iteration 1 was likely due to the introduction of the software treatment but the longer term effect of using the PDF_Review method is demonstrated with the 20.4% increase in Iteration 4. The slight dip between Iteration 2 and Iteration 3 is likely due to a reallocation of student efforts during mid-term examinations.

	Iteration 1	Iteration 2	Iteration 3	Iteration 4
All Participants	-4.5	6.9	4.7	20.4
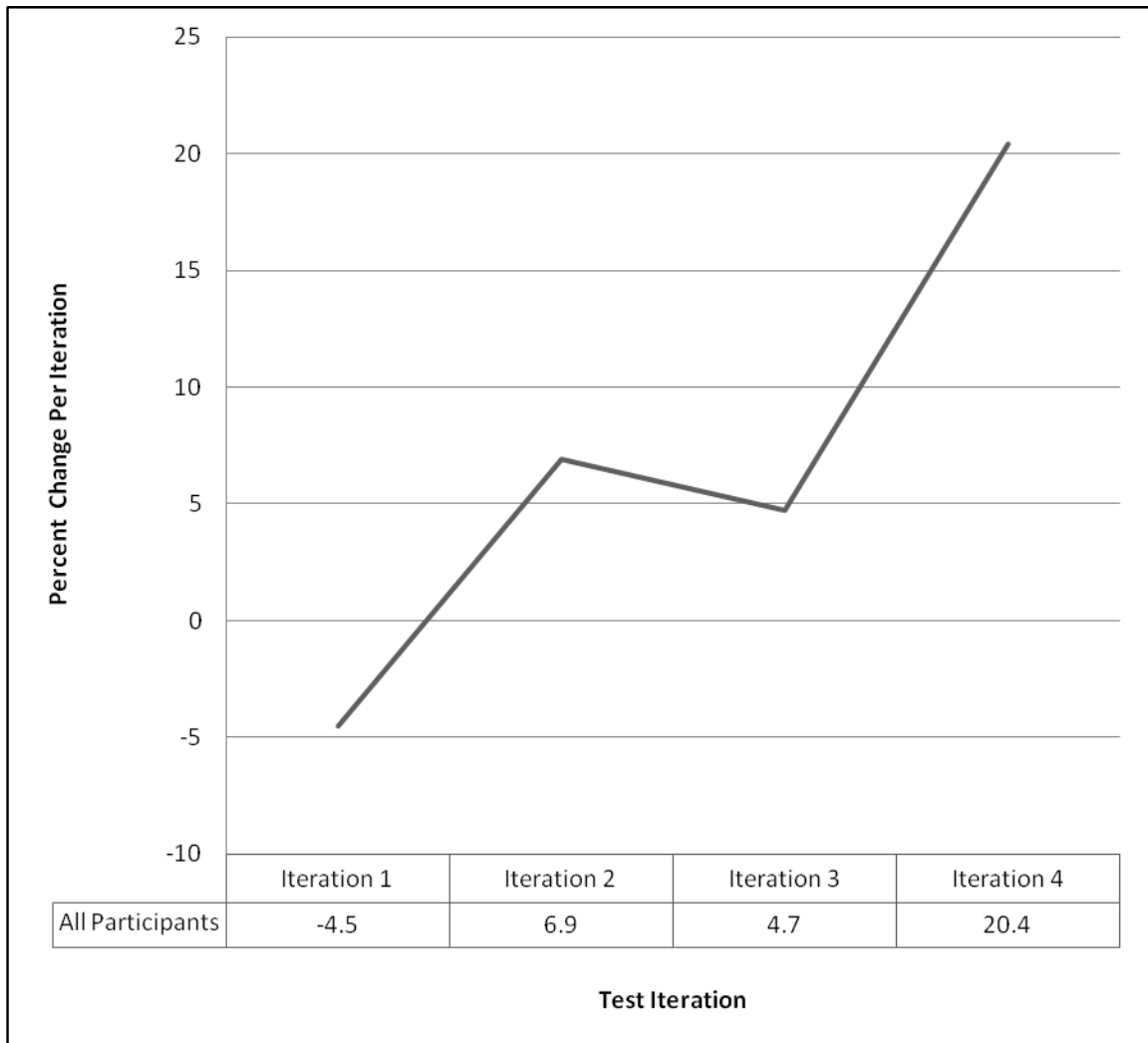
Test Iteration

Figure 3. Study method score change within test iteration for all participants.

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Figure 4 shows the total percent change between Test_Review and PDF_Review scores for each of the four successive paired test iterations by SLL status. Although the introduction of the PDF_Review method had an initial negative impact (-8.7%) on SLLs, that group also reported the highest performance gain (26%) by the end of the academic term. Similarly, the non-SLL group received their highest performance gain (12.9%) at the end of the academic term.

	Iteration 1	Iteration 2	Iteration 3	Iteration 4
SLL	-8.7	14.6	7.3	26
Non-Sll	2	-2.8	1	12.9
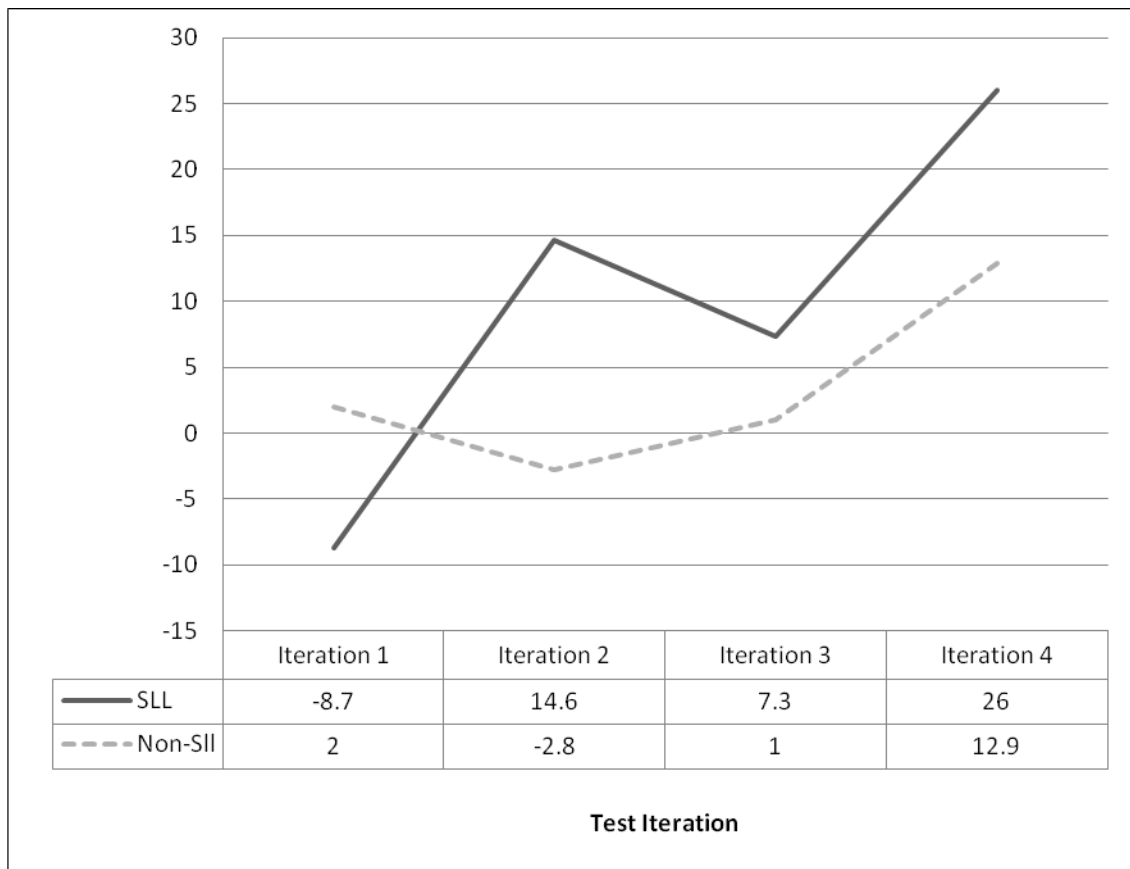
Test Iteration

Figure 4. Study method score change within test iteration by SLL status.

Recommendations

Although the findings of this study hold promise, additional research is required to more closely examine the effects of assistive technology on the learning outcomes of undergraduate second-language learners. Additional qualitative research is needed to explore other applications of assistive technology in support of SLLs. Additional quantitative research is also necessary to quantify the effect other applications may have on the academic performance and English language proficiency levels of SLLs.

This research focused on a specific function (text-to-speech) of a particular tool (PDF Equalizer) in a narrow subset (reading resources) of the existing pool of assistive technology resources. Exploratory analysis is required to determine the potential role that other assistive technology resources can play in the process. A qualitative case analysis following a small group of SSLs using a suite of language support tools would provide valuable insight into which tools (or specific tool functions) provide the best support potential for SLLs. This investigation, for example, focused on the text-to-speech function of PDF Equalizer. PDF Equalizer has a number of additional features including language translation, document summation, note taking, document scanning, and MP3 file conversion that may or may not provide academic support to the SLL population.

Although this investigation focused on the audio playback features of PDF Equalizer, results from the end-of-class questionnaire indicate that many SLLs also explored other features of the tool. Participants were provided with a list of PDF Equalizer's major features and asked to rate each feature's help in improving English language proficiency. SLLs consistently ranked each software feature higher than their non-SLL counterparts. On a scale from 1 (low) to 5 (high), more than half of SLLs ranked the additional features of language translation (72%),

document summation (56%), note taking (63%), document scanning (78%), and MP3

conversion (66%) as either a four or five. Qualitative investigations would point to specific

assistive tools or functions that could then be quantified though experiential or quasi-

experimental investigations.

The current investigation demonstrated a positive effect of assistive technology on the

academic performance of SLLs, but did not clearly elucidate the role that assistive technology

may have played on the English language proficiency levels of SLLs. A similar investigation

following SLLs over a full academic year, rather than a single academic term, would provide

valuable insight on the effect of assistive technology on English language proficiency levels.

Discussion

The results of this study indicate that assistive technologies traditionally designed to

support students with learning disabilities can be effectively integrated into the curriculum to

support the academic performance of undergraduate second-language learners. University and

college systems should explore the use of assistive technology to support their increasing number

of international second-language students. In terms of a business model, it makes economic

sense for universities to provide additional support services in support of SLL success rates. In

Canada, for example, it is estimated that international students attributed approximately $6.5

billion to the Canadian economy in 2008 (Fine, 2010).

If a student self discloses a learning disability, various university support services

become readily available to support that student. Universities take pride in the support services

offered for learning disabilities and often actively promote those services to prospective students.

From a strategic business perspective, the same promotional strategy could be applied to the

recruitment of SLLs. Reading is the most prevalent form of academic disability (Wagner, Francis, & Morris, 2005) and most university support services already have in-house expertise in this area in support of their learning disabled student population. This in-house expertise could be expanded to include additional support for undergraduate second-language students.

The recommendation to provide additional language support services to SLLs may require an attitude change in both university faculty and administration. Faculty must consider the staffing implications of empty classroom seats and the role international students play in maintaining access to post secondary education for the local population. Administration must consider the additional costs involved in filling those empty seats with international students who may require additional language support services. The international student market should not be viewed as a "cash cow" waiting to be exploited, but as a subset of potential graduates that deserve support services fitting to their needs.

In relation to students with learning disabilities, Edyburn (2004) asked how much failure data is required before it is decided that the learner cannot perform the task. This researcher applied Edyburn's question to the second-language learner population and asked how much failure data is required before it is decided that SLLs deserve support mechanisms similar to those provided to students with learning disabilities. This researcher also agrees with Brown's (2007) assertion that institutions have a moral obligation to provide language support services to students with known language deficiencies.

References

Artiles, A.J., Trent, S. C., & Palmer, J. (2004). Culturally diverse students in special education: Legacies and prospects. In J. A. Banks & C. M. Banks (Eds.), *Handbook of research on multicultural education* (2nd ed., pp. 716-735). San Francisco: Jossey-Bass.

Brown, L. (2007). A consideration of the challenges involved in supervising international masters students. *Journal of Further and Higher Education, 31*, 239-248.

Burgstahler, S. (2002). Distance learning: The library's role in ensuring access to everyone. *Library Hi Tech, 20*, 420-432.

Castellani, J., & Castellani, B. (2005). Data-mining strategies for researching the effectiveness of assistive and instructional technologies. In D. Edyburn, K. Higgins, & R. Boone (Eds.), *Handbook of special education technology research and practice* (pp. 835-848). Whitefish Bay, WI: Knowledge by Design.

Edyburn, D. L. (2004). Measuring assistive technology outcomes in reading. *Journal of Special Education Technology, 19*(1), 60-64.

Eubanks, P. (2002). How art specialists adapt curriculum for ESOL students. *Art Education, 55*(2), 40-46.

Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). Thousand Oaks, CA: Sage.

Fine, P. (2010). Foreign students satisfied with programs in Canada. *University Affairs*, *51*(1), 21.

Fox, J. (2005). Rethinking second language admission requirements: Problems with language-residency criteria and the need for language assessment and support. *Language Assessment Quarterly, 2*, 85-115.

Jessup, L.M., Valacich, J.S., & Wade, M.R. (2008). *Information systems technology: Why IS matters* (2nd Canadian Edition). Toronto: Pearson Education Canada.

Kumaravadivelu, B. (2003). Problematizing cultural stereotypes in TESOL. *TESOL Quarterly, 37*, 709-719.

Liu, D. (2005). Plagiarism in ESOL students: Is cultural conditioning truly the major culprit? *ELT Journal 59*, 226-233.

Mathews, J. (2007). Predicting international students' academic success... may not always be enough: Assessing Turkey's foreign study scholarship program. *Higher Education*, *53*, 645-673.

McCardle, P., Mele-Mccarthy, J., Cutting, L., Leos, K., & D'Emilio, T. (2005). Learning disabilities in English Language Learners: Identifying the issues. *Learning Disabilities Research & Practice, 20*, 1-5.

Meskill, C., & Hilliker, S. (2005). English language learners and technology. In D. Edyburn, K. Higgins, & R. Boone (Eds.), *Handbook of special education technology research and practice* (pp. 119-135). Whitefish Bay, WI: Knowledge by Design.

Olivas, M., & Li, C. (2006). Understanding stressors of international students in higher education: What college counselors and personnel need to know. *Journal of Instructional Psychology*, *33*, 217-222.

Ochoa, T., Kelly, M., Stuart, S., & Rogers-Adkinson, D. (2004). The impact of PBL technology on the preparation of teachers of English language learners. *Journal of Special Education Technology, 19*(3), 35-45.

Parette, H.P., & Scherer, M. (2004). Assistive technology use and stigma. *Education and Training in Developmental Disabilities, 39,* 217-226.

Pearson, M. (2004). Dollars, degrees, and dodgy deals. *Far Eastern Economic Review, 167*(43), 20-22.

Pisha, B., & Coyne, P. (2001, November). Jumping off the page: Content area curriculum for the Internet age. *Reading Online*, *5*(4). Retrieved August 4, 2010 from http://www.readingonline.org/articles/art_index.asp?HREF=pisha/index.html

Schunk, D. H. (2004). *Learning theories: An educational perspective* (4th ed.). Upper Saddle River, NJ: Pearson Merrill Prentice Hall.

Smith, R.O. (2000). Measuring assistive technology outcomes in education. *Diagnostique, 25*, 273-290.

Statistics Canada. (2001). *Canada's ethnocultural portrait:The changing mosaic.* Ontario: Statistics Canada.

Statistics Canada. (2006a). *Canada's ethnocultural portrait, 2006 census: National picture.* Ottawa: Statistics Canada. Retrieved August 4, 2010 from http://www12.statcan.ca/census-recensement/2006/as-sa/97-562/p3-eng.cfm

Statistics Canada. (2006b). *The evolving linguistic portrait, 2006 census highlights.* Ottawa: Statistics Canada. Retrieved August 4, 2010 from http://www12.statcan.ca/census-recensement/2006/as-sa/97-555/p1-eng.cfm

Wagner, R.K., Francis, D.J., & Morris, R.D. (2005). Identifying English language learners with learning disabilities: Key challenges and possible approaches. *Learning Disabilities Research & Practice, 20*(1), 6-15.

Winzer, M. (2005). *Children with exceptionalities in Canadian classrooms* (7th ed.). Toronto: Pearson.