

## **Student Attitudes Toward Blended Learning in Adult Literacy and Basic Skills College Programs**

### **Attitudes des étudiants envers l'apprentissage mixte dans les programmes collégiaux de formation de base et alphabétisation pour adultes**

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#### **Abstract**

Literacy and Basic Skills (LBS) programs in many Ontario colleges offer adult learners who have low literacy and basic skills with opportunities to improve their employment skills as well as results on prerequisite courses for entrance into post-secondary education. LBS students encounter many challenges and require extra interpersonal instructional support, which may be overcome through a blended learning approach. Due to limited access to technology in LBS programs, little is known about adult learners' attitudes toward online learning. This study investigates learners' attitudes and perceived success in blended learning, and key factors contributing to individual differences. A survey was administered to 149 LBS student participants at three Ontario community colleges, along with interviews conducted with 37 students. The results of correlation and thematic analysis have shown that differences exist in their attitudes between face-to-face and online learning environments, 90% versus 40% positive respectively. Individual differences in their perceptions were found to be associated with their age, time out of formal education, education levels, and computer skills.

#### **Résumé**

Les programmes de formation de base et alphabétisation (« FBA ») de nombreux collèges de l'Ontario offrent aux apprenants adultes dont la formation de base et la littératie sont faibles des occasions d'améliorer leur employabilité ainsi que leurs résultats aux cours prérequis pour l'admission aux études postsecondaires. Les étudiants en FBA font face à de nombreux défis et ont besoin de plus de soutien didactique interpersonnel, ce qui peut être surmonté par une approche d'apprentissage mixte. À cause de l'accès limité à la technologie dans les programmes de FBA, on en sait peu sur les attitudes des apprenants adultes quant à l'apprentissage en ligne. Cette étude se penche sur les attitudes des apprenants et sur la perception de la réussite en apprentissage mixte, ainsi que sur les principaux facteurs qui contribuent aux différences

individuelles. Cent quarante-neuf étudiants en FBA de trois collèges communautaires en Ontario ont répondu à un sondage, et des entrevues ont été réalisées avec 37 étudiants. Les résultats de l'analyse de corrélation et de l'analyse thématique ont démontré qu'il existe des différences dans leurs attitudes relatives aux environnements d'apprentissage en personne et en ligne, qui sont positives respectivement à 90 % et 40 %. Nous avons relevé que les différences individuelles de perception étaient associées à l'âge, à la durée passée hors de l'éducation formelle, au niveau d'éducation et aux compétences informatiques.

## **Introduction**

Since the 1950s, LBS programs have been funded by governments in both Canada and the United States to provide adults who have low literacy and educational levels with the opportunity to improve their skills through academic upgrades, and life skills or career training. For example, many LBS programs hosted by Ontario colleges serve as important pathways to help adult learners build the essential skills to achieve successful transitions to employment, post-secondary education, and independence (Ontario Ministry of Education, 2017). LBS programs are distinct from other adult education programs (e.g., adult high school credit diploma programs, language training programs) and warrant research attention in the context of higher education. In particular, LBS programs have shown high absenteeism and drop-out rates. Typically, these programs are offered in a traditional face-to-face format (Canadian Literacy and Learning Network [CLLN], 2015; Government of Canada, 2015; Ministry of Training, Colleges and Universities [MTCU], 2014; ProLiteracy America, 2003), which may not be the most effective option. In response, service providers continue to seek instructional innovations that will better support student success (ABC Canada, 2001; British Columbia Ministry of Advanced Education [BCMAE], 2005).

Applicants to LBS programs have one or more of the following challenges: unemployment or under-employment, no high school diploma, being away from formal education for extended periods, collecting government assistance, having a physical and/or learning disability, time management difficulties, and/or family issues (BCMAE, 2005; MTCU, 2014). These vulnerabilities pose substantial challenges for adult students and contribute to low academic success rates (ABC Canada, 2002; Greenberg, Morris, Fredrick, Rodrigo, & Hall, 2013; Pross & Barry, 2004; Zacharakis, Steichen, Diaz, & Glass, 2011).

The face-to-face format of standard LBS programs can both support and inhibit student success. On one hand, face-to-face classrooms can create safe and flexible learning environments where caring instructors and tutors help students gain the necessary confidence to thrive (Pross & Barry, 2004). On the other hand, the lack of instructor response to student learning needs or poor class attendance due to time demands and family responsibilities (Zacharakis et al., 2011) can have a significant negative impact on student outcomes.

As an alternative, blended learning, an instructional approach that includes face-to-face instruction with an online component, has the potential to provide students with support and encouragement through enhanced interaction, while accommodating individual challenges such as time, family, commuting, and learning pace, via a flexible online platform. According to Garrison and Kanuka (2004):

At its simplest, blended learning is the thoughtful integration of classroom face-to-face learning experiences with online learning experiences. There is considerable intuitive appeal to the concept of integrating the strengths of synchronous (face-to-face) and asynchronous (text-based Internet) learning activities. At the same time, there is considerable complexity in its implementation with the challenge of virtually limitless design possibilities and applicability to so many contexts ...it is not clear as to how much, or how little, online learning is inherent to blended learning. In fact, this is only a rough, indirect measure that may be misleading. (pp. 96-97)

Despite “the great complexity of blended learning,” Garrison and Kanuka (2004, p. 97) point out that true blended learning is a meaningful integration of face-to-face and online components to provide students with engaging learning experiences that serve their “various specific contextual needs” (p. 97).

Higher education students have benefited from blended learning environments due to a social-constructivist pedagogy, addressing different learning needs, and building collaborative communities (Bernold, Spurlin, & Anson, 2007; Fisher & Baird, 2005; Gill, 2009; Hoskins, 2012; Packham, Jones, Miller, & Brychan, 2004; Rovai, 2002; Wyatt, 2011). A number of studies have noted improved student satisfaction, retention, and success (Boyle, Bradley, Chalk, Jones, & Pickard, 2003; Fenouillet & Kaplan, 2009; Sorden & Munene, 2013). Blended learning can provide supportive resources and collaborative opportunities outside of the face-to-face classroom (Ausburn, 2004; Lim, Morris, & Kupritz, 2007; Moloney, Hickey, Bergin, Boccia, Polley, & Riley, 2007), anytime access to online course resources (Cicco, 2009), and increased instructor or peer support outside of the classroom (Lim et al., 2007; Sorden & Munene, 2013). However, to our knowledge, researchers have not examined the impact of blended learning in LBS programs. The purpose of the present study, then, was to investigate LBS adult students’ attitudes toward blended learning, the perceived success of blended learning, and individual differences in attitudes toward blended learning.

## Literature Review

### Student Attitudes Toward Blended Learning

**General attitudes.** A number of studies indicated that higher education students have positive attitudes toward blended learning that is innovative, interesting, and interactive (Gill, 2009), as it provides both robust face-to-face instructor support and the convenience of easy access to online resources (Rovai & Jordan, 2004). Hauser, Paul, and Bradley (2012) added that university students’ learning depended heavily on face-to-face personal interaction with the instructor, as well as the organization and completeness of online course materials. Larson and Sung (2009) found that college students were more motivated and satisfied with blended and online learning compared with face-to-face learning. Senn (2008) revealed that graduate students preferred blended over face-to-face learning, appreciating both the flexible online format and extra face-to-face instructional support.

**Communication.** The degree to which both face-to-face and online communication focuses on individual feedback and support in a blended course design can influence student

attitudes (Fisher & Baird, 2005). Student satisfaction was found to be improved for blended learning as communication increased (Gülbahar & Madran, 2009), which included active communication and interaction among learners and effective two-way communication between learners and instructors (Ausburn, 2004). Conceicao and Lehman (2013) also indicated that online feedback and response to individual needs supported and motivated undergraduate and graduate students in a blended learning environment.

**Collaboration.** Many studies indicated that students appreciated a blend of innovative online and traditional collaborative opportunities that built a sense of active learning communities (Ausburn, 2004) to provide instructor or peer support (Conceicao & Lehman, 2013). Gill (2009) observed increased student preference toward the collaborative approach compared with working alone in a two-year study on blended learning. Lewis (2010) reported that college students preferred blended over online-only learning because of increased collaborative interactions with peers and instructors. Overall, students believed that blended learning courses provided a more connected learning community and positive experience than face-to-face or online courses alone (Rovai & Jordan, 2004); there is a strong link between social and collaborative activities and student satisfaction toward blended learning (Sorden & Munene, 2013).

**Individual needs.** Researchers observed positive student attitudes when the blended design supported autonomous learning that offered options for a variety of individualized, self-directed learning activities (Ausburn, 2004) and addressed their individual needs (Fisher & Baird, 2005). Nikitenko (2011) reported that students appreciated asynchronous features such as discussion forums, self-paced online exercises, and tests with flexible timelines. Gülbahar and Madran (2009) found that student satisfaction with blended learning increased when the activities were tailored to students' preferences; that is, students could make choices about what and how to learn.

### **Blended Learning and Perceived Success**

Numerous studies in higher education have examined the impact of blended learning on perceived and actual success. Results have been mixed. Some studies have demonstrated outcomes that favoured blended learning over either a face-to-face or an online approach alone, demonstrated by higher course completion rates and increased learning outcomes (Gonzalez, 2014; Rovai & Jordan, 2004). Boyle et al. (2003) reported significantly increased student grades and success rates for blended instruction compared with traditional face-to-face or online-only delivery over a six-month period. Giguere (2009) studied course completion rates over three consecutive academic years among 6,634 course enrolments in 137 face-to-face and 70 blended university courses. The results revealed that course completion rates were consistently higher in blended versus face-to-face courses.

Several studies, however, have noted that blended instruction may not be as effective as face-to-face or online instruction. For example, in one study, students received lower grades and complained about a larger workload associated with blended learning (Senn, 2008). The additional time and effort needed for students to overcome difficulties in blended learning might have interfered with their attention to detail and ability to complete the highest quality assignments possible (Senn, 2008). In the same vein, when comparing 167 college students who

self-selected to enrol in blended, online, or face-to-face math courses, Ashby, Sadera, and McNary (2011) reported lower success rates in blended learning, as measured by students' final grades in math courses. Finally, Larson and Sung (2009) found no significant differences in students' exam scores and final grades when comparing delivery in face-to-face, online, and blended modes.

One possible factor explaining mixed results for the success in blended learning is lack of communication between instructors and peers. Students noted that instructor online feedback and informal course announcements were necessary for success (Conceicao & Lehman, 2013; Gonzalez, 2014). Otherwise, students were more likely to experience frustration and drop out of online courses when timely instructor support was absent (Muilenburg & Berge, 2005). Fenouillet and Kaplan (2009) found greater student success when blended and online learning environments provided asynchronous communications among instructors and peers through e-mail, discussion forums, and file exchange.

A second factor that moderates the impact of blended learning is the establishment of collaborative learning communities. Student success can be improved through enhanced collaboration with peers in online environments (Conceicao & Lehman, 2013; Kuh, Cruce, Shoup, & Kinzie, 2008; Muilenburg & Berge, 2005). Blended instruction that was social, collaborative, and tailored to suit students' needs was found to lead to improved student satisfaction, retention, and success (Boyle et al., 2003). Learning the material online prior to their face-to-face lectures allowed for deeper collaborative classroom interactions (Gonzalez, 2014). College students reported increased perceived success in their blended courses when they were given more opportunities to interact with instructors and students (Lewis, 2010). Finally, the highest degree of collaboration and success was observed among graduate students in blended learning, followed by face-to-face and online formats (Rovai & Jordan, 2004).

### **Individual Differences, LBS Programs, and Blended Learning**

Individual differences including age, gender, levels of education, physical and learning disabilities, computer skills, and employment status can have a critical impact on LBS students' academic success (CLLN, 2015; MTCU, 2014). We present the review of relevant literature for each factor below.

**Age.** Research results are mixed with respect to the influence of age on success in LBS programs. Several studies have suggested that older students are more successful than younger students in LBS programs (Greenberg et al., 2013), while other studies have indicated that age may be a barrier to success (Zacharakis et al., 2011). Smith and Smith (2008) reported that the odds of LBS students engaging in asynchronous learning activities increased by 1-2% with each year of age. Pross and Barry's study (2004) showed that LBS students aged 16-24 had the lowest success rates at 58%, while those aged 45 and older had the highest success rates at 83%. On the contrary, Packham et al. (2004) observed that students over 50 were less successful in completing online activities than their younger peers. Finally, a number of studies have indicated that age was not related to the success rate of completing blended courses (Giguere, 2009; Nikitenko, 2011; Sorden & Munene, 2013). Age may place different demands on the learning support required by students. Hayes (1988), for example, observed that older adults benefitted

from flexible program schedules to support their employment and family responsibilities, while younger adults required help to become self-directed learners.

**Gender.** Research findings regarding the impact of gender on success in blended environments are somewhat mixed (BCMAE, 2005, Hayes, 1988). On one hand, several studies have suggested that females are more successful. For example, male students dropped out of LBS programs (Pross & Barry, 2004) and online courses (Packham et al., 2004) more than female students. Furthermore, Ashby et al.'s (2011) study reported that female students self-selected to enrol in blended courses more than male students. On the other hand, a number of studies reported no significant gender differences in learners' participation in self-directed and asynchronous learning activities (Smith & Smith, 2008), satisfaction with blended courses (Sorden & Munene, 2013), or attitudes toward online and blended learning (Nikitenko, 2011).

However, research also suggested that female and male students may be attracted to different components of blended learning. For example, Ausburn (2004) observed that female undergraduates placed more importance on blended courses for a sense of belonging, while males looked for fast and effective assistance and more opportunities to learn new technology skills.

**Education level.** Studies have shown that lower levels of education may negatively influence success in both traditional face-to-face and online learning in LBS programs. Malicky and Norman (1994) found a high proportion of unsuccessful LBS students had lower than a grade 12 education. Smith and Smith (2008) added that LBS students with less than a grade 12 education were significantly less likely to engage in asynchronous learning activities. Zacharakis et al. (2011) reported approximately 80% of LBS students who lacked a grade 12 diploma perceived their lower levels of education as a barrier to learning.

**Learning and physical disabilities.** Students often enter LBS programs with previous negative or interrupted educational experiences (Hayes, 1988; Pross & Barry, 2004; Quigley, 1998). In some instances, students had physical and/or learning disabilities that were not formally diagnosed and/or shared with program instructors (Porter, Cuban, & Comings, 2005). Many students experienced frustration with their studies and dropped out of LBS programs due to their disabilities (Porter et al., 2005). Couzens et al. (2015) observed that university students who self-identified as being disabled and had access to, and used, disability services expressed positive attitudes toward blended learning options. This was based on informed and caring instructors and tutors who provided clear instructions, increased flexibility, and choices catering to specific student needs, experimentation with different learning modes, and assessment choices and timing. Negative attitudes were found to be related to restricted access to assistive technologies.

**Computer skill.** LBS students, in general, appeared to have low access to, and showed avoidance of, technology for learning (ABC Canada, 2002; BCMAE, 2013). Mixed results have been reported in a higher education context about learners' computer skills and their attitude toward blended learning. On the one hand, students were motivated to learn online if they were confident in their ability to use technology (Muilenburg & Berge, 2005). In addition, computer skills were reported to have a positive effect on student attitudes toward blended learning environments (Gülbahar & Madran, 2009). Students also benefited from individual technology

support when engaging in blended learning (Ausburn, 2004); on the other hand, some research suggested there was no correlation between learners' attitudes and satisfaction toward online or blended learning and their computer expertise and online course experience (Nikitenko, 2011; Sorden & Munene 2013).

**Employment status.** Mixed results have been reported on the impact of employment status in relation to student success in LBS programs. The BCMAE (2005) noted that employed students were less likely to complete their programs due to time constraints, as were unemployed students who were facing monetary challenges. Financial problems presented barriers for many LBS students from low-income households who frequently changed jobs and had unstable housing, child-care, and transportation arrangements (Porter et al., 2005). These challenges prevented students from attending face-to-face classes (Malicky & Norman, 1994; Pross & Barry, 2004) and created stress which interfered with learning (Pross & Barry, 2004). However, Packham et al. (2004) found that unemployed learners experienced more success in online courses than their employed counterparts. Students reported that the time demands of employment responsibilities interfered with their ability to complete courses. Giguere's (2009) study found no relation between employment status (not employed, employed part-time, employed full-time) and successful completion of blended courses at British Columbia Open University.

### **Research Questions and Conceptual Framework**

A few gaps were identified in the literature. First, most existing literature that we are able to locate reported studies conducted in higher education settings. Second, due to limited access to technology in LBS programs, little is known about this population of adult learners' attitudes and perceived success toward online and blended learning. Furthermore, the research findings are inconclusive as to key factors contributing to individual differences in their attitudes. Thus, to bridge these gaps, this study investigated three research questions:

1. What are the attitudes of adult learners in LBS programs toward blended learning?
2. What is the impact of blended learning on perceived success in an LBS program?
3. What individual differences (age, gender, education level, disabilities, computer skill, and employment status) exist with respect to students' attitudes toward blended learning?

This study and its research questions are grounded in a conceptual framework found in the research literature as reviewed above. The literature-based framework demonstrates that: (a) learner attitudes toward blended learning (Ausburn, 2004; Fisher & Baird, 2005; Gill, 2009; Gülbahar & Madran, 2009), the effects of blended learning (Ashby et al., 2011; Fenouillet & Kaplan, 2009) and perceived academic successes can be identified (Gonzalez, 2014; Rovai & Jordan, 2004); (b) blended learning can be related to perceived learning success (Boyle et al., 2003; Giguere, 2009); and (c) individual learner differences can be related to variations in their attitudes toward blended learning (Greenberg et al., 2013; Pross & Barry, 2004; Smith & Smith, 2008; Sorden & Munene 2013). This framework supports the choices of the independent and dependent variables for this study and the relationships proposed among them by the research questions.

## Methods

To provide an in-depth understanding of the research inquiries, this study applied a mixed methods approach (Creswell, 2014). A survey was used to collect quantitative data about students' attitudes toward blended learning, and their perspectives on their perceived success as affected by the program's instruction model. Next, individual interviews were used to collect detailed qualitative data to confirm, cross-validate, or corroborate (Creswell, 2014) the survey results to provide a comprehensive analysis of student attitudes and perspectives. This approach gave a voice to students and enabled us to interpret results that were grounded in their experiences (Creswell, 2014).

### Participants

Participants included 149 students (94 males, 55 females) from LBS programs at three Canadian community colleges. English was the first language of all participants in this study. These adult students had literacy and basic skills assessed at intake as being less than Level 3 on the 5-level International Adult Literacy and Skills Survey (IALSS; Statistics Canada, 2007). This level indicates students had some but insufficient skills in identifying, understanding, and synthesizing information (for more information about the IALSS, please see <http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&Id=15034>).

Table 1 indicates the distribution of participants' age, enrolled courses, education level, employee status, and aspirations of their education and career. Thirty-nine percent of the participants had a history of interrupted education; 43% had been out of education for more than six years; 27% reported having a physical and/or learning disability which may or may not have been formally diagnosed by a medical professional; and 12% required assistive technology to access educational programs. Also, 27% of the participants required and received training supports based on low-income requirements, including gas cards, bus passes, and child care expenses.

Table 1

#### *Background Information of Student Participants (N=149)*

Age (years)	Courses Enrolled	Educational Levels	Employee Status	Education and Career Goals
19-25 (52%)	Mathematics (32%)	university degree (3%)	unemployed over 6 years (13%)	post-secondary (77%)
26-35 (27%)	Science (26%)	college diploma (21%)	on government assistance (37%)	employment skills (15%)
36-44 (15%)	English (42%)	some post-secondary (16%)	employed less than 1 year (30%)	apprenticeship (8%)
45-54 (5%)		gr. 12 (43%)	employed part-time (33%)	
54 (1%)		gr. 9-11 (70%)	employed full time (12%)	



## Research Context

During the fall semester, participants registered in LBS academic upgrade courses at three colleges located in suburban regions of Ontario, where instruction was delivered using a blended learning approach. The face-to-face component consisted of 30 three-hour classes (two days per week, for 15 weeks). Students registered for a maximum of two courses per semester selected from four subject areas: Technical Math, English, Biology, and Chemistry. Choice of courses was dependent on the learner's specific goal path and intended post-secondary program. All courses were grade 12 equivalents. Literacy learning was embedded throughout the curriculum for all LBS courses. All instructors were Ontario College of Teachers certified and understood the importance of differentiated instruction and the special needs of students.

Face-to-face class time was mandatory, consisting of three parts across all subjects. These included approximately one hour of explicit teaching through instructor-led lectures; one hour for collaborative inquiry through group activities, such as whole group question-answer sessions, clarifying misconceptions; and one hour for consolidation and assessment, such as one-on-one teacher assistance, quizzes, and tests. The online component provided students with instructional materials and support outside of the class through the asynchronous Blackboard learning management system (<http://www.blackboard.com/>) and included the Ontario Educational Resource Bank (see <http://www.edu.gov.on.ca/elearning/bank.html>), Khan Academy, and instructor podcasts. With clear descriptions and instructor guidance, online resources supplemented and reinforced the face-to-face content, consisting of 40% multimedia (e.g., videos, podcasts, and Flash animations) and 60% text content (e.g., downloadable documents and PowerPoint presentations). The enriched online content included lesson plans, lectures, and exercise activities. Literacy learning was also woven throughout the online resources with a focus on digital literacy. Instructors facilitated collaborative learning asynchronously through the discussion forums and provided students with feedback via messages on Blackboard. Students were encouraged to take advantage of the online resources and support from their instructors to prepare for their face-to-face classes and strengthen their learning of instructional content afterwards. The enriched content and instructional support provided online were organized and aligned with their face-to-face classes. It was also a goal to provide sufficient support to ensure that students could catch up with their peers even if they missed some of the face-to-face classes.

Although the online component was not mandatory, according to researchers' and instructors' observations, adult learners in the present study used online resources to catch up on the course content and submit assignments when they missed face-to-face classes. Most students had significant family responsibilities as well as a job (75%) or were busy with looking for employment. In addition, those students who made a choice to come to the program to advance their education (77%) and skills (23%) often were motivated to use online resources for additional learning support. The context of this study was deemed as a blended learning environment because of the regular face-to-face courses and frequent interaction with online learning resources and tools.

## Research Instruments

**Overview.** Based on emerging themes in the literature review, we developed all the research instruments, which included a 7-point Likert-type scale attitude survey (with the scale being 1=strongly disagree, 2=disagree, 3=slightly disagree, 4=neutral, 5=slightly agree, 6=agree and 7=strongly agree). According to research, a 7-point Likert scale can provide more accurate information (Johns, 2010) and also results in higher internal reliability than a 5-point Likert scale (Colman, Norris, & Preston, 1997). To obtain insights into the results derived from the survey, we also developed interview questions. We wrote all survey and interview questions to accommodate the literacy levels of LBS students. We revised the first draft of the attitude survey and interview questions based on feedback from two graduate research supervisors and four LBS service providers. This draft of the survey and interview questions was then pilot tested with 10 LBS students. A second and final version of the survey was created based on student feedback (see Appendix A).

The interview questions included:

1. How did the face-to-face classes contribute to your learning?
2. How did the asynchronous online component contribute to your learning?
3. What aspects of this program helped you to persist to the end of the course?
4. What aspects of this program led you to feel you might not be able to persist to the end of the course?
5. How could this program better support you in meeting your goals in education?

**Demographics.** The first section of the survey used in this study collected demographic data (Appendix A, Part A) to describe participants and assess their individual differences. Individual differences considered in this study included age, gender, level of education, physical or learning disability, use of assistive technology, computer skills, and employment status (part-time, full-time, or unemployed).

**Attitudes toward blended learning.** The second section of the survey asked LBS students about their attitudes toward the face-to-face and online learning components of the blended learning program (Appendix A, Part B, Items 1 to 7). A 7-point Likert-type scale was used focusing on attendance, organization, desire for more face-to-face learning, effectiveness, and communication with instructors, tutors, and peers. The internal reliability coefficient, based on Cronbach's Alpha, was 0.70 for the seven items about attitudes toward face-to-face learning. Kline (1999) and Nunnally (1978) consider this coefficient acceptable for measures used in social sciences.

**Attitudes toward online learning.** We used five 7-point Likert-type scale items to assess LBS students' attitude toward online learning (Appendix A, Part B, Items 8 to 12), focusing on importance, organization, desire for more online learning, effectiveness, and ease of use. The internal reliability coefficient, based on Cronbach's Alpha, was 0.79 for the five items about attitudes toward face-to-face learning. Kline (1999) and Nunnally (1978) consider this coefficient acceptable for measures used in social sciences.

**Perceived success.** We used two 7-point Likert-type scale items to assess perceived success by LBS students (Appendix A, Part B, Items 13 and 14). Cronbach’s Alpha was 0.82 for this scale and considered acceptable (Kline, 1999; Nunnally, 1978).

**Open-ended and interview questions.** To solicit feedback on student attitudes and perceptions of the blended learning program, one open-ended written question (Appendix A, Part B, Item 5) and five interview questions were asked (see page 15). The open-ended survey questions asked students how the blended learning program, in general, supported their learning. The five interview questions focused on attitudes towards the face-to-face and online learning components, factors that influenced LBS students’ ability to persist in the program, and how the blended learning program could better meet student goals.

**Procedure and Data Collection**

After receiving ethical approval, we visited three separate colleges and presented, in person, a letter of informed invitation to potential participants. Of the 170 potential participants, 149 took part in the study (88% completion rate). The survey, administered at each site on three separate days, took about 20 minutes to complete. Accompanied by the course instructors, a researcher read and explained each survey item with small groups of participants to ensure that all questions were understood.

We then invited all of the participants who completed surveys to take part in an interview. All 37 participants who volunteered in the interview indicated that they would prefer not to be audio-recorded during the interview (see Table 2 for demographic information of student interview participants). However, they agreed to provide written answers to the interview questions. If the hand-written information provided was confusing, a researcher would ask the participants for clarification. The interviews were conducted in the students’ classrooms after the completion of the survey. Each interview took approximately 20 minutes to complete.

Table 2

*Background Information of Student Interview Participants (n=37)*

Age (years)	Courses Enrolled	Educational Levels	Employee Status	Education and Career Goals
19-25 (41%)	Mathematics (35%)	university degree (14%)	unemployed over 6 years (5%)	post-secondary (84%)
26-35 (49%)	Science (19%)	college diploma (19%)	on government assistance (49%)	employment skills (14%)
36-44 (9%)	English (46%)	some post-secondary (19%)	employed less than 1 year (0%)	apprenticeship (2%)
45-54 (0%)		gr. 12 (41%)	employed part-time (38%)	
54 (1%)		gr. 9-11 (7%)	employed full time (8%)	

## Data Analysis

Descriptive statistical analyses were conducted on the Likert-type scale items from the survey to examine learners' attitudes toward blended learning (i.e., face-to-face and online components). Correlation analyses were conducted between the attitude items, learners' perceived success scores, and individual characteristics data: age, level of education, and time out of formal education. One-way analyses of variance were used to examine differences in learners' attitudes toward blended learning by employment status (unemployed, employed part-time, or employed full-time). Independent *t*-tests were conducted to determine if there were differences in gender, disability, use of assistive technology for learning, use of program training supports for learning, and learners' history of interrupted education with respect to their attitudes toward blended learning.

Content and thematic analyses were performed on comments generated from open-ended questions in the survey and interviews. All the comments were first coded for positive and negative attitudes toward blended learning (i.e., face-to-face and online components), then categorized into emergent themes to provide more detailed descriptions of learners' attitudes toward blended learning and their perceived success in the program. To ensure reliability, the coding and content analyses were conducted twice, and a test-retest analysis revealed no significant differences ( $t=0.64$ ,  $df=173$ ,  $p=0.32$ ). Descriptive statistical analyses of the comments were conducted to provide more detailed descriptions of the learners' attitudes and perceptions in response to the research questions. To ensure anonymity of interview data, a number was assigned to each participant. For example, student participant one was designated as S1.

## Results

### Attitudes Toward Blended Learning

To answer research question 1—What are the attitudes of adult learners in LBS programs toward blended learning?—we reported findings from the survey, with thematic analysis of the data from the open-ended questions in the survey and interviews by teasing apart the learners' differing attitudes toward face-to-face and online learning.

**Face-to-face component—survey data.** Nine out of 10 LBS students agreed that face-to-face classes were important for learning, communicating with the instructor, meeting their learning needs, and learning more effectively (see Table 3). Two-thirds of LBS students agreed that peer interaction in face-to-face settings was important for learning. Just half of the LBS students agreed that face-to-face interactions with tutors were important for learning and that they would like more face-to-face instruction.

Table 3

*LBS Students' Attitudes Toward Face-to-Face (FTF) Learning (N=149)*

Survey Item	<i>M(SD)</i>	Disagree <sup>1</sup>	Neutral <sup>2</sup>	Agree <sup>3</sup>
1. FTF important for learning	6.4 (0.9)	1%	4%	95%
2. In-class instructor communication important	6.3 (1.0)	3%	3%	94%
3. FTF classes met learning needs	6.2 (1.0)	1%	6%	93%
4. Learning more effectively with FTF	6.2 (1.1)	2%	9%	89%
5. FTF peer communication important	5.1 (1.6)	12%	23%	65%
6. FTF tutor communication important	5.0 (1.7)	13%	31%	56%
7. Would like more FTF instruction	4.9 (1.5)	11%	36%	53%

<sup>1</sup> Includes somewhat disagree, disagree, and strongly disagree responses

<sup>2</sup> Neither agree nor disagree

<sup>3</sup> Includes somewhat agree, agree, and strongly agree

**Online component—survey data.** Just over 40% of LBS students noted that the online component met their learning needs (see Table 4). One-third of LBS students claimed that the online component was easy to use and important for learning. Less than 30% of LBS students agreed that they would like more online instruction. It is worthwhile to note that half of the LBS students were neutral about the online component meeting their needs, ease of use, importance, and wanting more. Finally, while one-quarter of LBS students felt they learned more effectively with online resources, half disagreed with this claim.

Table 4

*LBS Student Attitudes toward Online Learning Component (N=149)*

Survey Item	<i>M(SD)</i>	Disagree <sup>1</sup>	Neutral <sup>2</sup>	Agree <sup>3</sup>
1. Online component met my learning needs	4.6(1.4)	9%	48%	43%
2. Online component was easy to use	4.6(1.3)	6%	57%	37%
3. Online component was important for my learning	4.4(1.6)	15%	49%	36%
4. Would like more online instruction	4.0(1.6)	26%	45%	29%
5. Learn more effectively via online component	3.4(1.7)	50%	27%	23%

<sup>1</sup> Includes somewhat disagree, disagree, and strongly disagree responses

<sup>2</sup> Neither agree nor disagree

<sup>3</sup> Includes somewhat agree, agree, and strongly agree

**Face-to-face component—interview data.** Interview and open-ended questions provided 91 comments (77 positive, 14 negative) about face-to-face instructions. Four major themes emerged from the positive comments, including interactions and collaboration with

instructors and peers ( $n=24$ ), instructors' encouragement and supervision ( $n=20$ ), one-on-one support ( $n=10$ ), effective instructor feedback ( $n=10$ ), and a miscellaneous set of other factors ( $n=13$ ), including attendance, retention, organization, and learning style (see Appendix B).

Twenty-four student comments indicated that interaction and collaboration with instructors and peers in face-to-face classes had a positive influence on their learning. The major contributing factors included teachers' timely, effective, and detailed explanations to their questions, in-class discussions, and help from peers. A student said that in class, "the teacher gives us hints, shortcuts, and better explanations and even life experiences to explain the lesson," (S7) and another student believed "discussions with teacher and peers about relevant world science issues helped me to apply my classroom learning to the real world" (S105).

Twenty comments reported encouragement and supervision from face-to-face instructors who knew them personally as important to building their confidence and supporting their learning. Two students believed the instructors in their face-to-face classes "are very reassuring and build my confidence" (S64) and "encouraged me and kept me on track" (S109). They further commented that instructors in class can better cater to their individual learning needs, providing them with one-on-one support, personalized effective feedback: each of these two themes were reflected in 10 comments. For example, a student commented "[instructors in face-to-face class] know me and know my learning style, so it helps me to understand" (S70). They believe one-on-one support from the instructors "helps me the best" (S58), and "has a huge impact on my success" (S52). Another 13 comments demonstrated students' preference for face-to-face classes due to other reasons, such as being "well organized" (S148), and "suit(s) my learning style best" (S89).

Fourteen negative comments were recorded toward face-to-face learning, mainly focusing on the themes of rigid class schedule and timeframe ( $n=7$ ), and instructor teaching and communication style ( $n=7$ ). For example, students' comments included "rigid class schedule is sometimes hard to keep due to outside responsibilities" (S45); "there is not enough time in class to get all the work done" (S37). One of the biggest challenges in face-to-face classes that the students encountered was instructor teaching and communication style. Student participants made suggestions for their instructors for the improvement: "take your time explaining your lecture, don't speed through the material" (S13), "explain things more clearly and [do] not talk condescendingly" (S44), and "be patient with students" (S141).

**Online component—interview data.** Interview and open-ended questions produced 61 comments (37 positive, 24 negative) about the online component (see Appendix B). Four themes observed from the positive comments included more effective time management ( $n=12$ ), support for learning outside the classroom ( $n=10$ ), a desire for more online learning ( $n=9$ ), and specific contributions to learning ( $n=6$ ).

In 12 of the comments, students pointed out that the online component helped them with time management so they could keep up with the course work when they were not able to attend face-to-face classes. One student explicitly elaborated on this aspect:

I would like more resources for learning online. Being an adult learner, I cannot always make it to class due to work or prior responsibilities. Having an online

option to stay up-to-date with course work would be helpful in these cases. The lack of online learning made it more difficult when I was sick or working. (S12)

Ten comments indicated that online resources support their learning in a number of ways: these resources helped them “understand the in-class material,” provided “support outside of class” (S102), including “to access course material and stay organized” using Blackboard (S5). A student said: “The online resources are remarkable. All of the extra worksheets, websites and videos all contributed to help[ing] me understand the material that the instructors have taught me in class” (S97).

Nine students’ comments expressed a strong desire to have “an option to do more work online. This would be helpful for students who struggle with face-to-face instruction” (S148). Six comments indicated that the online component contributed to specific learning tasks and skill development. These included “helped me to complete my assignments” (S109), “helped me to improve my reading and understanding” (S44), and “taught me different ways to solve problems” (S8).

Two themes emerged from the negative comments about online learning by LBS students: avoidance of online learning due to a preference for face-to-face learning ( $n=18$ ) and lack of confidence in computer skills ( $n=6$ ). A couple of students expressed a strong resistance toward online learning and said, “I hate online learning...I need a classroom.” (S2), “[it] did not contribute to my learning, so I chose not to use it.” (S3). Overall these few students believed that they “learn better face-to-face than online” (S57). This preference may be related to students’ lack of confidence in computer skills, as they explicitly pointed out “I am not confident in my ability to use computers, so I avoided the online content.” (S106); “I am not confident in my computer skills, so this did not contribute to my learning” (S126).

### **Perceived Success and Blended Learning**

To answer research question 2—What is the impact of blended learning on perceived success in an LBS program?—we reported the findings from the survey, along with thematic analysis of interview data and also responses from open-ended questions in the survey. We coded student comments about their perceived success in the program as it related to either, or both, online and face-to-face learning components.

**Survey data.** Students generally reported positive perceptions about their success in the blended learning environment. Overall, 83% of LBS students ( $n=124$ ) perceived that they had been successful in the program. Seventy-nine percent of them ( $n=118$ ) reported that they had completed all of their learning goals.

**Interview data.** LBS students offered 47 comments (45 positive, 2 negative) about their perceived success in the blended learning format. Twenty-six comments supported face-to-face instruction as it related to success, focusing on the theme of support from instructors. These included “great” teachers in face-to-face classes who “encouraged me to stay committed and continue to want to succeed” (S141). Some students were content with the blended design. As one of them said, the program “is well made both online and face-to-face and nothing needs to change since it supports my goals” (S1).

LBS students provided 19 positive comments about the online component and perceptions of success, which were centred on the two themes: enhanced communication with instructors and access to resources outside of face-to-face class time. Students believed the interaction with teachers online “helped me outside of class” (S7), and “the online resources provided by my instructors and tutors are great and very useful” (S97). We observed only two negative comments about the blended learning program that were directly associated with student success: one addressing the rigid schedules of face-to-face classes and the other noting that not enough online learning resources were available.

### **Individual Differences in Attitudes Toward Blended Learning**

To answer research question 3—What individual differences (age, gender, education level, disabilities, computer skills, use of assistive technology for learning and employment status) exist with respect to students’ attitudes toward blended learning?—we examined seven variables, based on a thorough review of the literature, to assess individual differences in LBS student attitudes toward blended learning. These included age, gender, level of education, disability, use of assistive technology for learning, computer skills, and employment status

**Age.** The results showed a moderate positive correlation between age and attitudes toward face-to-face instruction ( $r=0.38$ ,  $r^2=0.14$ ,  $p<0.01$ ), meaning older students preferred the face-to-face learning approach more than their younger peers. No correlations were found between age and attitudes toward online learning ( $r=0.039$ ,  $p=0.64$ ).

**Gender.** Males and females did not differ significantly in their attitudes toward face-to-face instruction ( $t=0.94$ ,  $df=147$ ,  $p=0.35$ ) or online learning ( $t=-0.79$ ,  $df=147$ ,  $p=0.32$ ).

**Level of Education.** A small but significant negative correlation was found between LBS students’ level of education and attitudes toward online learning ( $r=-0.21$ ,  $r^2=.04$ ,  $p<0.05$ ). As student education level increased, preference for online learning decreased, but this relationship was trivial in practical size. No significant correlation was found between their level of education and attitude toward face-to-face instruction ( $r=0.08$ ,  $p=0.31$ ).

**Disability.** There were no significant differences between students with a disability ( $M=40$ ,  $SD=6.1$ ,  $n=39$ ) and students with no disability ( $M=40$ ,  $SD=6.1$ ,  $n=110$ ) regarding their attitude toward face-to-face learning ( $t=0.10$ ,  $df=147$ ,  $p=0.93$ ). Also, no significant difference was found between students with a disability ( $M=21.7$ ,  $SD=6.8$ ,  $n=39$ ) and students with no disability ( $M=20.7$ ,  $SD=5.7$ ,  $n=110$ ) regarding their attitude toward online learning ( $t=0.84$ ,  $df=147$ ,  $p=0.40$ ).

**Use of assistive technology for learning.** A significant difference ( $t=2.42$ ,  $df=147$ ,  $p<0.05$ ) was found between students who did ( $M=24.1$ ,  $SD=5.7$ ,  $n=18$ ) and who did not require ( $M=20.5$ ,  $SD=6.0$ ,  $n=131$ ) assistive technology for learning with respect to their attitudes toward online learning. Students who needed assistive technology rated online learning significantly higher than students who did not. No significant difference was found between students who did ( $M=39.3$ ,  $SD=5.4$ ,  $n=18$ ) and who did not require ( $M=40.1$ ,  $SD=5.3$ ,  $n=131$ ) assistive technology and their attitudes toward face-to-face instruction ( $t=-0.62$ ,  $df=147$ ,  $p=0.54$ ).



**Computer skills.** There was no significant correlation between LBS students' computer skills and their attitude toward face-to-face instructions ( $r=-0.01$ ,  $p=0.93$ ), or online learning ( $r=0.16$ ,  $p=0.54$ ).

**Employment status.** No significant differences were observed among employment status categories (unemployed, employed part-time, or employed full-time) and attitudes toward face-to-face instruction ( $F(3, 148)=1.58$ ,  $p=0.20$ ) or online learning ( $F(3, 148)=1.64$ ,  $p=0.18$ ).

## Discussion

### Attitudes Toward Blended Learning

In this study, more than 90% of LBS students said that the face-to-face learning environment was important and met their needs. Student survey responses placed less importance on communication with peers (65%) and tutors (56%) compared with instructors (94%). They indicated that instructor responses to questions, one-on-one support, and face-to-face feedback were critical for their learning, particularly when encouragement and supervision were offered. These results are consistent with the literature, specifically that students' attitudes toward face-to-face learning were positively affected by caring, motivating, and resourceful teachers, collaborative and hands-on activities in the classroom, one-on-one learning experiences (Quigley & Uhland, 2000; Reynolds & Johnson, 2014; Zacharakis et al., 2011), and personal interactions with face-to-face instructors and peers (Hauser et al., 2012; Vance, 2012).

Several studies have shown that students' attitudes are influenced by the degree of communication in the blended course design (Ausburn, 2004; Conceicao & Lehman, 2013; Fisher & Baird, 2005; Gülbahar & Madran, 2009). Specifically, their attitudes were affected by communication opportunities afforded by online courses, including instructor feedback and social interactions online with instructors and peers (Muilenburg & Berge, 2005). As the students in the present study placed importance on communication in face-to-face classrooms for their learning, it is conceivable that enhanced virtual communication and collaboration, and efficient instructor feedback for blended and online courses, would also benefit their learning.

Even though the online component was not mandatory in the LBS program, 43% of students felt it met their learning needs, 27% found online resources benefitted their learning, and almost one-third of LBS students said they could learn effectively via online instruction or would like to have more online learning opportunities. With flexible online access and additional support to meet students' individual needs outside of the classroom, the present findings confirm previous research reporting that students can benefit from the extra resources and support provided by a blended learning environment (Hauser et al., 2012; Larson & Sung, 2009; Rovai & Jordan, 2004; Senn, 2008). In addition, 32% of the students appreciated that the online component allowed them to keep up with work when they were not able to attend face-to-face classes. These results are consistent with previous findings reporting time management as a consistent barrier to learning (Malicky & Norman, 1994; Packham et al., 2004; Pross & Barry, 2004).

However, LBS students had a variety of negative responses to the online component provided. Three-quarters of the students felt that the online content was not necessary or

inapplicable to their learning, 60% did not view the online activities as easy to use, and 25% of students avoided the online content completely. These results are consistent with negative feedback from college and university students in previous studies (Campbell & Campbell, 1997; Schofield & Dismore, 2010; Shelton, 2003).

It is worth noting that 30% of students cited a lack of confidence in their computer skills as a factor for not participating in the online component. This finding is consistent with other studies of LBS students who reported avoidance of technology for learning (ABC Canada, 2002; BCMAE, 2013). Muilenburg and Berge (2005) found that students' ability and confidence in technology use were positively correlated with their motivation to learn online. It is possible that the provision of support, guidance, and training in technology would increase adult learners' motivation and participation and improve their attitudes toward online learning.

Despite LBS students' clear preference for face-to-face learning, a number of comments suggested that some students' ability to attend every class at the scheduled times was impeded by situational barriers. Online support might not be useful for all students, but it appears to be necessary for those who could not attend class. This result echoes previous reports that LBS students bemoaned rigid class schedules and time management in the face-to-face class (BCMAE, 2005; Zacharakis et al., 2011) and of students favouring the support and flexibility provided by blended learning (Gill, 2009; Hauser, Paul, & Bradley, 2012; Larson & Sung, 2009; Rovai & Jordan, 2004; Senn, 2008; Vance, 2012).

### **Perceived Success and Blended Learning**

Over 80% of students in this study believed that they achieved success in their program, and a small positive correlation was found between student attitudes towards face-to-face learning and perceived success ( $r=0.26, p<0.01$ ). Students attributed their perceived success mainly to the encouragement, support, and availability of their face-to-face instructors, who kept them focused on achieving their goals. This finding is consistent with Reynolds and Johnson's (2014) and Zacharakis et al.'s studies (2011) reporting that program success and strengths were related to the factors derived from a caring, motivational teacher-student relationship. Quigley and Uhland (2000) also found that student success was enhanced as a result of instructor face-to-face and one-on-one support.

Though no correlation was found between student attitudes toward online learning and perceived success, there was a positive and significant correlation between students' perceived success and their computer skill. Eleven percent of LBS students indicated that online learning contributed to their success through enhanced communication with instructors and available learning resources outside of the classroom. This result is supported by research reporting the positive impact of well-organized online resources and platforms that facilitate communication and collaboration with instructors and peers (Ausburn, 2004; Conceicao & Lehman, 2013; Muilenburg & Berge, 2005; Willging & Johnson, 2004).

Students in this study who required assistive technology for learning rated online learning significantly higher than students who did not. As stated earlier, online learning may not be needed by all students, but it appears to be necessary for some students; in this case, students with special needs. Previous research has not been conducted regarding the impact of blended

learning on students who require assistive technology, however, some researchers have noted that higher education students were more likely to experience frustration and drop out of online courses when technical assistance was absent (Conceicao & Lehman, 2013; Muilenburg & Berge, 2005; Willging & Johnson, 2004). Therefore, it is possible that LBS students requiring special assistance might have discontinued their studies without the support of the online component. Future research in the form of interviews would provide more detail on why and how online learning helps students with special needs who require technological support.

### **Individual Differences and Blended Learning**

**Age.** In this study, older students preferred face-to-face instruction, a result that is consistent with previous studies reporting that older LBS learners were more likely to be successful in face-to-face programs than younger students (Pross & Barry, 2004; Quigley, 1998). However, no significant correlation was found between age and attitudes toward online learning. This result is similar to previous studies, reporting only weak or no correlations between students' age and attitudes toward online or blended learning environments (Ashby et al., 2011; Giguere, 2009; Nikitenko, 2011; Sorden & Munene, 2013). However, Packham et al. (2004) reported that older students were less likely than younger students to complete online courses.

**Gender.** The present study found no gender differences in LBS students' attitudes toward face-to-face learning, which is consistent with the results reported by Smith and Smith (2009). However, the absence of gender difference in this study differs from the results of Hayes (1988), who reported that males were more likely to express negative attitudes toward their classes than females. We also found no gender differences in LBS students' attitudes toward online learning. This finding is consistent with the results of two studies of student attitudes toward online learning that reported no significant differences with respect to gender (Nikitenko, 2011; Sorden & Munene, 2013). However, the results of this study also conflict with studies of university students that revealed significant gender differences regarding student attitudes toward blended learning courses (Ashby et al., 2011; Gülbahar & Madran, 2009). For example, Ashby et al. (2011) reported a higher percentage of college females than males self-selected to enrol in blended learning versus face-to-face or online learning, and Gülbahar and Madran's study (2009) found college and high school male students were more satisfied with blended learning environments than female students.

We propose that these results might be related to the maturity of LBS learners in the present study and the learning setting of the adult literacy program. It appeared that participants in the LBS program had specific needs and were highly motivated to improve their literacy skills and succeed in the program, regardless of gender. Moreover, most students appreciated the personal encouragement and instruction support offered in the face-to-face classroom. They also valued the flexibility of learning support provided by the online component, because of responsibilities at home and work that created time conflicts with their face-to-face classes. More in-depth research, perhaps in the form of focus groups or interviews, is needed to better understand the conditions in which gender may influence attitudes toward a blended learning environment.

**Level of education.** No correlation was found between level of education and attitudes toward face-to-face instruction. This finding is in contrast with previous research where a higher

level of education was associated with more positive attitudes toward LBS programs (Hayes, 1988; Malicky & Norman, 1994). The inconsistency may be partially explained by differences in basic literacy skills. All participants in the present study reported that English was their first language and met a minimum level of literacy skill required for acceptance into the LBS program. Limited English language proficiency reported in previous studies (Hayes, 1988; Malicky & Norman, 1994) may have acted as a confounding variable concerning the influence of education level on attitudes toward LBS programs. A minimum level of English language ability, if met, may negate the impact of education level. More research is needed to examine what specific academic skills might influence attitudes toward, and ultimate success in, an LBS program.

A slight but statistically significant negative correlation between student attitudes toward online learning and level of education was found. As the level of education increased, LBS students' preference for online learning decreased. This result is confirmed by Packham et al.'s (2004) study. Given that students with higher levels of education in the study were also older, this result may be confounded by the age factor. Older students in this study preferred a face-to-face instructional approach.

**Disability.** No differences in attitudes toward face-to-face learning were found between students with or without disabilities. This result is different from other studies of face-to-face learning, where students' attitudes were negatively impacted by learning difficulties due to physical, mental, and/or learning disabilities (Hayes, 1988; Porter et al., 2005; Pross & Barry, 2004; Quigley, 1998). Also, no differences in attitudes toward online learning were found for students with and without disabilities. This finding is in contrast with Couzens et al.'s (2015) study, which noted that university students with disabilities expressed positive attitudes toward blended learning options. It is possible that the high level of support offered by instructors, coupled with the readily available online supports, may have lessened the impact that having a disability might have had on student attitudes. On the other hand, the categorization of disability used in the present study may have been too general to properly assess the impact on student attitudes. Future studies should use a formal, official diagnosis to provide a more precise analysis of specific disabilities and their potential influence on attitudes toward blended learning.

**Computer skill.** This study found no correlation between students' computer skills and their attitudes toward teaching approach, either face-to-face instruction or online learning. This was interesting in light of a number of reports of uncertainty about computer skills reported in qualitative data in this study. These correlational results are consistent with two studies that reported no relationship between computer skills and attitudes toward blended learning (Nikitenko, 2011; Sorden & Munene, 2013), but different from four studies that indicated improved computer skills positively affected attitudes toward blended learning environments (Ausburn, 2004; Gülbahar & Madran, 2009; Hauser et al., 2012; Muilenburg & Berge, 2005). However, students in this study who had confidence in their computer skills reported greater perceived success, which is in line with other studies in higher education indicating that improved computer skills positively affected attitudes toward blended learning environments (Ausburn, 2004; Gülbahar & Madran, 2009; Hauser et al., 2012; Muilenburg & Berge, 2005).

**Assistive technology.** A significant difference was found between students who did or did not require assistive technology for learning with respect to their attitudes toward online

learning. Students who needed assistive technology rated online learning higher than those who did not require assistive technology for learning. No significant difference was found between the students who did or those who did not require assistive technology and their attitudes toward face-to-face instruction. These results are consistent with previous studies which reported that students were more likely to experience frustration and drop out of online courses when technical assistance was absent (Conceicao & Lehman, 2013; Muilenburg & Berge, 2005; Willging & Johnson, 2004). Improved quality and quantity of online learning content and support could lead to increased success for students who require assistive technology.

### **Limitations and Future Studies**

There are several limitations which need to be kept in mind when interpreting the results of the present study and considering future research. First, the study lasted for one semester and did not follow participants through to the end of the program. It is possible that LBS students' attitudes and experiences might change over time. A longitudinal study with multiple assessment points would address this concern.

Second, the LBS programs that were assessed involved face-to-face classes taught by different instructors with potentially different teaching styles. These variations could affect student attitudes toward their face-to-face learning environments. Surveying instructors about their teaching strategies, classroom environment, and lesson designs might provide more detailed analysis of what specific components contribute to, or detract from, the face-to-face experience for LBS students.

Third, due to the limited timeframe of the present study, we did not administer a standardized language test to measure the individual differences in participants' literacy skills in listening, reading, and writing. Future research is needed to provide a more comprehensive analysis of student literacy skills and blended learning.

Fourth, the online component was not mandatory at all three sites, although it provided the LBS students with online asynchronous instructional support, plus rich learning materials. A more active, systematic, interactive, and meaningful approach to using online supports and resources might result in different attitudes toward this component. In addition, a more systemic analysis of specific online components would help identify key features that might improve the learning experience of LBS students. We also have realized the challenge in defining blended learning in literature. Future research is warranted to explore the composition of online components regarding quantity (e.g., amount of content, percentage of time split between two learning modes, number of learning tasks), quality (e.g., asynchronous and synchronous, types of online and virtual interactions), and the kind of learning activities that create an optimal blended learning environment for specific student populations.

Fifth, the measure of success used in the present study was based on student perception. A more rigorous and independent measure, perhaps segmented into a range of constructs, would be useful in future studies to link specific blended learning strategies more accurately with particular aspects of student success.

Finally, there is some evidence to suggest that students who require the use of assistive technology benefit from using the online component in a blended learning approach. However, it is unclear what specific online elements are useful and contribute to success. A more in-depth examination, perhaps in the form of interviews or focus groups, would be helpful in fleshing out these details.

### Conclusions

Overall, LBS students believed that face-to-face instruction was critical for their learning due to communication and collaboration with instructors, tutors, and peers. Students attributed their success in the program to the encouragement, support, and feedback they received from their face-to-face instructors. Students also appreciated online resources and enhanced communication with instructors outside of the face-to-face classroom; some of them mentioned that the online component assisted them in better managing their time for learning. Given these results, a blended teaching and learning approach appears to offer flexibility and support to LBS students, leading to greater perceived success.

The present study provides significant insights into LBS program design and curriculum development. Individual differences in students' attitudes regarding age, level of education, time out of formal education, and the use of assistive technology indicate a need for program developers, policy makers, and instructors to consider not only the best instructional strategies but also for whom those strategies are most effective. Programs that take into account students' individual differences can provide a differentiated instructional approach to better support students' needs. LBS students in this study placed considerable importance on face-to-face instruction for their learning needs, which could, in part, reflect a fear of using technology for independent learning. This potential fear suggests a need to enhance technical support and provide user-friendly designs in blended learning courses. These added supports could lead to increased confidence and encourage students to become more self-sufficient learners, helping them along their path to accomplish their personal and professional goals.

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**Appendix A. A Survey for Students in Literacy and Basic Skills Academic Upgrading Programs**

<b>A survey for students in Literacy and Basic Skills academic upgrading programs</b>  Please circle a number indicating how much you agree or disagree with each of the following statements.	<b>Strongly Disagree</b>  <b>1</b>	<b>Disagree</b>  <b>2</b>	<b>Slightly Disagree</b>  <b>3</b>	<b>Neutral</b>  <b>4</b>	<b>Slightly Agree</b>  <b>5</b>	<b>Agree</b>  <b>6</b>	<b>Strongly Agree</b>  <b>7</b>
1. Attending face to face classes was important for my learning in this program.	1	2	3	4	5	6	7
2. The organization of face-to-face classes met my learning needs in this program.	1	2	3	4	5	6	7
3. I would like to have more face to face instruction in this program.	1	2	3	4	5	6	7
4. Participation in online activities was important for my learning in this program.	1	2	3	4	5	6	7
5. The organization of online activities met my learning needs in this program.	1	2	3	4	5	6	7
6. I would like to have more online instruction in this program.	1	2	3	4	5	6	7
7. I can learn more effectively through online instruction.	1	2	3	4	5	6	7

8. I can learn more effectively through face to face instruction.	1	2	3	4	5	6	7
9. The online activities were easy to use.	1	2	3	4	5	6	7
10. My computer skills are adequate.	1	2	3	4	5	6	7
11. Communication with other students in class was important for my learning in this program.	1	2	3	4	5	6	7
12. Communication with my instructors in class was important for my learning in this program.	1	2	3	4	5	6	7
13. Communication with face to face tutors was important for my learning in this program.	1	2	3	4	5	6	7
14. Program staff were informative about available program resources.	1	2	3	4	5	6	7
15. Program staff cared about my learning needs.	1	2	3	4	5	6	7
16. My instructors were informative about available program resources.	1	2	3	4	5	6	7
17. My instructors cared about my learning needs.	1	2	3	4	5	6	7
18. I completed all of my learning goals in this program.	1	2	3	4	5	6	7
19. I achieved success in this program.	1	2	3	4	5	6	7

20. Please provide details about how we could better support your learning in this program.

<b>A survey for students in Literacy and Basic Skills academic upgrading programs</b>  Please circle a number indicating how much you agree or disagree with each of the following statements.	<b>Strongly Disagree</b> 1	<b>Disagree</b> 2	<b>Slightly Disagree</b> 3	<b>Neutral</b> 4	<b>Slightly Agree</b> 5	<b>Agree</b> 6	<b>Strongly Agree</b> 7
21. Employment has interfered with my education in the past.	1	2	3	4	5	6	7
22. Current employment interferes with my education.	1	2	3	4	5	6	7
23. Lack of employment interferes with my education.	1	2	3	4	5	6	7
24. My financial situation interferes with my education.	1	2	3	4	5	6	7
25. My family responsibilities interfere with my education.	1	2	3	4	5	6	7
26. Please provide details about how your employment, financial and family situation interfere with your education.							

27. Lack of reliable transportation interferes with my education.	1	2	3	4	5	6	7
28. My lack of discipline interferes with my education.	1	2	3	4	5	6	7
29. My lack of confidence interferes with my education.	1	2	3	4	5	6	7
30. My social life interferes with my education.	1	2	3	4	5	6	7
31. Lack of family supports interferes with my education.	1	2	3	4	5	6	7
32. My uncertainty about my academic goals interferes with my education.	1	2	3	4	5	6	7
33. My uncertainty about my career goals interferes with my education.	1	2	3	4	5	6	7

**Demographic Data**

1. Birth Date (MM/DD/YYYY): \_\_\_\_\_

2. Male or Female: \_\_\_\_\_

3. Do you have an identified disability (physical and/or learning)?      Yes    OR    No

4. Do you require assistive technology/devices in order to access education programs? Yes OR No

**Short Term Goal Path**      Post-Secondary      OR      Apprenticeship      OR      Employment

**Education**

1. Highest level of education  
(Please circle which choice applies to you)

College Diploma/ University Degree  
Grade 12 Diploma

Some College/ University  
Less than grade 12

2. History of Interrupted education?    Yes    OR    No

3. Length of time out of formal education? \_\_\_\_\_

**Employment**

1. Source of income

(Please circle which applies to you)

Employed Full Time

Employed Part time

Ontario Works

ODSP<sup>1</sup>

Employment Insurance

Dependent OW/ ODSP<sup>2</sup>

Crown Ward

No Source of income

2. If unemployed, how long have you been unemployed? \_\_\_\_\_

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<sup>1</sup> Ontario Disability Support Program (ODSP)

<sup>2</sup> Ontario Works/ Ontario Disability Support Program (OW/ ODSP)



**Appendix B. Results of Coding and Thematic Analysis of Interviews and Open-ended Survey Questions (N=199 idea units).**

Themes	No. of Idea Units	Idea Units (%)	Comments Samples
<b>Students' attitude on face-to-face learning (positive)</b>	<b>77</b>	<b>38.69%</b>	<b>See samples in the five sub-themes below</b>
1. Interaction and collaboration with instructors and peers	24	12.06%	<p><i>"[It] helps with fast and easy understanding, and the teacher could answer questions more clearly to help in my understanding."</i> (S107)</p> <p><i>"I learn best this way, so I can ask questions and get further explanation."</i> (S94)</p> <p><i>"I got the answers to questions that I have and I couldn't get [them] from the online resources."</i> (S101)</p> <p><i>"I like face-to-face better than online, because I would quickly receive answers, and other classmates could also help."</i> (S100)</p>
2. Encouragement and supervision from face-to-face instructors	20	10.05%	<p><i>"The face-to-face gave me a push to do my work and gave me support for my learning."</i> (S67)</p> <p><i>"I felt comfortable going to all of my instructors if I had a question or problem with the material that was being presented to me."</i> (S97)</p> <p><i>"Encouragement from instructor and peers in class was important."</i> (S106)</p> <p><i>"Encouraging face-to-face learning and teacher availability."</i> (S133)</p>
3. Other reasons for preference for face-to-face classes	13	6.53%	<p><i>"I felt like being present during all classes was critical. When I missed classes I was always worried about getting behind or missing important information."</i> (S5)</p> <p><i>"Retention of concepts is better through face-to-face lectures."</i> (S85)</p> <p><i>"Face-to-face was helpful because it is easier when you hear the lesson as opposed to reading it myself."</i> (S7)</p>
4. Effective feedback from instructors	10	5.03%	<p><i>"It was great to get feedback and help if it was needed; face-to-face is a must in my opinion."</i> (S6)</p> <p><i>"Helped me to understand test errors."</i> (S63)</p>
5. One-on-one support	10	5.03%	<p><i>"I need to ask questions and have one-on-one support."</i> (S101)</p> <p><i>"I learn best in the classroom with the help of an instructor."</i> (S96)</p>

<b>Students' attitude on face-to-face learning (Negative)</b>	<b>14</b>	<b>7.04%</b>	<b>See samples in the two sub-themes below</b>
1. Rigid class schedules and time management	7	3.52%	<p><i>"There is not enough time in class to get all the work done."</i> (S37)</p> <p><i>"Rigid class schedule is sometimes hard to keep due to outside responsibilities."</i> (S45)</p>
2. Instructor teaching and communication style	7	3.52%	<p><i>"Better review for tests is needed and less hands-on labs."</i> (S94)</p> <p><i>"Classes could use more chalk board instructions, examples [demonstrating] how to deal with or work out certain problems."</i> (S43)</p> <p><i>"More one-on-one help with assignments is needed."</i> (S62)</p>
<b>Students' attitude on online learning (Positive)</b>	<b>37</b>	<b>18.59%</b>	<b>See samples in the five sub-themes below</b>
1. Effective time management	12	6.03%	<p><i>"The online resources helped me to keep up with the material when I had to miss class due to work."</i> (S96)</p> <p><i>"This helped when I could not get to class; I could still access material online and not fall behind."</i> (S94)</p>
2. Support for learning outside of the classroom	10	5.02%	<p><i>"The online resources gives me visuals and videos that I can access outside of class."</i> (S101)</p> <p><i>"The technology advanced the course, gave me help outside of the classroom."</i> (S103)</p> <p><i>"This provided more information and examples outside of the classroom."</i> (S107)</p> <p><i>"It was helpful in Biology when I missed class."</i> (S7)</p>
3. A desire for more online learning desired	9	4.52%	<p><i>"I believe online learning is much easier for me than face-to-face at times. I would prefer more online course work than what is currently available. I hope that more work for class could be done on the computer."</i> (S60)</p> <p><i>"More online work would be better for me since I am shy."</i> (S33)</p>
4. Contributions to specific learning tasks and developing skills	6	3.01%	<p><i>"It was a great help and resource and a great tool to learn."</i> (S6)</p> <p><i>"The online component was necessary for research assignments."</i> (S70)</p>

<b>Students' attitude on online learning (Negative)</b>	<b>24</b>	<b>12.06%</b>	<b>See samples in the two sub-themes below</b>
1. Avoidance of online learning (a preference for face-to-face learning)	18	9.04%	<p><i>"I learn better face-to-face than online."</i> (S57)</p> <p><i>"I hate online learning. I can't do it. I need a classroom."</i> (S2)</p> <p><i>"Never used the online component I prefer face-to-face."</i> (S11)</p>
2. Lack of confidence in computer skills	6	3.01%	<p><i>"I am not confident in my ability to use computers so I avoided the online content."</i> (S106)</p> <p><i>"I learn better face-to-face and am not confident in my computer skills."</i> (S141)</p>
<b>Perceived success to blend learning (Positive)</b>	<b>45</b>	<b>22.61%</b>	<b>See samples in the two sub-themes below</b>
1. Face-to-face: Support from instructors	26	13.96%	<p><i>"Great face-to-face teachers that encouraged me to stay committed and continue to want to succeed."</i> (S141)</p> <p><i>"Face-to-face teacher availability and support is very helpful".</i> (S51)</p>
2. Online: Enhanced communication with instructors & access to resources	19	9.54%	<p><i>"Communication with teachers using email helped me outside of class."</i> (S7)</p> <p><i>"The online resources provided by my instructors and tutors are great and very useful."</i> (S97)</p> <p><i>"This program is well made both online and face-to-face and nothing needs to change since it supports my goals."</i> (S1)</p>
<b>Perceived success to blend learning (Negative)</b>	<b>2</b>	<b>1.01%</b>	<b>See samples in the two sub-themes below</b>
1. Rigid classroom schedules	1	0.5%	<i>"Rigid class schedule made it sometimes hard for me to get to class."</i> (S51)
2. Support from instructors	1	0.5%	<i>"There was not enough online learning [which] made it more difficult when I was sick or working."</i> (S97)

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