BLENDED LEARNING FOR SOFT SKILLS DEVELOPMENT:
Testing a Four-Level Framework for Integrating Work and Learning to Maximize Personal Practice and Job Performance

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EXECUTIVE SUMMARY

As Canadian businesses look for new ways to empower workplace learning, interest in delivering blended learning programs that provide just-in-time access to learning tools and supports anywhere, anytime is growing. Generally research in this area is designed around comparisons of classroom versus online courses versus blended programs. However, analysis of the impact of different blended learning strategies on personal soft-skills development and job performance has not been given much attention. The focus of this research study was to compare the learning impact/outcomes of the following four different blended learning strategies (i.e., offered in parallel in each of four research groups) based on a theoretical model emerging from work reported by Adams (2004):

Level 1 (Research Group 1)	This blended learning strategy used online learning materials as a background resource for self-directed learning - defined as a *very loose* coupling of personal learning with job performance in relation to the other three blended learning strategies mentioned below.
Level 2 (Research Group 2)	Online materials were integrated as pre-and post work for a structured classroom course in this blended learning strategy.
Level 3 (Research Group 3)	Online learning materials were integrated with personal learning objectives and blended with collaborative discussion forums and peer coaching.
Level 4 (Research Group 4)	Online learning materials were used to support action-learning projects where a demonstrable return on learning (ROL) was measured - defined in this research as a *very tight* coupling of personal learning with job performance in relation to the previous three blended learning strategies mentioned above.

The project involving York University's Schulich School of Business and Scotiabank targeted the CCL "outcomes" theme. Two hundred research participants were assigned to one of four parallel course offerings where personal job situations and skills assessment were used to

focus learning and personal development. Feedback was gathered through surveys and interviews about various aspects of the six-week program. Evaluation included pre/posttest soft-skills and learning styles assessment results for each learner, and each of the four assigned blended learning groups. Participants also completed confidential self-report assessments at the end of the research project including comments about what was achieved (i.e., including qualitative / quantitative impacts resulting from actions taken on their personal situations), and personal observations on barriers and motivators for learning.

Rationale for this study was threefold: (a) to observe, monitor, test, review, and validate the four-level framework in a large, leading-edge Canadian organization; (b) to deepen and extend our understanding of the use of e-learning for supporting soft-skills development in a Canadian workplace aimed at maximizing job performance impact; and (c) to provide a solid platform for future blended learning research in the workplace.

Methodology & Research Findings

The research study was a multi-method, two time-point, repeated measures quasi-experimental design methodology that combined the rigour of theory testing the following three hypotheses employing quantitative/qualitative methodologies within a larger action-learning framework embracing a continuous improvement philosophy:

Hypothesis / Proposition #1: The tighter and more well-defined the links between learning and the job (i.e. moving from blended learning strategy level 1 to 4), the more likely participants are to report demonstrable impacts/positive outcomes on job performance. Specifically, it was expected that benefit-cost ratios would increase progressively moving from Research Group 1 through to Research Group 4, and that soft-skills development would also improve to a greater degree for those in Research Group 4 in relation to the other groups.

Hypothesis / Proposition #2: The tighter and more well-defined the links between learning and the job (i.e. moving from blended learning strategy level 1 to 4), the more likely participants are to report learning motivators rather than barriers to learning. It was anticipated that learning tightly linked to the job as action-projects (Level 4) would create a highly motivational context for learning.

Hypothesis / Proposition #3: The closer the match between individual learning styles and the blended strategy employed, the more likely participants are to report positive learning outcomes and impact on personal skill development. For example, it was expected that those

favouring an auditory learning style would have a better experience in Research Group 2 where a face-to-face classroom-based component was included. Similarly it was anticipated that those favouring a kinesthetic learning style would perform better in Research Group 4 where a project-based component was featured.

The research findings reinforce the importance of implementing workplace learning programs that are tightly integrated with workplace practice where blending strategies are used to provide just-in-time learning support. Different blended learning strategies did have different job impacts, although not exactly as predicted. The findings also shed light on the context-specificity of barriers and motivators for workplace learning (i.e., including noteworthy differences between organizational contexts, differences between groups with different blended learning offerings, differences between individual learners in the same groups, and differences between workplace and academic contexts). In a somewhat similar pattern, differences in pre/posttest learning styles/preferences, as well as differences between individual learners in, and between, blended learning groups was found.

The most significant discovery in this research is that individuals excelled in *each* of the blended learning research groups, and no common individual characteristics for those who did well in each group, or across the research study, could be found. Learning styles differed, learning preferences differed, and major motivators and major barriers for learning also differed. In other words, the major finding is the inability to find a predictable, repeatable, no-fail approach to ***workplace*** learning for ***soft-skills*** development. These unexpected findings have seeded a new highly individualized, "mass customization" theory driven by the recognition that each learner has a unique personal learning profile which includes personal characteristics, learning needs, learning style/preferences, job responsibilities, and job context. This is not a new idea. Training and professional development experts have been talking about the importance of customized, individual learning models for over a decade. What is new, however, is that technologies are finally available to support a "mass customizable" learning strategy.

Implications & Recommendations

A highly individualized, "mass customization" approach to employee development where every learner is encouraged and supported to take ownership of his or her own personal learning requires a fundamental shift from an organizational model where decisions are made for learners, to one where organizational learning experts ask questions to find effective ways to support a

learner-in-control approach. This is not a traditional course-based model. Rather, it needs to be a holistic approach designed to foster self-directed, meaningful, career-long learning.

Recommendations for those interested in developing blended learning strategies for soft-skills development aimed at maximizing learning outcomes for individuals and their organizations include the following highly practical advice.

The importance of flexible blended learning models that offer learners as much choice as possible. Blended learning approaches offer a rich context for learning where different technologies and instructional approaches engage learners in a variety of ways, thereby enabling learners to process information using more than one learning style. Therefore, consider offering learners different choices (e.g., those identified in the four-level model). In this way learners will be able to self-select the modes of interaction that suit their needs for the topic being studied and the way they can best integrate learning and job responsibilities.

The value of regularly scheduled learning over time. In this research study, learners dedicated twenty minutes a week (i.e. two hours over six weeks) to personal learning and quantifiable value was created for the organization. Designing blended learning offerings in short spurts most likely makes it easier to make time for personal learning than it will be to attend half-day or all-day seminars or training sessions.

The importance of "learning accountability loops" to create tightly structured links between work and learning. When the aim is to maximize job impact, creating blended learning strategies that tightly link learning and work can be effective; however, doing so will vary by organization and individual. Therefore, consider asking learners how they would prefer to create the tight framework that will provide the structure needed to ensure learning gets on their schedule.

The importance of pre-/posttests to evaluate outcomes. The pre/posttest learning outcomes data provided an objective manner in which to assess the degree of value created and soft-skill development for both learners and the organization. The pre/post comparisons for learning styles and barriers/motivators for learning were also useful for surfacing assumptions and provoking new insights about learners and learning contexts. Feeding this information back can promote reflection. In time, this regular feedback may also help to promote a deeper understanding for both organizations and individual learners on how best to structure learning experiences that have maximum impact for everyone involved.

The importance of acknowledging and rewarding learning in meaningful ways for learners. The research findings revealed the importance of creating workplace contexts that motivate learning rather than block it. This, however, is more complex than was originally anticipated. What one person my find motivating or rewarding, another may find irrelevant, or possibly even a de-motivator or barrier to personal learning. Therefore, asking learners about motivating and rewarding factors seems essential to for success.

The importance of a continuous improvement mandate for training and development departments. Many of the findings in this research study invite a re-evaluation of conventional wisdom and rethinking of conventional practice around learning. This means seriously looking at every course and program being offered to understand where gains can be made and ways to create business cases for continuing, updating or abandoning offerings. All too often new offerings that outlast their value, but never get cycled out of production, are draining valuable organizational resources that could be directed towards upgrading and /or initiating new more relevant offerings. Many of the approaches explored in this study (i.e. outcome measures by learner by offering; pre/posttest contextual evaluations; learner preference surveys) could be used as a starting point.

Concluding Thoughts & Next Steps …

The research study met the stated objectives: to observe, monitor, test, review and validate the four-level blended learning framework; to deepen and extend our understanding of the use of e-learning for supporting on the job soft-skills development; and, to provide a solid platform for future blended learning research in the workplace. Much has been achieved in this project that helps to advance the understanding of different blended learning strategies and their impacts in terms of workplace learning. As with most research, however, answering questions often leads to even more questions. Such has been the case in this project. That a single best blended learning model could not be clearly delineated opens up the possibilities of a highly individualized approach to workplace blended learning strategies – a personal learning path for each and every employee. What has generally been viewed as impossible in the past because of the seemingly infinite nature of this vision, is now on our doorstep, considering the vast possibilities being created in today's web-world. It is our hope that this research report brings new light and a sense of urgency to this important mandate.

INTRODUCTION AND RATIONALE

As Canadian businesses look for new ways to empower workplace learning, interest is growing in blended learning strategies that can advance employee development and performance improvement. Much of the existing research has compared classroom versus online courses versus blended learning approaches. The job impact of different blended learning strategies, an area that has been largely under-researched, was the focus of this research study. In this report, the differential impact of four distinct blended learning strategies on personal soft-skills development and job performance will be presented. The theoretical model guiding the work is the result of a four year action learning research study emerging from work reported by Adams (2004). This research project which involved York University's Schulich School of Business, the Institute for Research on Learning Technologies (IRLT), and Scotiabank targeted the Canadian Council on Learning (CCL) adult learning "outcomes" theme. More specifically, this research report documents the findings of a study where two hundred research participants working in managerial positions across Scotiabank were assigned to one of four parallel courses of study, each of which was delivered using a different blended learning strategy. Feedback was gathered before, after, and throughout the research project period (April 7 to June 10, 2008) using questionnaires, surveys, brief interviews, and online forums. Information collected for analysis included demographic and workplace variables, soft-skills and learning styles assessments, confidential self-reports on what was learned (i.e., impacts of actions taken in personal job situations), and barriers and motivators for learning (including, for example, perspectives on belonging to learning communities).

The research context, Scotiabank, is one of North America's premier financial institutions, and Canada's most international bank. With an employee base of 69,000 employees, Scotiabank and its affiliates offer a broad range of products and services, including retail, commercial, corporate and investment banking to more than 12.5 million customers in some fifty countries around the world. Being a global employer of choice enables Scotiabank to attract and retain high-performing employees, and positions the bank as a place where talented people not only want to work, but also have the opportunity to thrive in their careers. In 2008, the Bank invested $84.2 million in global employee learning and development. Scotiabank encourages

employee learning and development through a blend of classroom learning, e-learning, coaching, job shadowing, and mini-training sessions in the branch, and continually looks for ways to leverage learning technology. While classroom programs are available through larger centres, Scotiabank continues to increase the use of interactive virtual classroom technology, iShare, making training more accessible in all locations. Scotiabank is recognized as a top employer by a number of independent surveys and publications in many of the markets where the company operates. The Bank was named among the 50 Best Employers in Canada for the fourth straight year by Report on Business magazine, and a top employer in Mexico for the fifth consecutive year by the Great Place to Work Institute. The institute also recognized Scotiabank among the best places to work in Central America and the Caribbean. Scotiabank was recognized as a leading training company as well as the top Canadian Bank in Training magazine's 2008 Training Top 125, the sixth consecutive year the Bank has appeared on the list.

The rationale for this study was threefold: 1) to observe, monitor, test, review and validate the four-level framework in a large, leading-edge Canadian organization; 2) to deepen and extend our understanding of the use of web-based learning for supporting soft-skills development aimed at maximizing impact on job performance; and 3) to provide a solid platform for future blended learning research in the workplace.

LITERATURE REVIEW

Most people will agree that the Internet has changed the way we work, socialize, and learn. The majority of Canadian universities have some web-based component to many courses and this is expanding (McGreal & Anderson, 2007, p. 2, 4). The potential for e-learning to revolutionize workplace learning is also generally accepted in principle; however, in practice it has not yet reached its full potential (Tynjala & Hakkinen, 2005, p. 319). This disparity between potential and realized e-learning hinges on the following two major factors. Firstly, there is a distinction between "first generation" and "second generation" e-learning systems where first generation systems have a linear, instructor-controlled underlying design logic that tends to be effective for supporting hard-skills development. Second generation e-learning systems, on the other hand, are designed to support soft-skills development that put learners in control of their learning by embracing flexible, self-organizing design principles (Adams & Morgan, 2007;

Morgan & Adams, 2009). It is likely that many organizations think of conventional first generation models when they think of e-learning. A second factor in the disparity between potential and realized e-learning is that many models have not tapped into the profound effect that a tight integration of work and learning can have when implementing e-learning for leadership and management soft-skills development to maximize personal learning and job impact (Adams, 2004; Adams, 2008). These findings of the two disparities emerged as a "second generation" e-learning system (the *NewMindsets* project) was developed from the bottom up as part of a research project led by Dr. Gareth Morgan, Distinguished Research Professor (York University), where content was written, web-enabled, and integrated into a fully operational content management system, and pilot-tested in academic and workplace contexts. Over a six-year period (1999 to 2004) of testing the content system in parallel and varying contexts, a four-level model for integrating e-learning with work practice emerged (see Table 1). Each of the four implementation strategies had different levels of impact on job performance (i.e., the tighter the direct links between online learning and work practice, the greater the job impact). These findings were primarily subjective and self-reported by learners. As well, the outcomes for the most part were observed in different organizations at different times. This current project builds on this research in two ways. First, where different organizations at different times were used in the pilot study, the current project was able to access one organization over one learning time period. Second, the four strategies were again borne of different results from different participants at different times. This study is unique as it is the first to conduct a study comparing four models of e-learning against each other at the same time by the same population of participants.

Four distinct models of e-learning strategies were developed that increase progressively in terms of colleague interaction, tie-in to work, and project focused deliverables. The blended learning models include: self-directed e-learning; a blend of class and e-learning; a blend of coaching and e-learning; and a blend of action-learning projects and e-learning (Adams, 2004). A summary of the four strategies is presented in Table 1.

Table 1 Blended Learning: A Four-Level Model for Integrating Work and Online Learning

Blended Learning Model	Details for Integrating Work and Online Learning
Level 1: e-Learning as a Background Resource	Online learning resources are made available as voluntary background material for supporting job performance and personal development and used as: • a supplementary resource (e.g., e-libraries, e-books, e-catalogues), • a stand-alone feature (e.g., self-directed courses), • an add-on combined with other primary modes of instruction (e.g., face to face classroom/workshop sessions/ online classrooms/virtual teams).
Level 2: e-Learning as Part of a Balanced (Blended) Mode of Instruction	Online materials are integrated with classroom instruction and used as: • required pre-work assignments, • referenced/featured in classroom discussions (e.g. using screen shots to make concrete links and motivate and guide learner use), • required post-work assignments.
Level 3: e-Learning Tightly Coupled with Personal Learning Objectives	Online materials are tightly coupled with personal learning objectives and used as: • core content support for competency development plans, • focus for job coaching, advisory or remedial performance support, • collaborative focus for team mentoring programs.
Level 4: e-Learning Tightly Coupled with Action Projects	Online materials support action projects that have been mandated to deliver demonstrable value through individual or team project applications that provide the key focus for learning. Online materials are used to: • drive a practical "ROL" (return on learning) approach into practice as a key strategic imperative, • provide just-in-time support for action projects where learning is directly geared to creating positive outcomes - through demonstrable project results and improved personal/team development and work performance as the primary objective, rather than as an ancillary or supplementary spin off.

Note. Based on: Adams, J. (2004). *"Second generation" e-learning: An action-based exploration of design and implementation.* Unpublished doctoral dissertation, York University, Toronto.

Definition of Blended Learning

Since research in blended learning is still in its infancy, it is not surprising to find that there is not a uniform definition that all researchers have adopted (Graham, 2006; Procter, 2003). With the continuing advancement of digital technology, blended learning continues to develop along new dimensions merging the best features of conventional face-to-face instruction and online learning (Graham, 2006), making it even more difficult to agree on a single definitive statement. Thorne (2003) defined blended learning as "a way of meeting the challenges of tailoring learning and development to the needs of individuals by integrating the innovative and technological advances offered by online learning with the interaction and participation offered in the best traditional learning" (p. 184). Another commonly used definition of blended learning is a combination of face-to-face instruction combined with computer-mediated instruction to facilitate interactive and reflective higher-order learning (Graham, 2006).

Blended learning is generally agreed to involve a mixture of instructional modalities, delivery media, instructional methods, and web-based technologies (Graham, 2006). Blends of instructional modalities usually entail a balanced mixture of onsite, web-based, and self-paced learning (Martyn, 2003; Picciano, 2006). To make blended learning more powerful, educators can blend various media delivery types, for instance, classroom training, seminars, web-based courses, CD-ROMs, video, computer simulations, books, study guides, the Internet, PowerPoint slides, etc (Bersin, 2003). In most cases, blended learning is designed with the use of synchronous and asynchronous web-based technologies, such as chat rooms, wikis, threaded discussions, virtual classrooms, instant messaging, conferencing tools, bulletin boards, computer conferencing, blogs, etc (Graham, 2006). Some researchers believe that incorporation of new pedagogies, learning theories, and instructional methods transform conceptual models of teaching and learning in blended learning environments (Carman, 2005). The choice of a blend is usually determined by several factors: the nature of the course content and instructional goals, student characteristics and learning preferences, instructor experience and teaching style, online resources and others (Dziuban, Hartman, Moskal, 2005).

A model developed by Bonk and Graham (2005) overviews three levels of blended learning as: combining the delivery media; combining the instructional methods; and combining on-line and face-to-face instruction. Levels One and Two are broad and generally already

practiced in most instances by using multiple delivery media and methods of instruction. Combining on-line and face-to-face instruction (Level Three) emphasizes the importance of computer-based technological advancement and use. It incorporates the need for Level One and Two as well, offering a variety of media and methods both face-to-face and on-line in order to meet the needs of different learners. As technology advances with on-line communities, video conferences and virtual spaces, on-line learning is becoming more instant, in real-time and rich in interaction and sensory. Bonk and Graham (2005) also identify three categories of blended learning systems: enabling (access and convenience), enhancing (using technology to add value), and transforming (change to course design, learn through interactions and activities). Mary Simpson (2008) notes four key factors of blended learning are collaboration, interaction, personalization and media-richness. These are seen as necessary to engage students and create valuable learning experiences.

For the purposes of the current study, blended learning can be viewed as *a combination of various instructional modalities combined with synchronous and/or asynchronous web-technologies to facilitate interactive and reflective individual and collective learning.* The blend may include face-to-face interaction as well as live tele- and/or video-conference interpersonal communication. This definition is purposely broad to offer maximum flexibility for innovating and developing the full potential of the blended learning concept.

In summary, it needs to be stressed that blended learning is not just a mixture of strategies and technologies, but a holistic didactical method that combines “the effectiveness and socialization opportunities of the classroom with the technologically enhanced active learning possibilities of the online environment, rather than ratio of delivery modalities” (Dziuban, Hartman, Moskal, 2004).

Blended Learning Educational Design Principles

Four main principles of educational design for blended learning are identified in the literature: (a) thoughtful integration of face-to-face and fully online instructional components; (b) innovative use of technology; (c) re-conceptualization of the learning paradigm; and (d) sustained assessment and evaluation of blended learning. The first principle is intended to maximize the advantages of both environments and better address diverse students’ needs and preferences (Carman, 2005; Martyn, 2003). The innovative use of technology means that any

technology should be applied in a pedagogically appropriate way and used for creating and maintaining socially situated and highly interactive learning (Vaughan, 2007). A re-conceptualization of the learning paradigm entails the incorporation of new pedagogies and learning theories (e.g., student-centered, social constructivism), the development of new understanding and knowledge through social interactions with a community of peers, and new roles of learners (e.g., active author of content, self-paced learner) and teachers (e.g., mentors, coaches) (Dziuban, Hartman, & Moskal, 2004). The fourth principle of sustained assessment and evaluation of blended learning solutions is aimed at ensuring the quality of education (Graham, 2006).

Benefits of Blended Learning

The landscape of employee training and development is a rapidly evolving field. Recent approaches incorporate technology and remote accessibility along with traditional classroom instruction. This evolution has at least two advantages – cost effectiveness and learner value. This blended learning approach is a strategy that has the potential to garner success in terms of learner value and return on training investment. Nagura and Arakawa (2003) found that when the topics included in training matched the needs of the learners and participants who were engaged, they were more likely to report that they had met their goals. Most learners had a positive view of blended learning, feeling that in-class time was more effective with the prior knowledge gained as part of the blended strategy used. More support was found for blended learning during an in-depth evaluation of IBM's blended training model for managers called Basic Blue, a process of manager training for leadership and people skills. The training program as a whole was evaluated based on its effect on leadership, effectiveness of e-learning, business results, and cost avoidance using Kirkpatrick's (1979, 1998) training evaluation model. Surveys, interviews, self-assessments, alumni behaviour assessments, productivity, team morale, and return on investment (ROI) data found some key results. These include "unequivocal enthusiasm for implementation of both the on-line and classroom components of the program" (Bonk & Graham, 2005, p. 68). Further, 96 percent of 6600 participants to date achieved mastery in all subject areas, while five times the content was being covered compared to the previous classroom program. Behaviour change was found in managers in terms of self-efficacy and leadership, and initiating systemic change. In terms of return on training investment, an estimate

delivery was found of 17:1 between blended and classroom instruction, and managers estimated department improvement change to the tune of an average $415,000 (ROI = 47:1). Blended learning has been compared to an online only approach by Dziuban, Hartman, and Moskal (2004) at the University of Central Florida. This study found that blended learning garnered higher levels of student and faculty satisfaction, lower attrition, and higher student learning as compared to online only courses.

From the literature, it seems clear that blended learning is an approach that satisfies the needs of students and faculty, as well as logistical and budgetary concerns. Other potential benefits of blended learning include pedagogical richness (i.e., shifting from a presentational format to active learning); greater access to personalized learning, to resources and experts; greater flexibility and personal agency; greater accommodation for learners and teachers of diverse backgrounds; increased interaction and sense of community; and increased cost-effectiveness (e.g., reduced seat time, decreased costs) (Albrecht, 2006; Dziuban, Hartman, & Moskal, 2004; Moore, 2004; Owston, Wideman, & Murphy, 2008; Picciano, 2006; Vaughan, 2007). However, many organizations face challenges in transforming their instruction into a blended learning format. For example, four main barriers to implementation of blended learning options include: administrative challenges (e.g., lack of awareness, policies, plans, goals, support related to blended learning), re-designing courses and/or programs, faculty preparedness, and quality assurance (Cook, Owston, & Garrison, 2004; Dziuban, Hartman, & Moskal, 2004).

Learning Styles and Blended Learning

Another issue that is of interest when implementing blended learning is how successful the approach will be across varying individual characteristics or differences, such as learning styles. In one study, Akkoyunlu and Soylu (2008) investigated differences between two learning styles – divergers and assimilators – that emerged during their study. According to this study, assimilators (e.g., who focus on logic, ideas and concepts; are good at systematic planning; prefer to work alone; and prefer to learn by thinking and watching) reported significantly more positive views on blended learning and participated more than divergers in the online forum. While views on blended learning differed, the two groups showed no significant difference in actual achievement in the blended learning course. In terms of auditory, visual, and kinesthetic

model for learning styles, there is little information on the possible interconnection between learning styles and blended learning approaches.

Barriers and Motivators for Blended Learning

A large amount of literature has examined students' perceptions, concerns and motivation for the use of technology employed in online learning programs, as well as their attitudes towards the use of differing web-based learning activities with face-to-face interaction (Dobbs, 2005; Liu, Theodore, & Lavelle, 2004; Lupshenyuk, Hocutt, & Gibbs, 2007). While the impact of challenges and benefits of e-learning on students in the postsecondary context is well established (Berge, 1998; Panda & Mishra, 2007), there are relatively few studies on workplace learners' perceived barriers and possible motivators for blended learning in a corporate setting (Vaughan & MacVicar, 2004).

Several studies related to student perceptions towards e-learning identified most predominant barriers to e-learning as: technical barriers (e.g., Internet access, use of technology, setup problems, inadequate technical support), organizational barriers (e.g., insufficient feedback, ill-designed activities), social barriers (e.g., feeling of being isolated, interaction with others), lack of prerequisite skills (e.g., research and information processing skills), and time management barriers (Berge, 1998; Fung, 2004; Muilenberg & Berge, 2005). A few studies identified the two most important motivators for e-learning – content relevance to work and the utilization of easy-to-use technologies (Vaughan & MacVicar, 2004).

Conclusion

The term blended learning is being defined in this report as a combination of various instructional modalities combined with synchronous and/or asynchronous web-technologies to facilitate interactive and reflective individual and collective learning. This definition is purposely broad to offer maximum flexibility for innovating and developing the full potential of the blended learning concept.

As is the case in any new and emerging field of research, there are a number of interesting opportunities for exploration. For this blended learning research project, the design enabled the comparison of different strategies and the determination of which strategy yielded optimal results or change in organizational and interpersonal performance. Specifically, the study

compared the effects of different blended strategies on the development of soft-skills and job performance as a measure of return on learning (ROL). As well, the research project investigated the relationships of learning styles to the different blended learning approaches in workplace contexts. Further, it offered a way to develop a deeper understanding of barriers and motivators for learning by determining whether those identified by participants varied with blended learning strategies and/or learning styles. That is, barriers and motivators for workplace learning and learning styles were explored in light of research group assignment as well as in relationship to each other.

METHODOLOGY

The research was a multi-method, two time-point, repeated measures quasi-experimental design that investigated differences in learning outcomes where participants were assigned to four unique blended learning groups. Each research group participated in a course of study that was offered at the same time, employing different blended learning strategies. Further, the research examined the effect of group on changes in soft-skills. Quasi-experimental methodology was employed to determine if learning styles interacted with group allocation to affect learning outcomes or changes in skills. Demographic and other descriptive information, such as Scotiabank business line, was assessed where appropriate, and follow-up qualitative measures were examined in light of research group allocation.

The four-level blended learning theoretical model (presented in Table 1) was used as the framework for the four different blended learning strategies where Research Group 1 equated to Level 1 learning design (i.e. e-learning used as a background resource), and so on. As well, the four-level framework was used as the platform for testing the following three hypotheses / propositions:

- Hypothesis / Proposition #1: The tighter and more well-defined the links between learning and the job (i.e. moving from blended learning strategy level 1 to 4), the more likely participants are to report demonstrable impacts/positive outcomes on job performance. Specifically, we expected that the benefit-cost ratio would get progressively higher moving from Research Group 1 through to Research Group 4, and that soft-skills development would also improve more for those in Research

Group 4 in relation to the other groups.

- Hypothesis / Proposition #2: The tighter and more well-defined the links between learning and the job (i.e. moving from blended learning strategy level 1 to 4), the more likely participants are to report learning motivators rather than barriers to learning. We expected to find that learning tightly linked to the job as action-projects (Level 4) would create a highly motivational context for learning.
- Hypothesis / Proposition #3: The closer the match between individual learning styles and the blended strategy employed, the more likely participants are to report positive learning outcomes and impact on personal skill development. For example, we expected that those favouring an auditory learning style would have a better experience in Research Group 2 where a face-to-face classroom-based component was included. Similarly it was expected that those favouring a kinesthetic learning style would perform better in Research Group 4 that included a project-based component.

An overarching action-learning research methodology (Morgan, 1997; Morgan and Ramirez, 1984; Morgan and Smircich, 1980; Pedler, 1983; Revans, 1982) was also used to embed a continuous learning philosophy throughout the study. Action learning is closely related to "action research" methodology (Argyris and Schon, 1978; Eden and Huxham, 1996; Lewin, 1947; Susman and Evered, 1978; Whyte, 1991) which is generally accepted to involve planning, acting, observing, and reflecting (Kurt Lewin's model) in a "continuous and iterative process" involving "research and development, intellectual inquiry and practical improvement, reflection and action" (Altrichter, Kemmis, McTaggart, Zuber-Skerritt, 2002, p. 131). One of the key aspects of the way this methodology was used in this research was the ability to challenge the findings as they emerged and explore the surprises/exceptions to gain as many different perspectives about blended learning as possible. This embedded the essence of Karl Popper's (1958) refutational approach to scientific method and critical thinking into this study emphasizing the importance of continuous discovery and improvement. For example, when we discovered that barriers and motivators for learning seemed different in our project than those found in the literature, we were able to explore this further by implementing a similar survey in an educational context *during* the project to see if it was a workplace context-specific finding. Action-learning research is particularly useful in research involving academics and practicing

managers, as was the case here, because it has the potential to yield both new practical and theoretical knowledge benefiting everyone involved.

In summary, not only was the four-level blended learning model tested, it was also iterated to provide additional research value in moving from a theoretical framework to a working blended learning model in a live workplace context.

Participants

Recruitment

The research study was widely supported by securing agreement and support from the heads of training, Human Resources (HR) vice-presidents and sponsorship from the Executive Vice President HR. Coaches, mentors, and instructors were also invited to provide their ideas and feedback on the topic selection and research parameters. An email about the research study was sent by senior executives of the Bank (see Appendix B) to seven hundred and ninety-two employees who were either scheduled for a Scotiabank management development course during the period of the research study or who had completed such a course during the previous twelve months. A follow-up email was sent by the Principal Researcher independent of Scotiabank to two hundred and ten people who agreed to participate in the research welcoming them to the study. They were also asked to complete online surveys on learning styles, barriers and motivators for learning, and the Scotiabank soft-skills survey. It is important to note that no one at Scotiabank knew the names of those who had agreed to participate in the research. Confidentiality was maintained throughout the research to protect the ethical integrity of the work (see Appendix A).

Participant Characteristics

The largest number (32%) of participants were located in Ontario, 28% were from Alberta, 21% from British Columbia, 12% International, and about 5% from Eastern Canada, the United States, Saskatchewan, and Quebec. The majority (91%) of participants had been with Scotiabank for more than five years, 4% at Scotiabank for three to five years, and 4% between one and three years. Most participants' business line (62%) dealt with Domestic Banking, about 10% of participants were in International Banking, and about 9% - in Shared Services. The remainder of business lines had fewer than 5% representation in this study, ranging from 4% in

Wealth Management to 1% in Global Risk Management. All participants were in mid-level management positions (i.e. job levels six to eight). Most of the participants (58%) were level seven or eight, while less than 10% were level nine, and less than 10% were below level six. All participants completed a learning style survey indicating that most people were either auditory learners (37%) or kinesthetic learners (35%), while 15% were visual learners and 13% had multiple learning styles. Based on previous online learning experience prior to the present research project, participants did not identify any major barriers to learning. They scored "relevant content" and "good fit with personal learning style" as the top two major motivators (see Appendix G for more details). Demographic data gathered at the end of the research project for those who responded to the final survey indicated 1.5 percent of participants were Generation Y (under 30 years); 56 percent were Generation X (30 to 45 years); and 43.5 percent were Baby Boomers (over 45 years).

Assignment of Participants to Research Groups

Two hundred employees completed the required pretest surveys and were assigned to one of the four research groups where the same online materials were offered using four different blended learning strategies. Forty-eight respondents who were registered in one of several Scotiabank classroom-based management development courses during the period of the research study were assigned to Research Group 2, which was specifically designed with an in-class element (Level 2 in the four-level model being tested). The remainder of the participants were randomly assigned to Research Groups 1, 3, and 4. Fewer participants were assigned to Research Group 1 (Level 1 in the four-level model) because it served somewhat as a control group and previous research had established that the other three designs were more likely to have greater impacts on job performance. The research team agreed that these issues of sample size imbalance were thus overridden by ethical considerations. Randomly, thirty two participants were assigned to Research Group 1 (where e-learning was primarily a background resource), forty eight participants were assigned to Research Group 2 (where e-learning was used to support an existing classroom-based course offered by Scotiabank during the research period), sixty participants were assigned to Research Group 3 (where e-learning was tightly linked to personal development supported with collaboration), and sixty participants were randomly assigned to Research Group 4 (where e-learning was tightly coupled with personal projects).

Participants were asked to spend twenty minutes per week on the research project, a total of two hours over the six-week project period. Those who completed the end results survey self-reported the total time spent as: 34% of participants spent less than one hour; 44% spent between one and three hours; 15% between three and six hours; 1.5% spent between six and ten hours; and the remaining 5.5% spent more than ten hours in total.

Measures

Demographic Information

In the pretest demographic survey (see Appendix C), participants reported their business line, number of years at Scotiabank, location, business level (i.e., management, executive, etc) and, if applicable, the Scotiabank course they would be taking during the research period.

Scotiabank Soft-Skills

At pre- and posttest time points, participants completed a skills inventory survey designed by Scotiabank rated on a six-point measure with response options ranging from 6 (*always*) to 0 (*never*) and including a "no opportunity" option. Indicators included measures related to *coaching* (i.e., When I speak with someone who has made a mistake, I make sure they know that I'm criticizing an action, not them personally), *communication* (i.e., I adapt my presentation or discussion to suit and appeal to the Research Group I am addressing), *team leadership* (i.e., I plan meetings thoroughly, considering my objectives and the requirements of each participant), *flexibility* (i.e., I support changes that mean better ways of thinking or doing things), *customer focus* (i.e., I respond promptly to the needs of customers), and *relationship building* (i.e., I am friendly and co-operative with people), among other soft-skill constructs.

Learning Styles/Preferences

Participants completed a learning style/preference survey (see Appendix D) recommended by Scotiabank that determined whether respondents were more likely to be visual, auditory, or kinesthetic learners. Response options ranged from 1 (*strongly disagree*) to 5 (*strongly agree*) and included such questions as "I prefer to see information written on a chalkboard and supplemented by visual aids and assigned readings," "I can tell if sounds match when presented with pairs of sounds," and "I enjoy working with my hands or making things." Mean scores were computed and the learning style with the highest mean score was denoted for

each participant as their predominant learning style. Many respondents revealed a "tie" mean score and thus a fourth category – "multiple style" – was assigned to those respondents. Split-half procedure was employed with the learning style/preference survey and thus half was administered at pretest, half – at posttest.

Barriers and Motivators

At pre- and posttest time points, participants completed Barriers and Motivators for Learning online questionnaire that had been developed by the research team (see Appendix E). It included dimensions that were identified in a literature review as well as other dimensions that members of the research team had discovered in independent research. Participants were asked to rate specific barriers and motivators for learning on a three-point scale (i.e. no barrier/no motivator; minor barrier/minor motivator; major barrier/major motivator) and invited to add more details in open-ended questions if they wished. A short questionnaire was also administered at the mid-point asking participants in each of the four separate research groups about the motivating aspects, problems or issues making it difficult to learn, and recommendations for improvement.

Follow-up measures

At the end of the project, participants completed End Results and Feedback survey (see Appendix F) that indicated "return on learning" measures (i.e., benefit-cost analysis), personal feedback on various aspects of the project (i.e., ideal learning model), information regarding a follow-up project (i.e., whether or not they would like to be involved), and other basic "next steps" information about ways to create even tighter links between work and learning (i.e., financial rewards for learning outcomes, use of learning contracts, performance mandate from immediate manager or upper executive team). Benefit-cost analysis referred to as "return on learning" (ROL) was the focal question in this survey as participants came with personal situations (i.e., a workplace problem being faced or specific project being undertaken) in mind. This situation, along with the skill assessment results, provided the focus for self-directed study. It also provided the base-point for reporting specific gains made at the end of the program. Participants were encouraged to quantify the subjective and objective gains made related to the learning program to the degree possible at the end of the program. Costs and benefits attributed to the program were used as the basis for determining ROL and cost-benefit ratios as a point of

comparison for the four blended learning strategies being tested.

Data Analysis Procedures

Data were gathered using the York University online survey software which caches data in excel format. Each survey was merged by participant codename and the final dataset was analyzed using either the Statistical Package for Social Sciences 16.0 (SPSS) or MPlus V5 (Muthén & Muthén, 2007). Frequency and descriptive data were collected to describe demographics of participants. To determine change over time, multivariate or univariate analysis of covariance, using the pretest score as a covariate was generally employed, using SPSS. To determine whether Scotiabank soft-skill measure latent variables were well indicated by their associated variables, MPlus was employed to conduct confirmatory factor analyses. Correlations and *F*-tests were used where appropriate to determine relationships and differences between groups, respectively. Each analysis used in this project will be further explained in the Research Findings section of this report with a brief description of the procedure(s) used to determine the results being reported.

TECHNOLOGY

A lot of attention was given to the selection of technologies used to support the blended learning strategies in this research project. Our original preference for using technologies familiar to Scotiabank employees proved to be a challenge for two reasons. Firstly, the diverse nature of the participant sample meant that employees in different corporate departments used different technologies. Secondly, our guarantee for participant confidentiality limited our ability to use many of the internal Scotiabank technology resources which resided on corporate databases since they were monitored by the bank. As a result, the research team agreed to support the blended learning project using a variety of technologies that were maintained and monitored independently of Scotiabank.

Although the research team had some initial concerns about introducing so many new technologies in such a confined period without doing any formal training, there were very few problems. This speaks highly of the willingness of Scotiabank participants to adapt to new situations, as well as the user-friendly quality of the technology interfaces we selected. As a

result, all of the technology resources selected were seamlessly integrated in the blended learning project with minimal technological disruptions and issues identified (i.e. other than a few requests to reset passwords) as will be further discussed in the Research Findings section of this report.

Content Resources

NewMindsets™ "Second Generation" e-Learning Content

As mentioned in the Literature Review section, the use of web-based content designed to put learners firmly in control of their own learning is ideal for soft-skills development. The other benefit of using this type of e-learning system is that it can support short spurts of learning. That became a critical factor in this research project because daily work commitments were the priority and the research project needed to be fit in around heavy managerial workloads. Consequently, the 20-minute rule was adopted where participants were asked to simply find twenty minutes per week over a 6 week period to devote to the research project (i.e., two hours in total). This included both the online learning and online collaboration aspects, as well as completing survey feedback. NewMindsets™ online content has been designed as a just-in-time performance support; therefore it was ideal for supporting this research project.

The NewMindsets™ team graciously created a research website for the exclusive use of Scotiabank employees – the use of which was extended until the end of 2008 at participant request. Figure 1 is a screen grab of the home page giving learners the option to study one of three recommended topics: Coaching, Crucial Conversations, and Transition to People Management. Each of these topics offered a selection of six or seven e-learning resources that could be studied in any order the learner so wished. See Figure 2 for the guidelines and recommended learning resources selected for the Coaching module.

This NewMindsets™ content base was used by all of the research participants. System usage reports indicated that 153 research participants logged on the NewMindsets™ site a total of 514 times for about of 35 to 40 minutes of online use per logon cumulating in a total of 2.5 hours of online learning per participant during the research period. Comparison of usage between groups will be provided in the Research Findings section.

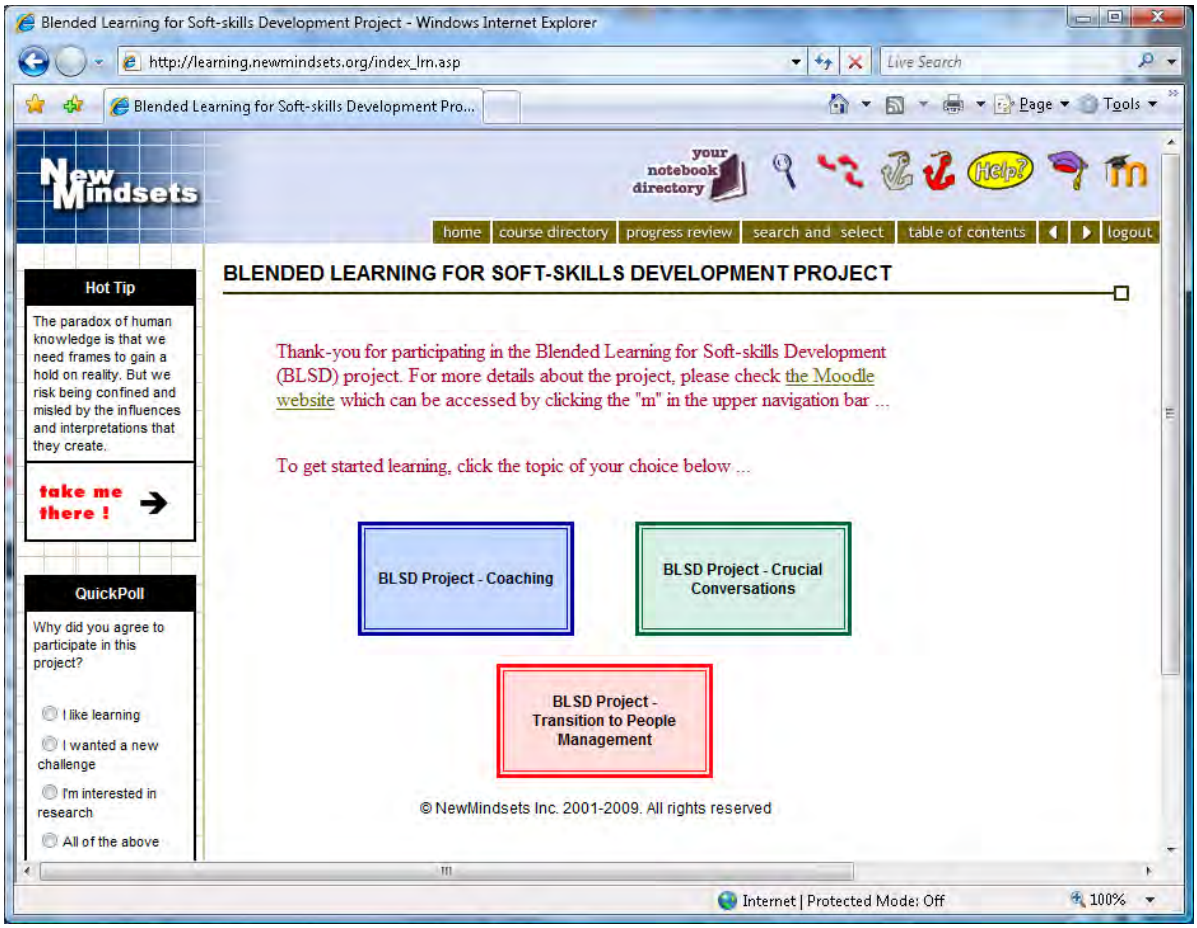

Figure 1. NewMindsets™ Home Page.

Retrieved April 25, 2009, from http://learning.newmindsets.org/. Copyright 2001-2009 by NewMindsets, Inc. Screenshot was taken with permission of the author.

Scotiabank Classroom Courses

Since Level 2 of the four-level model being tested in this research included a classroom course, the researchers worked closely with Scotiabank to select course topics that were being offered during the research period. Those selected were: Coaching, Crucial Conversations and Transition to People Management. The NewMindsets™ online component of the project, as discussed above, was configured to support the relevant Scotiabank topics of study.

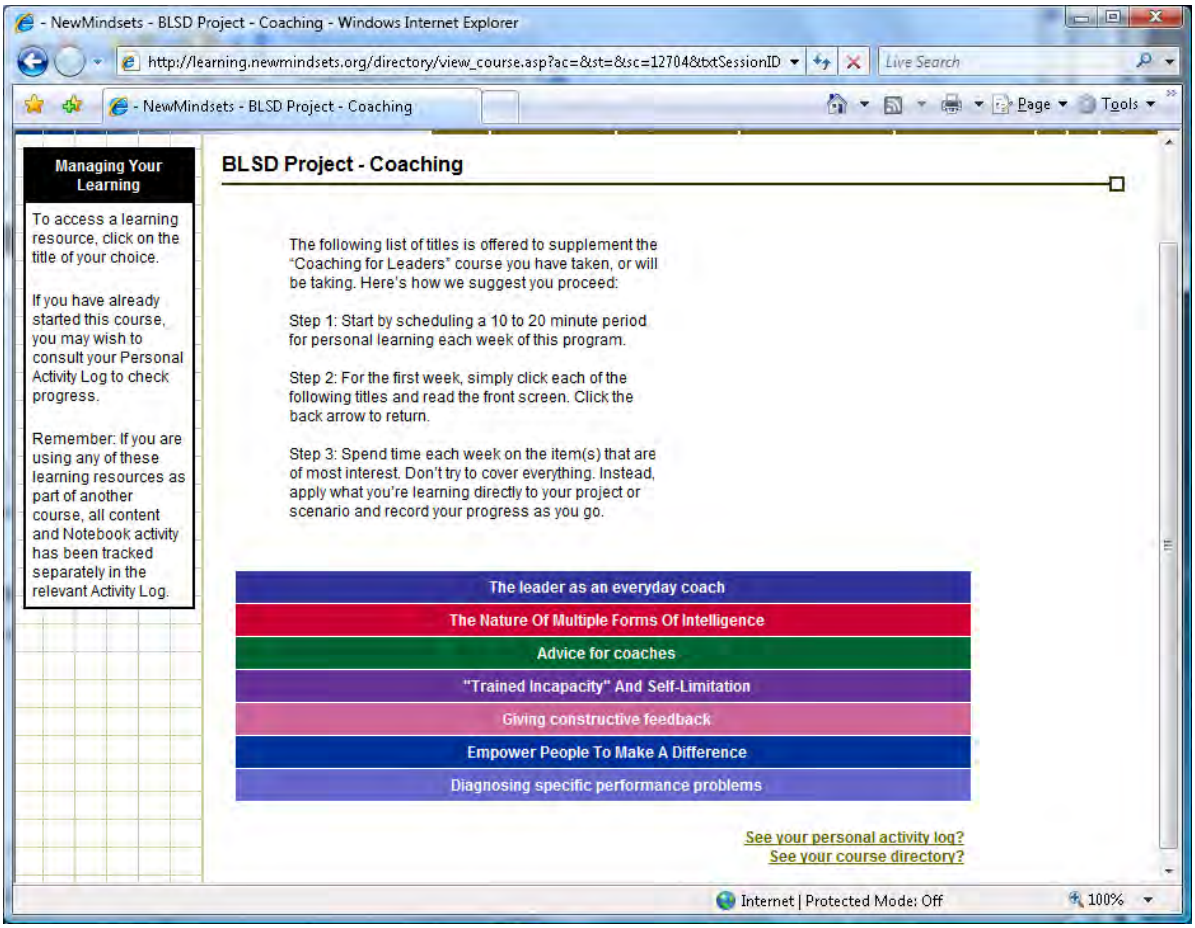

Figure 2. NewMindsets™ Resources for the Coaching Module.

Retrieved April 25, 2009, from http://learning.newmindsets.org/. Copyright 2001-2009 by NewMindsets, Inc. Screenshot was taken with permission of the author.

Communication Technology

A communication strategy was designed to make contact as easy as possible. For general information about the administrative aspects of the research involving all and/or some of the participants, various email lists were used. A return email and phone contact information for the principal researcher was always included. To provide anonymity and protect confidentiality, participant email addresses were entered in the BCC (Blind Carbon Copy) field. As well, those interested could contact York University's Institute for Research on Learning Technologies (IRLT) by phone or email throughout the research period. A public research site (see Figure 3) was also hosted by IRLT where regular updates on the project were posted.

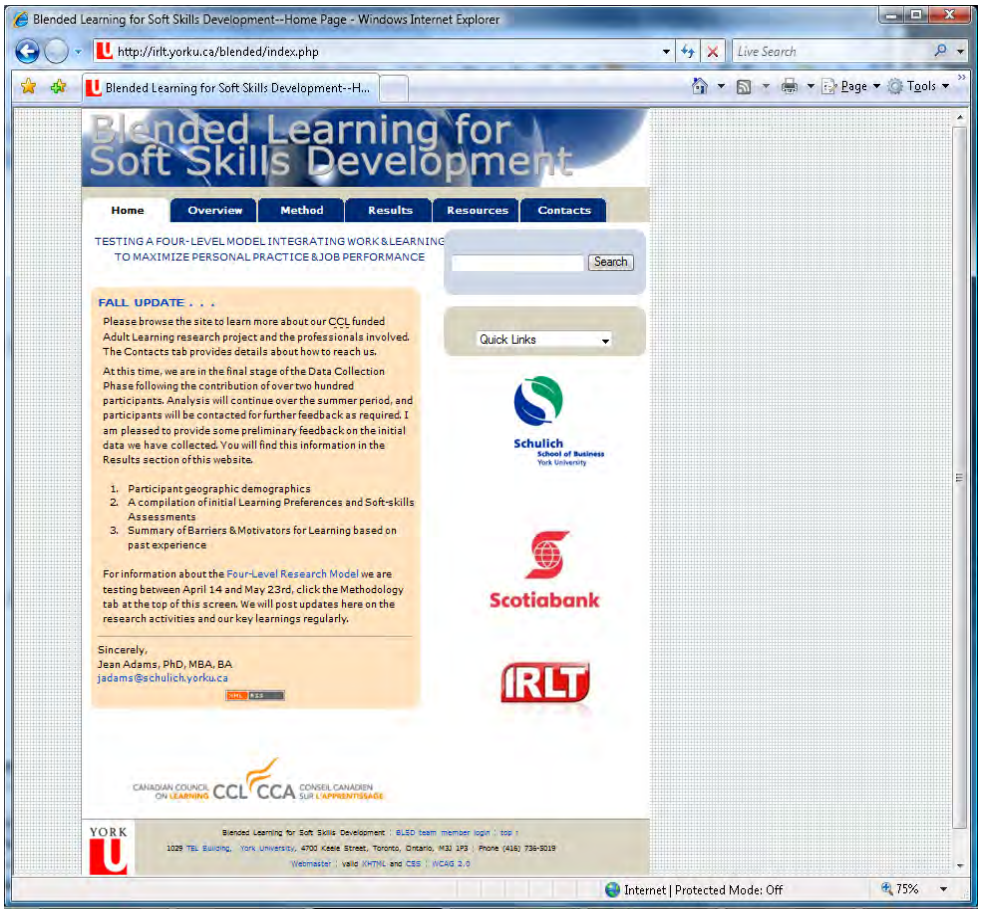

Figure 3. Home Page of the Public Research Site Hosted by IRLT, York University.

Retrieved May 05, 2009, from http://irlt.yorku.ca/blended/index.php

Research participants were directed to the public research site at the end of each of the online surveys through a direct link. This was an ideal way to share regular updates with those interested. There were on average about 12,000 visits to the site each month during the research project, this an increase of about 30% in comparison to the activity on this site prior to the blended learning research project.

For details about the specific learning activities involved in each of the four blended learning course offerings, Moodle (i.e., an open-source learning management system) was provided and supported by York University for the research period (see Figure 4).

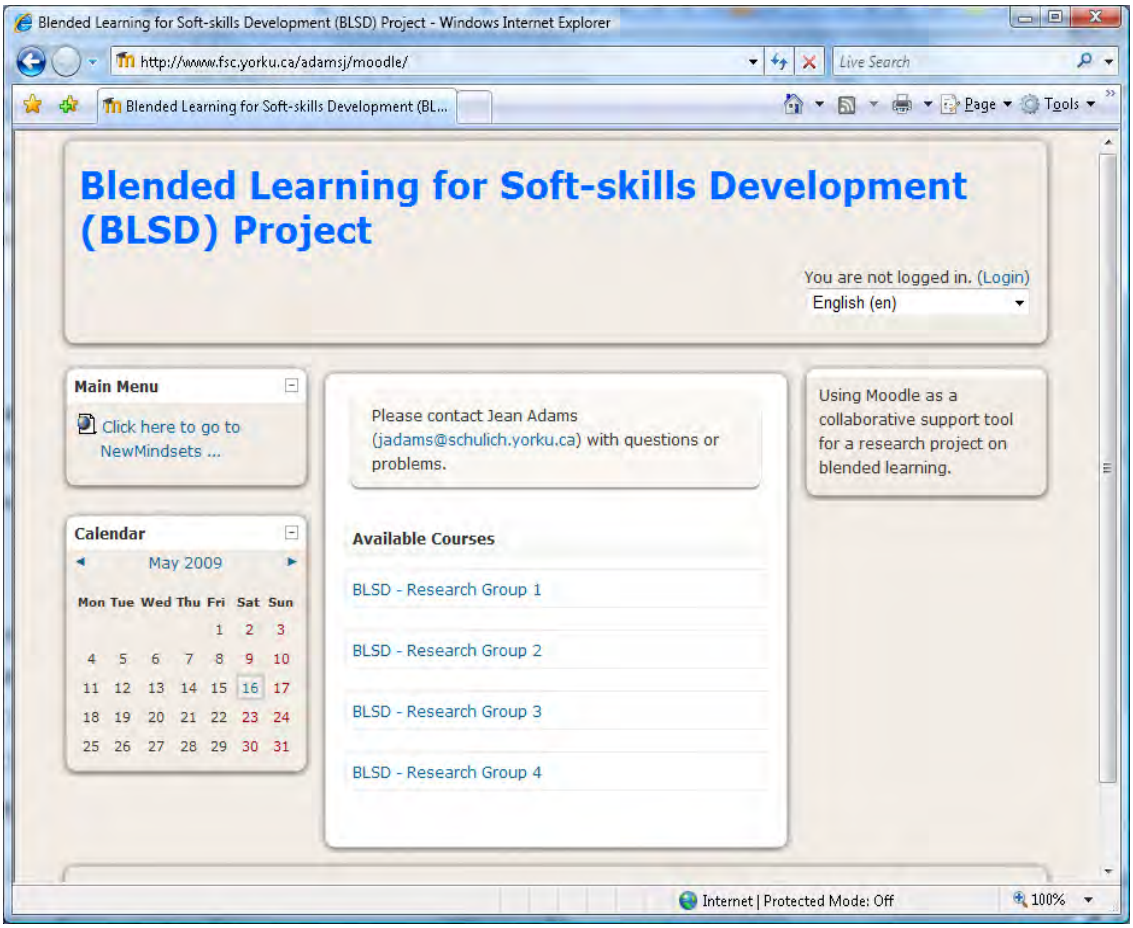

Figure 4. Moodle Home Page.

Retrieved May 05, 2009, from http://fsc.yorku.ca/adamsj/moodle/

Participants were given access to the appropriate section of the site (i.e. Research Group 1, 2, 3, or 4) that featured specific instructions and advice relevant for the blended learning research group to which they had been assigned (see Figure 5). For a complete summary of the topic headings for each research group across the Moodle sites (see Table 2). All of the blended learning research groups were provided with access to similar, yet distinct, online tools and discussion forums. In other words, all participants had similar opportunities for online discussions, with any of their own research group members who opted to participate. In Research Groups 1 and 2, these collaborative activities were completely optional, whereas in Research Groups 3 and 4 they were integrated as formal learning activities. All groups were sent periodic reminder emails throughout the research project about the formal learning activities. Some

groups (e.g., Research Groups 3 and 4) received more email reminders because there were more formal learning activities scheduled.

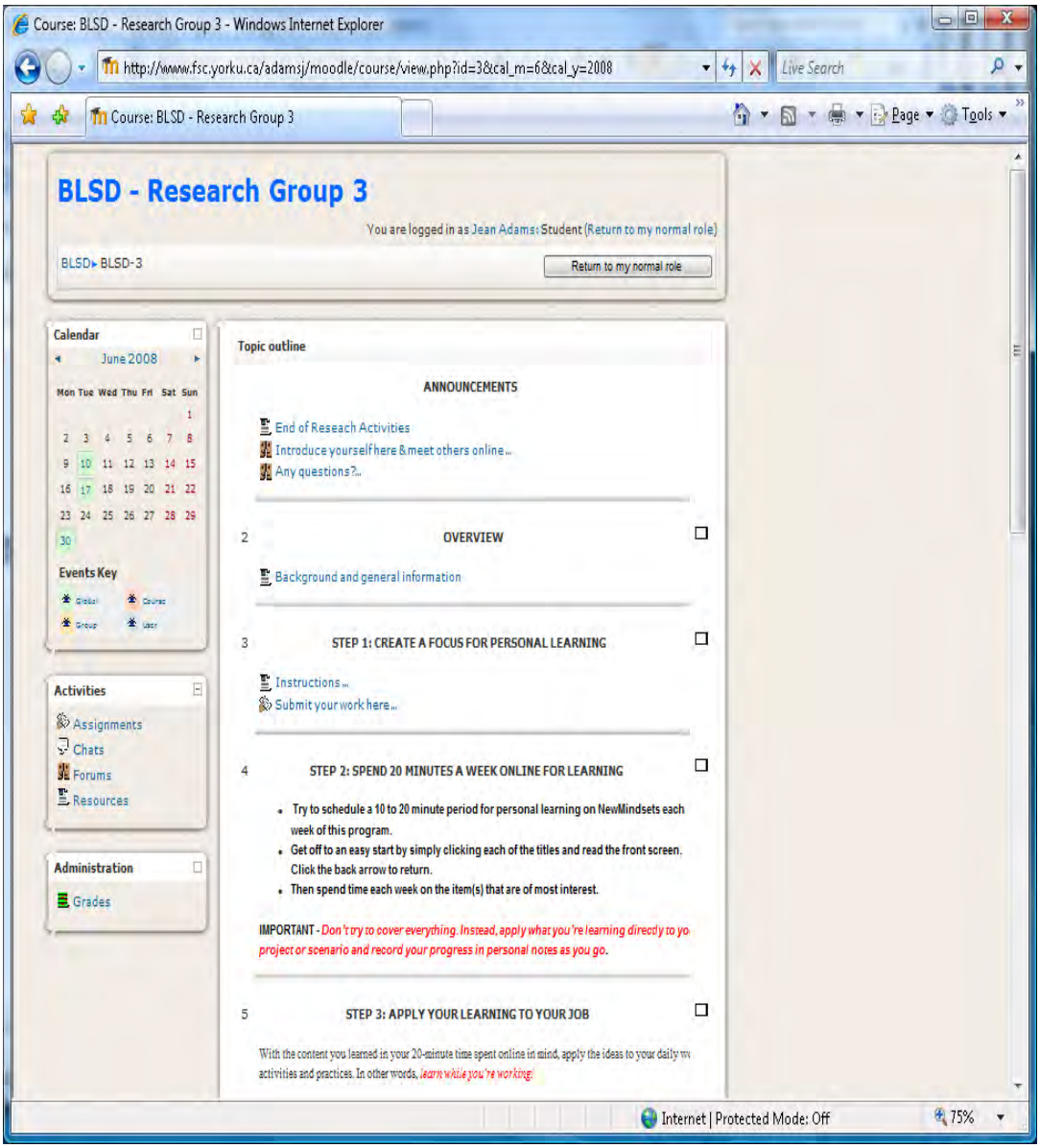

Figure 5. Moodle Home Page for Participants in Research Group 3.

Retrieved May 05, 2009, from http://fsc.yorku.ca/adamsj/moodle/

Table 2 Topic Headings Posted on Moodle for Each Research Group

BLSD – Group 1	**BLSD – Group 2**	**BLSD – Group 3**	**BLSD – Group 4**
Announcements			
Overview - Customized for each Research Group			
Step 1: Create a focus for personal learning	Step 1: Create a focus for personal learning	Step 1: Create a focus for personal learning	Step 1: Identify a "stretch" project for personal learning
	Step 2: Complete this assignment before your attending Scotiabank Course		
Step 2: Spend 20 minutes a week online for learning	Step 3: Spend 20 minutes a week online for learning	Step 2: Spend 20 minutes a week online for learning	Step 2: Spend 20 minutes a week online for learning
Step 3: Apply your learning to your job	Step 4: Apply your learning to your job	Step 3: Apply your learning to your job	Step 3: Apply your learning to your job
		Step 4: participate in the collaborative activities for your group	Step 4: participate in the collaborative activities for your project team
	Step 5: Complete this assignment after attending your Scotiabank course		
Step 4: Assess your learning outcomes & personal progress	Step 6: Assess your learning outcomes & personal progress	Step 5: Assess your learning outcomes & personal progress	Step 5: Assess your learning outcomes & personal progress
NewMindsets™ Resources (links to online content provided here)			
	BLSD - Coaching for leaders	BLSD - Crucial Conversations	BLSD - Transition to People Management
Content Titles	• The leader as an everyday coach • The nature of multiple forms of intelligence • Advice for coaches • Trained incapacity and self-limitation • Giving constructive feedback • Empowerment • Diagnosing performance problems	• Dialogue and collective learning • Two-way listening • Promote quality and continuous learning as core values • Dealing with emotionally charged situations • Defensive routines • Picking your battles • The role of "space" in effective communication	• Cultivating trust • Use multiple views to improve decision making • Overcoming your own barriers to delegating • Create stretch benchmarks • Thinking win-win • Unlearn to create room for new development • Understanding the ripple effects of words and actions

Data Gathering Technology

York University provided access to an online survey tool that enabled researchers to create, administer and analyze survey data. For this project, the research team used a total of fourteen surveys to gather data throughout the research period. Most took an average of ten minutes or less to complete. Access to surveys and the associated results were password protected ensuring confidentiality.

RESEARCH FINDINGS

In general, the research findings reinforce the importance of implementing workplace learning programs that are tightly integrated with workplace practice. The findings also shed light on the different impacts associated with different blended learning strategies, as well as some insights on barriers and motivators for learning in a workplace context. And lastly, the study offers insights linking learning styles/preferences to blended learning strategies and subsequent outcomes. Specific findings are presented in terms of the three hypotheses / propositions that were explored in the methodology section of this report, an exploration of possible inter-relationships between the three major factors studied (demonstrable learning impacts/outcomes, barriers and motivators for learning, and learning styles), and a comparison of sub-group demographics of participants who completed the final research surveys versus those who did not.

Demonstrable Learning Impacts/Outcomes on Job Performance

Hypothesis/Proposition #1: The tighter and more well-defined the links between learning and the job (i.e. moving from blended learning strategy level 1 to 4), the more likely participants are to report demonstrable impacts/positive outcomes on job performance.

Demonstrable learning impacts/outcomes on job performance were assessed in the following two ways: benefit-cost assessment of the return on learning which measured the tangible and intangible benefits derived from the blended learning study versus the perceived costs to the company; change in the soft-skills self-assessment scores indicating how the blended learning approach taken impacted personal performance. Each is detailed below.

Benefit-Cost Analysis as Return on Learning

Return on learning was defined as a "way to report the new value created and benefits derived from learning, versus the costs of participating." Sixty-two participants responded to this question in the end of program survey. Their responses, proportionately for all participants and sub-groups, are presented in Table 3 and Figure 6 below which is preceded by a brief description

- *Research Group 1 (RG1):* This blended learning strategy used online learning materials as a background resource for self-directed learning - defined as a *very loose* coupling of personal learning with job performance in relation to the other blended learning strategies.
- *Research Group 2 (RG2):* Online materials were integrated as pre-and post work for a structured classroom course in this blended learning strategy.
- *Research Group 3 (RG3):* Online learning materials were integrated with personal learning objectives and blended with collaborative discussion forums and peer coaching.
- *Research Group 4 (RG4):* Online learning materials were used to support action learning projects where a demonstrable return on learning (ROL) was expected - defined in this research as a *very tight* coupling of personal learning with job performance in relation to the other blended learning strategies.

Table 3 Return on Learning (ROL) Comparison by Research Groups

ROL Descriptors	Percentage of Participants				
	All	RG1	RG2	RG3	RG4
I created *a lot more new value* for myself and the company than the costs invested!	37%	8%	69%	33%	36%
The new value created is *slightly* more than the costs	18%	33%	15%	8%	0%
I broke even – the costs and benefits were about the same	19%	33%	8%	21%	9%
The costs *slightly* outweighed the benefits to me and the company	17%	8%	8%	12%	45%
The costs *greatly* exceeded the benefits for me and the company	15%	17%	0%	25%	9%

For comparison purposes the five categories for return on learning were collapsed into three categories: “costs outweigh value,” “costs and value were equal,” and “value outweighs cost.” Chi-square analyses were conducted to determine whether the groups differed in the number of participants who responded to each of these categories. Results indicated that the differences in frequencies approached significance (χ^2 = 11.99, p = .062, φ = .44; weak relationship). The group driving these results was RG2, where 84% of respondents (11/13) indicated that the value created from the online component outweighed the costs. It is worth noting that this group was simultaneously taking a Scotiabank training workshop at some point during the time of the project which may also have created some of this perceived value. However, since details of the cost of the Scotiabank classroom-based course were not specified, there is a possibility the benefits may have been overstated. Nevertheless, RG2 clearly had compelling results for the perceived benefits versus organizational costs. Also worthy of note is RG3 where 41% of participants (10/25) reported that value exceeded the cost. There were, however, also many in this group (37%) who reported that the costs exceeded the benefits.

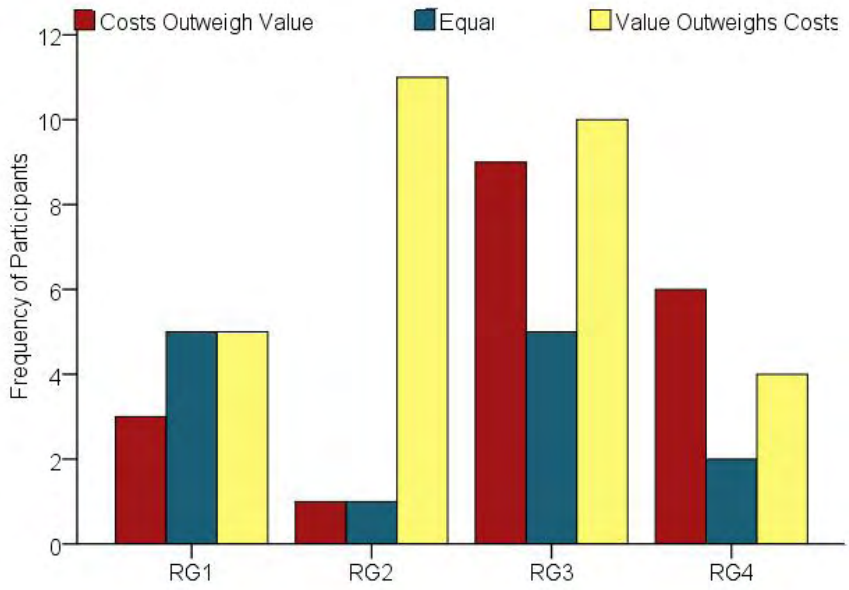

Figure 6. Comparison of Return on Learning (ROL) by Research Groups.

In the follow-up survey, participants were asked to indicate the value they perceived to have gained by being involved with the project. This open-ended question included some responses indicating that the instructions were somewhat unclear for assessing value created, or that there hadn't been enough time to assess a quantitative value. However, responses in each of the research groups indicate that there was, in general, a positive feel about the project and that there was value added to their workplace. The responses, organized by research groups, are presented in Table 4.

Table 4 Comments about Return on Learning (ROL) by Research Groups

Research Group	Participant comments about value created versus costs
RG 1	• I guess that I have tried to use more patience. By that I mean having examples of what I am coaching to - getting the employee to commit and taking ownership of what needs to be done. • I feel that my coaching has been more successful. • Made sure that I had a plan with defined goals. Ensured that proper time was spent preparing, to gain better value. • A huge time-saver.
RG 2	• With my busy work and home life it was easier to have a set time to participate in a classroom setting. Ensured I would complete the course without distraction. • …invaluable because I have again been shown a different way of communication more effectively. This makes me a better Manager and supervisor. • I avoided potential problems. • I certainly have approached problems in a different manner. I knew where to start and the path I can take. • I have added more value to my weekly coaching. • I learned how I should be coaching each staff member based on the skills they bring for each task.
RG 3	• It became more rewarding, staff opened up more because of the concern / empathy. More committed to achieving results now. More positive to reaching for higher goals. • I avoided a potential problem. I was able to discuss with the need for further learning and by making it a collective learning experience I was able to avoid open conflict • Approached a situation in a new way • In the long term, officers will develop a more independent approach to their work and therefore be more efficient. This will add to increased revenue for the Bank as they deal more proactively with situations. Time savings for me will be huge! I estimate 6 - 8 hours per week. • Improved coaching skills and response of direct reports should resuls in a time savings of approximately 3 hours per week or $6280 annually of my time - and have similar effect of each of my four direct reports with estimated savings of $15m. • I feel I am getting more efficient dealing with people at all levels. This saves everybody time • There was so much valuable information, I really would love to be able to learn more • In a small way my team is more positive and motivated for success • Staff opened up more because of the concern / empathy • More committed to achieving results now • It made me stop and think about my approach
RG 4	• Based on the [online] course of Crucial Conversation, yes I am approaching things differently to work towards a harmonious relationship. Also, in dealing with conflict, getting at the facts and looking at it realistically - and admitting if we 'dropped the ball'. Monetary value is usually difficult to assess - yes, we built some relationships and we smoothed over others, but profit/loss in my position is difficult to assess. • I don't think I really saved time approaching a situation differently because it takes practice to do it, but the long term results will definitely save me time. I won't have to do things twice. • The project went smoother from a communication standpoint

Soft-Skills Development Analysis

The soft-skill survey that was designed by Scotiabank included several constructs that were indicated by four measures each. Confirmatory factor analysis (with variances of latent constructs constrained to 1) indicated that, in general, the latent constructs were well indicated by the indices that loaded onto them. All latent constructs had non-significant χ^2 values, and RMSEA values of less than .10. Further, CFI and TLI statistics were all very high (above .97). It would be redundant to include all models of all latent variables here, but an example is given in Figure 7. Here, the latent construct "communication" was indicated by measures of observation skills, adaptability, checking for correctness, and summarizing. The λ (lambda) values on the factor loading arrows indicate that as the latent variable of "communication" increases by one standard deviation, the index will increase by said value. For example, as one increases in the skill of communication by one standard deviation, the score on "observation" is expected to increase by .62 of a unit. This analogy can be repeated for each of the indicators, with their respective factor loading values.

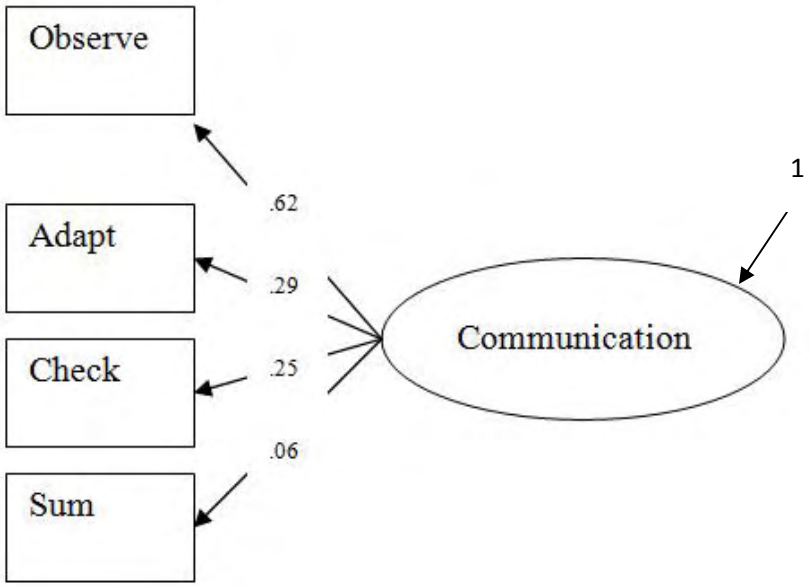

Figure 7. Confirmatory Factor Analysis Example of Scotiabank Soft-Skills Factor "Communication." A close fit. $\chi^2 = .32$, p=.91, CFI = 1.0, TLI = .99, RMSEA < .001, SRMR = .012

Missing scores for the ensuing analyses were imputed for the measures on the soft-skills assessment. Maximum Likelihood estimation was utilized in the SPSS software. Of particular interest in this study is whether the four research groups changed differently from pretest to posttest on the Scotiabank soft-skills assessments. Secondarily, there was an interest in whether scores changed, regardless of group assignment. Multivariate analysis of covariance was conducted, using the pre-scores as a covariate on the post-scores and group as the independent variable. Neither the set of outcome variables, nor the individual indices of the measurement emerged with a significant time x group interaction. In other words, the groups did not change differently over time on the measures of the Scotiabank soft-skills assessment.

The effect of time (regardless of group allocation) was assessed for each of the indices on the Scotiabank soft-skills assessment. In general, there was a trend for scores to change over time and the magnitude of the change ranges from small to large (seen in the “effect size” column, Table 5). Each index is provided with statistical relevance indicators and size of the effect of time. For example, on the measure of perseverance, participants in general increased by a moderate amount; about 1/3 of a point. To note, 24 was the maximum score possible, and many participants scored high on pretest. Thus the amount of change is relative to the inability to change by much (e.g., ceiling effect).

Summary

The first hypothesis tested yielded mixed results. There was not the expected progressive increase in the benefit versus cost (i.e., Return on Leaning) or in the change in skill development (posttest versus pretest scores) from Level 1 to Level 4 in the four-level model being tested. There were, on the other hand, significant differences in the Return on Learning for the different blended learning strategies. Most notably, blended learning strategies for Level 2 (e-learning blended with classroom-based learning) and Level 3 (e-learning blended with collaboration and coaching) did yield greater organizational and individual value. This seems to confirm the underlying assumption in the hypothesis being tested that different blended strategies do have significantly different impacts on job performance in term of a cost-benefit ratio.

Table 5 Summary of Change in Soft-Skills Assessment Scores for All Participants

Soft-Skills	Pretest Mean	Posttest Mean	*F* Statistic	*p* value	effect size η^2
Perseverance	20.3	20.6	11.74	< .001	.07 (moderate)
Influence	21.1	21.6	14.1	< .001	.08 (mod)
Communication	19.6	20.5	20.3	< .001	0.11 (mod)
Team Leadership	20.5	20.9	13.6	< .001	.08 (mod)
Customer Focus	21.7	22.0	18.8	< .001	.11 (mod)
Self-Development	19.3	19.8	11.6	.001	.07 (mod)
Flexibility	19.9	20.2	23.2	< .001	.13 (large)
Relationships	19.4	20	6.8	0.01	.04 (small)
Team Focus	19.7	19.8	2.7	0.07	not significant
Innovation	20.4	20.4	16.8	.10	not significant
Empathy	20.7	20.4	20.2	<.001	.12 (moderate)
Results Focus	20.8	20.8	14.2	<001	.085 (moderate)
Coaching	19.6	20.3	7.9	.01	.05 (small)

Also worthy of attention at a research project level, more benefits versus costs (Figure 6) were reported for the organization. Similarly, there was a significant, though to a varying degree of, change in skill development over the six week research period (Table 5). Considering that the blended learning design was based on a twenty-minute model (i.e., learners were asked to spend twenty minutes a week on the research project for a total of two hours of learning over the six week period), these impacts on job performance are quite promising. These results seem to suggest that even short spurts (i.e., twenty minutes a week) of ongoing learning, even for a limited period (i.e., six weeks in this case) can have positive impacts on job performance and likely reinforces the promise of blended learning as a useful organizational tool for continuous performance improvement.

Lastly, the extremes are worthy of note. Overall, 37% of participants reported "I created *a lot more new value* for myself and the company than the costs invested!" and 15% of participants reported "The costs *greatly* exceeded the benefits for me and the company." Although this differs to some degree by different blended learning strategies, it is a fairly

consistent finding across all research groups. This suggests that there are other factors, likely individual and possibly organizational, that have an impact on the findings for this hypothesis.

Motivators and Barriers for Learning

Hypothesis / proposition #2: The tighter and more well-defined the links between learning and the job (i.e. moving from blended learning strategy level 1 to 4), the more likely participants are to report learning motivators rather than barriers to learning.

Barriers and motivators for blended learning strategies used to support personal learning in a workplace context were investigated using a pretest and posttest questionnaire, a brief mid-point survey, and a few telephone interviews. Based on personal experiences and a review of literature on barriers and motivators for learning, the research team identified eleven potential barriers and ten potential motivators. Along with this inventory of barriers and motivators that learners tend to encounter during their learning, the questionnaire also included open-ended questions designed to capture participants' own perceptions of factors that motivate or impede their learning and an option for one of the research team members to contact those interested in discussing their experiences in more detail. Participants were asked to identify and rate the strength of proposed barriers and motivators on a three-point scale: "no barrier / no motivator," "minor barrier / minor motivator," and "major barrier / major motivator."

To analyze the collected data, the researchers explored the survey data to examine the actual percentage distribution of learning barriers and motivators. In addition, rank order analysis was used to compare different sets of top barriers and motivators – before and after the treatment and between the research groups. The detailed findings of the study follow.

Motivators for Learning

The percentage distributions of major motivators for learning rated by the participants for before-after results are reported in Figure 8.

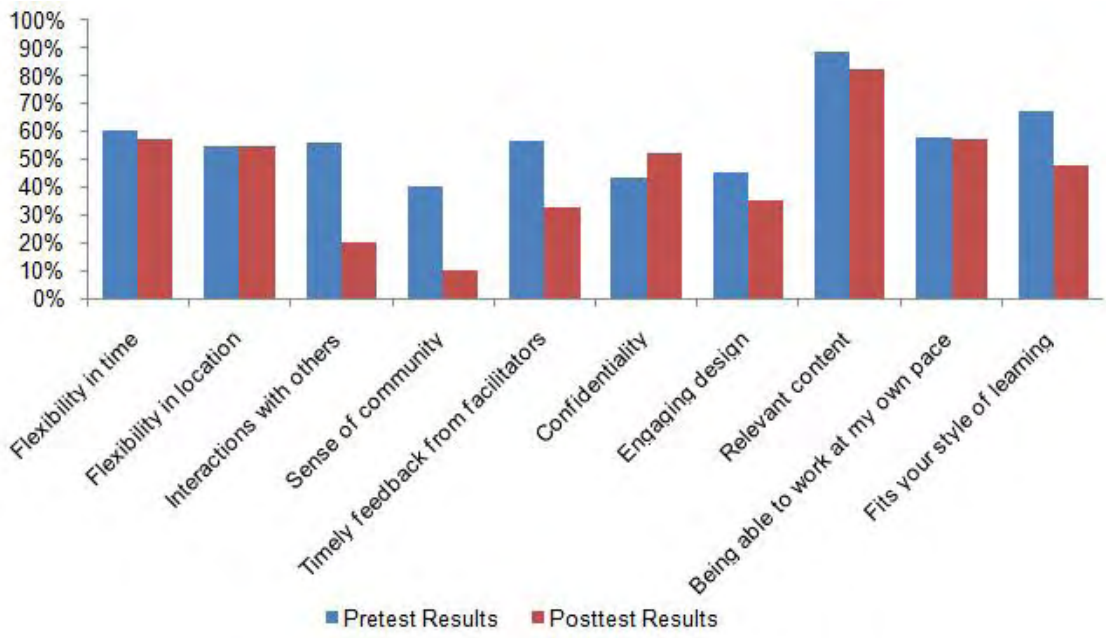

Figure 8. Summary of Major Motivators for Learning.

Survey results aggregated across all participants in different research groups before the research study began indicated that the most common major motivators for learning were "relevant content" (88%), "fits your learning style" (67%), "flexibility in time" (60%), "work at your own pace" (58%), "timely feedback" (56%), "interactions with others" (55%), and "flexibility in location" (55%). Motivators of lesser importance to participants were "engaging design," "sense of community," and "confidentiality". When comparing pre/posttest results, rank order analysis indicated that "relevant content" remained the top motivator for learning. This was followed with very minor changes in pre/posttest results by "flexibility in time," "work at my own pace," "flexibility in location," and "confidentiality." Two of the motivators showing the largest pre/posttest changes were "interactions with others" which ranked as a top motivator (56%) at the beginning of the research project and dipped to 20% after, and "sense of community" perceived as a motivator by 43% of respondents before the research to 10% after it completed. One other noteworthy pre/posttest finding is "confidentiality" which shifted upward in rank order (from 43% to 53%). Qualitative data (see Table 6) also supported these findings.

Table 6 Participant Comments about Major Motivators for Workplace Learning

Motivators	Participant Comments
Relevant content	• Course material which is very relevant to my job motivates me. • Content relevant to work and life interests - easy to see how it fits to my job or personal life. • Real-life examples - this ensures I am on the right path. • The possibility in taking part of ongoing changes or ideas, to our organization which will directly affect me as a staff member.
Flexibility in time & location	• With a busy life, being able to fit my learning into a schedule that fits my needs is key. • Being able to save at any point in time and not lose my place. • Course flexibility - in how take course (i.e., e-learning, or classroom setting or a combination of both), to allow for better work-home life balance.
Timely feedback	• Sometimes it would be beneficial to receive feedback to make sure you are on the right track. This goes a long way towards self confidence. • When taking courses via distant learning, I find it difficult not having the "classroom" feedback to ensure I am on the right track. • There are times that one does need one-on-one with their tutor and feedback is very important when taking distance courses.

Comparisons of the top three major motivators across the four research groups (see Table 7) were quite similar. In spite of a few differences between groups, chi-square statistics indicate there are no truly significant differences between the major motivators as perceived by participants in terms of different blended learning strategies. Participant comments confirm that workplace learners are motivated by content relevancy first-most, and then by individual factors such as learning style, flexibility, ability to work at own pace.

Table 7 Summary of Major Motivators for Learning by Research Groups

Research Groups	Top Major Motivators	Participant Comments
RG 1	• Relevant content (71%) • Able to work at my own pace (71%) • Flexibility in time (71%) • Flexibility in location (71%)	• The more I know the more I can help my employees... • The online information and practice scenarios are excellent and very informative. • ...I can work at my own pace and on my own
RG 2	• Relevant content (86%) • Fits your style of learning (71%) • Confidentiality (71%) • Able to work at own pace (57%) • Flexibility in time (57%)	• I enjoy the readings as they all apply directly to daily situations and ring true. I especially liked the tips for dealing with various situations. • I truly get motivated by learning new skills and being able to apply them in my day to day life (work & home).
RG 3	• Relevant content (85%) • Flexibility in time (60%) • Able to work at own pace (55%) • Confidentiality (55%)	• I really like that there is so much valuable information in the learnings, with reference to more research if you would like to learn more. • The courses offered provide many valuable insights which I try to take back to the job and put into practice with some successes. • The individual modules do not take a great deal of time to complete, and this is important given time constraints of my position. You can actually feel that you completed something within 20-30 minutes. • The information is good and it makes me focus on the area of study and how I can apply it to my situation. • I find I have to slot a specific time in my Agenda to ensure I allot adequate time to complete the learning activities. This is working for me.
RG 4	• Relevant content (83%) • Flexibility in location (83%) • Able to work at own pace (50%) • Fits your style of learning (50%)	• The topics that we had to choose from are very relevant to my position and it is always good to have more information • It is so interesting it [the information on the website] makes me want to learn everything. • Being able to go online at anytime within a window to complete the study is really helpful.

Note. Top *major* motivators as identified by more than 50% of participants in each research group.

Research participants also identified other motivators for workplace learning (see Table 8) not included in our inventory, but most certainly worthy of future attention.

Table 8 Other Motivators for Workplace Learning Identified by Participants

Other Motivators	Participants' Comments
Self-motivation	• Always want to do my best. • Feelings of success and achievement. • The more I can learn, the better I am equipped to help supervise and pass this knowledge on to my co-workers. • Desire to learn new concepts. • I anticipate each day to be a motivator to learn something different. • I am really interested in furthering my studies on coaching. • The desire to grow and improve is still high. • See the value of the courses. • Keeping the focus alive. I keep my Crucial Conversation book close by my side. • Eagerness to see how course can benefit.
Rewards	• Make more money and get promoted (i.e., extrinsic rewards). • The learnings will help me do my job better and improve my life. (i.e., intrinsic rewards).
Supportive culture	• Opportunity to try out new things and having a supportive management team that embraces new processes. • The support from my manager. • When I receive the emails, it reminds me to check out the site, and do a bit of learning. • The regular/weekly emails from Jean Adams serve as a great reminder to get the learning done and to move forward in the required activities.

Barriers for Learning

The percentage distributions of major barriers for learning rated by the participants for before-after results are reported in Figure 9.

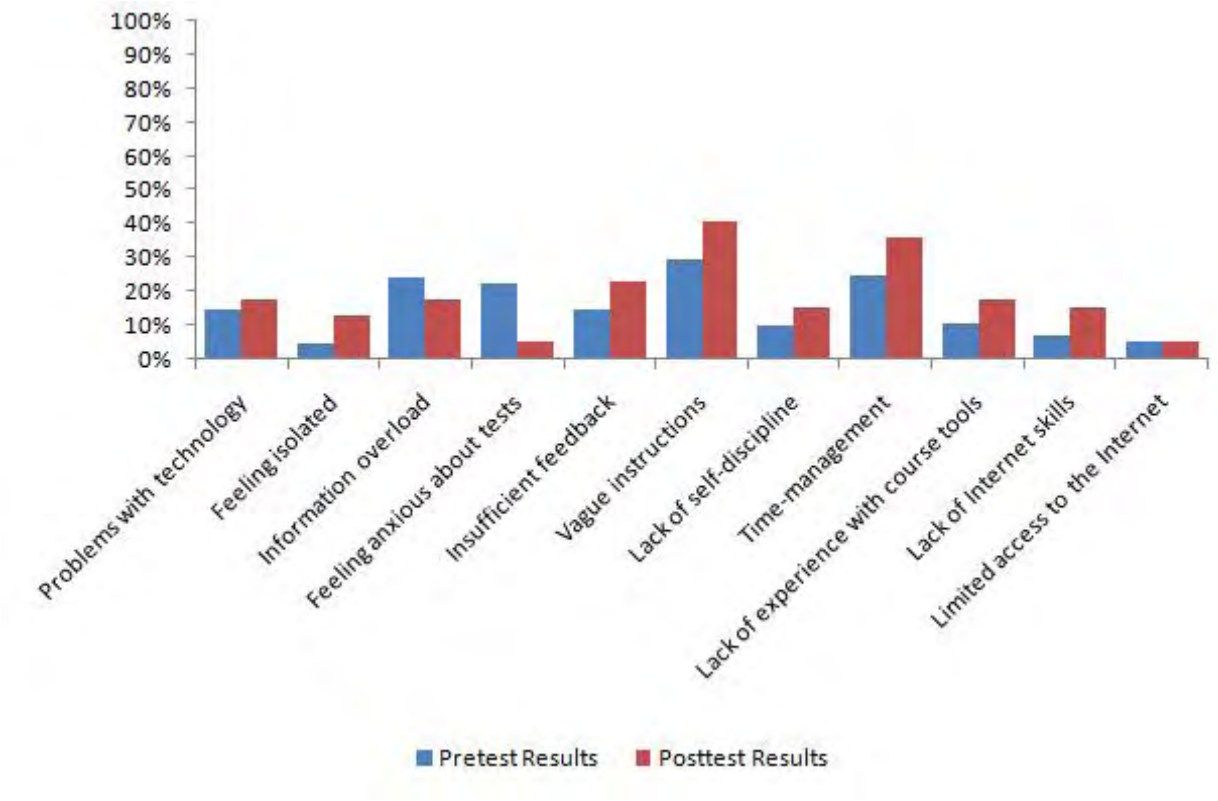

Figure 9. Summary of Major Barriers for Learning.

It is worth noting that the "major barrier" response rates were all less than about 30% at pretest and less than 40% at the posttest. This suggests that individual differences for barriers were more diverse than they tended to be for motivators where there was far more agreement among participants (i.e., 88% of participants considered relevant content a major motivator). Survey results aggregated across all participants in different research groups at the beginning of the research study indicated that the most common major barriers for learning were: "vague instruction" (29.5%), "information overload" (24.0%), and "time management" (24.8%). Barriers of lesser importance to participants were "limited access to the Internet" (5.4%), "lack of Internet skills" (7.0%), and "online isolation" (4.7%). When comparing pre/posttest results, rank order analysis indicated "vague instructions" (41%) and "time management" (36%) were still prominent. "Information overload", however, decreased in rank to 17% and "insufficient feedback" increased to 23%. Also of interest in the posttest results, three factors were widely

identified as ‘no barriers’: “limited access to the Internet” (87%), “lack of Internet skills” (80%), and “anxiety about tests” (77%). Participants’ comments on time management and technology barriers presented in Table 9 provide additional insights on these factors.

Table 9 Participant Comments about Major Barriers for Workplace Learning

Major Barriers	Participant Comments
Time management	• My biggest barriers are time management and self discipline. I tend to put things off until absolutely necessary. Then I am stressed, but I do get the job/training done. • Intentions are always good when you start something, however at times there is not enough time in the day to complete. • Courses are too long - spread out over 2 days, when one day would have been sufficient. • Time Management - Interruptions, either at work or at home are a major factor I encounter. Finding the time in general to learn. • My day is very full with coaching, sales, skill-building, and meetings. I find it very difficult to put aside time for learning. It's probably better to remove us to a classroom setting for a day, maybe every 6 months. • Time spent with family after work, made study time limited. • Finding time to complete tasks as sometimes just too busy at work.
Lack of technology skills	• I'm not 100% computer-savvy so some things take me time to figure out. I do find learning online somewhat boring, I learn from listening to other students and the teacher. • I am not as fluent technically as I would like. I have also been on many courses through [my organization], and still get a little nervous on tests vs. assignments. • Getting frustrated when unable to use the systems.

In contrast to the motivators by a research group, the barriers to learning across research groups were rated quite differently by the participants (see Table 10). The most recurrent barriers for Research Groups 1 and 3 were “vague instructions” (57.1% and 47. 4% respectively) and “time management” (42.9% and 47.4%). In Research Group 2, the participants were mostly concerned with external barriers, such as “insufficient feedback” (42.9%) and “vague instructions” (28.6%). Interestingly, the participants from Research Group 4 voiced less concerns about the factors that could impede their learning, compared to the participants from other

research groups. Specifically, they rated only six out of ten barriers as “major barrier” with the response rate for each as less that 17%. The rest of the barriers were identified by the participants as “minor barrier” or “no barrier.”

Table 10 A Summary of Major Barriers for Learning by Research Groups

Research Groups	Top Major Barriers	Participants’ comments
RG 1	• Vague instructions (57%) • Time management (43%) • Problems with technology (29%) • Insufficient feedback (29%)	• Wasn't clear on what was expected of me. • As usual, time is the most difficult. In our busy days, it is hard to put away the time that is necessary to keep up on learning new things. • I found this course very interesting, however I could not follow the instructions provided and found it very difficult to navigate between web sites. I really found that a challenge.
RG 2	• Insufficient feedback (43%) • Vague instructions (29%)	• I put time & effort into the assignments and did not receive any feedback. That is not very motivating! • I am also not sure what I am supposed to be doing. • Confusing directions.
RG 3	• Vague instructions (47%) • Time management (47%) • Information overload (32%)	• I am having some difficulty keeping track of where I am and what is necessary to finish. • Time, it is so difficult to carve out uninterrupted time to focus on the learning. Holidays, illness, absences etc have created a backlog making it hard to prioritize the learning. • Lots of links and websites sent - vague instructions - teams put together, no clear direction as to what to do, then time zones not considered.
RG 4	• Problems with technology (17%) • Feeling isolated (17%) • Vague instructions (17%) • Time management (17%) • Lack of self-discipline (17%) • Lack of experience with the course tools (17%)	• Not being in a class or completing as group together makes it easy to procrastinate and do the work. I have not heard from my study group at all. • Confusing at times. We were told to get into groups early on, but not provided any details on other individuals involved with the project. • The study took place during a busy time at work and change in my personal life which affected my ability to take the time to sort out the problems I was having with the technology. I was unable to include it in my priorities. This is unfortunate because the topics available were very pertinent to my job.

Research participants also identified other barriers for workplace learning (see Table11) not included in our inventory, but most certainly worthy of future attention.

Table 11 Other Barriers for Workplace Learning Identified by Participants

Other Barriers	Participants' Comments
Work-related pressures	• Deadlines have to be met, and I have been short staffed for about 2 months. • It can be very difficult to take courses at work as there are work commitments that need to be met. Sometimes the best laid plans can come to a halt (i.e. someone calls in sick, extra assignments to be done at work, customer complaints, etc.). • Interruptions....Others don't always put my needs before theirs. • As a manager there are many interruptions that require the use of your computer and you may be in the middle of the course and have incidents where you lose what you had already done. • There is absolutely no time at work to relax and learn. I find the pace that I am going and the demands of my position do not allow me a block of time without interruptions. I can tell people that I am not available but there seems to always be a reason for interruption. We are a large branch and a training branch. • Time. Really busy at work. System problems. I have 4 direct reports. New trainee takes a lot of my time, plus my own job and the season is busy. Just goes back to lack of time.
Literacy / Capabilities	• I am a poor reader and in spelling so this make it difficult for me to learn through reading. • My major barrier is reading and understanding. I am better off listening to audio and video than reading in order to understand concepts. Secondly, in most cases concepts are just being learnt, the discipline to implement them is paramount. • My problem is my lack of knowledge or ability to work my way through the different areas. I feel that I haven't been able to utilize all the material to its fullest potential. I also feel that allowing only 20 minutes a week doesn't allow enough time to fully grasp the full concept of the learning.
Interdependence	• No team co-operation. My team did not respond or set up any conference calls. Issues at work came up that didn't allow me to go in and read the material and apply it like I wanted too. • Not being in a class or completing work as a group together makes it easy to procrastinate and not do the work. I have not heard from my study group at all.

Summary

The second hypothesis proved to be false. There was not a progressive increase in the ratio of major motivators to major barriers from Level 1 to Level 4 in the four-level model being tested. Rather the research findings indicated that there was considerable participant agreement about major motivators for learning across all of the blended learning strategies. The top three motivators identified by a large majority of participants were: relevancy of learning content to job-related responsibilities (88%), flexibility in time (58%), and the ability for learners to work at their own pace (58%). This did not differ significantly between the research groups. The research findings also revealed that there was less participant agreement (i.e. no major barrier was identified by a majority of participants) on the factors that were barriers to learning. The most common barriers to learning in this research study were vague instructions (41%), time management (36%), and insufficient feedback (23%). Unlike motivators, there were differences in rank order of major barriers identified in research groups indicating that different blended learning strategies can create different barriers for different learners. The pre- and posttest comparison of major barriers for learning indicating decreases in information overload (drop from 36% to 17%) and anxiety about taking tests (from 23% to 5%) that can in part be explained by the 20-minute a week study period recommendation and the highly modular self-organizing aspect of the NewMindsets™ second generation e-learning system used to support self-directed learning. Similarly the increase in rank order for vague instructions (from 30% to 41%) may also be related to the very open-ended learner-controlled pedagogy underpinning the web-content inherent in second generation approaches. Learners familiar with first generation e-learning designs where learning paths are pre-determined, linear and interspersed regularly with tests that need to be passed in order to proceed could feel “lost” and disoriented by the less-structured second generation design.

Since the major motivators and barriers for learning in this study differed from those generally identified in the literature where academic contexts are prevalent, the same survey was used in an undergraduate introductory business course where second generation e-learning was being used along with classroom study, collaborative team projects and individual skill development action-learning projects. Results revealed that there were differences in the barriers and motivators in the different contexts (i.e., workplace versus academic) as presented in Table 12.

Table 12 Major Motivators and Major Barriers in Workplace and Academic Contexts

	Workplace	University
Major Motivators	• Relevant content (88%) • Able to work at my own pace (55%) • Flexibility in time (58%) • Flexibility in location (55%) • Confidentiality (53%)	• Able to work at my own pace (53%) • Flexibility in time (49%) • Fits style of learning (47%) • Interactions with others (47%)
Major Barriers	• Vague instructions (41.0%) • Time management (36%) • Insufficient Feedback (23%)	• Vague instructions (55%) • Information overload (47%) • Time management (42%)

Noteworthy differences between workplace and academic contexts include the importance of relevant content and confidentiality as major motivators in the workplace context, the importance of interactions with others as a major motivator in academic context, and the consistency in vague instructions as a barrier in both contexts (likely related to the open-ended, learner-in-control pedagogy in use in both projects). Another interesting comparison is the higher rank order of the motivators and lower rank orders of barrier in the workplace context versus those in the academic context. The major finding here is that barriers and motivators for learning in the workplace do differ from those in full time academic study emphasizing the importance of the learning context.

Lastly, research participants identified motivators (i.e., self-motivation, rewards, supportive culture) and barriers (i.e. work-related pressures, literacy/capabilities, inter-dependence) to workplace learning that were not included in the survey tool used. Literacy and self-motivation refer to individual characteristics; the other four relate directly to aspects of the workplace (reward systems, job responsibilities). The idea of peoples' jobs and job contexts as impacting the ease or difficulty for learning on the job is most certainly worthy of further consideration and research. In some cases, jobs themselves and/or workplace practices can actually thwart or prevent learning by creating such enormous barriers that learning becomes extremely difficult, if not impossible. These are organizations where errors are repeated,

outdated procedures prevail, innovation and positive change are elusive ideals. Blended learning strategies in these work contexts would likely need to help people break out of the job constraints and existing workplace practices to seed and foster skill development and performance improvement. The four-level model being tested in this research study emerged through research in organizations that supported learning and new practices. This has also been the experience at Scotiabank where the results improvement noted in the previous section clearly reinforces the notion that the Bank culture supports learners and learning. Though it is rare to conduct a barriers and motivators for learning survey, let alone to perform pre/posttest assessments as in this research project, it would seem to be an important step when designing, implementing and evaluating blended learning in workplace contexts to maximize learning impact. This idea will be explored further in the discussion and implications section of this report.

Learning Styles and Preferences

Hypothesis / proposition #3: The closer the match between individual learning styles and the blended strategy of the course delivery selected, the more likely participants are to report positive learning outcomes and impact on personal skill development.

All of the research participants completed a learning styles survey (Appendix D) at the beginning and end of the research project. They were, however, not given feedback on their learning style until well after the research study ended. On the pretest, about a third of participants were identified as auditory learners and about a third as tactile / kinesthetic. The remainder were either visual learners or some combination of two or all three types of learning style (see Figure 10). The distribution of participant learning styles was similar in each of the four research groups. There was no significant difference in the distribution between the groups, a result of the random assignment of participants to groups.

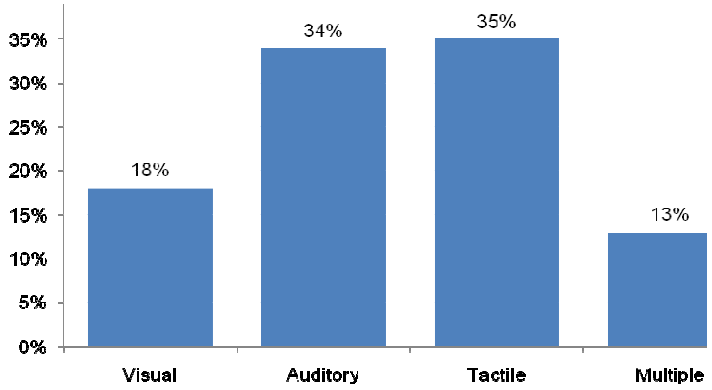

Figure 10. Participants' Learning Styles.

Participants completed learning style surveys at both pre-test and post-test. Further, they were asked to identify which, in their opinion, was their primary learning preference. Some participants showed changes in learning preferences between pre- and posttest timepoints. These differences can be seen below (Table 13)..

Table 13 Learning Styles/Preferences: Pretest versus Posttest

		Learning Style/Preference Scored at Pretest			
		Visual	Auditory	Kinesthetic	Multiple
Learning Style/Preference Scored at Posttest	Visual	**100%**	0	0	0
	Auditory	9%	**54%**	18%	18%
	Kinesthetic	10%	20%	**45%**	25%
	Multiple	11%	56%	33%	**0%**

To elaborate, there were no changes for visual learners. Those who scored as visual learners at the beginning of the research project also scored as visual learners at the end of the project. In contrast, all of those who scored as multiple-type learning style at the beginning of the project did change at the end: 11% scored as visual learners posttest, 56% scored as auditory learners, and 33% scored as kinesthetic learners. It can also be seen that 54% of auditory learners and 45% of kinesthetic learners had consistent pre-post learning styles.

Participants were not given feedback on their learning style scores until well after the last research data was collected. Therefore it is also interesting to note that when asked to which learning styles (auditory, visual, or kinesthetic/tactile) participants *perceived* themselves to be at the end of the research project, 60% thought they were kinesthetic learners (i.e. preferred learning-by-doing style, a hands-on approach). This is explored further in Table x. Of those who perceived they were kinesthetic, 32% did score as kinesthetic. However, 4% of those who thought they were kinesthetic scored as visual learners, 40% were auditory, and 24% were multiple-type learning style. Interestingly, no visual or auditory learners perceived their learning style to be what they measured on the final learning styles survey. Of those who thought they were visual, 18% were actually auditory, 72% were kinesthetic, and 9% were multiple-type. Of those who thought they were auditory learners, 33% were kinesthetic and 67% were multiple-type. Interestingly, the only participants in the project who did have perceived styles the same as actual results were 32% of those who were kinesthetic learners.

Table 14 Perceived versus Posttest Measured Learning Styles/Preferences

		Learning Styles/Preference Scored at Posttest			
		Visual	Auditory	Kinesthetic	Multiple
Perceived Learning Styles/Preferences at Posttest	Visual	0	18%	72%	9%
	Kinesthetic	4%	40%	32%	24%
	Auditory	0	0	33%	67%
	Not sure	0	0	100%	0

Learning Styles/Preferences and Return on Learning

A comparison of the value created as cost-benefit ratio (i.e. return on learning) versus learning styles/preferences is summarized in Figure 11. Of the majority of participants who reported creating more value than cost, each learning style/preference is represented. This holds true for the other factors as well, with the exception that there weren't any visual learners who reported 'equal'. Chi-square analyses were conducted to determine whether return on learning varied as a function of participants' primary learning style/preference. There were no significant differences between the research groups (χ^2 = 3.72, p = .715). This indicates that, primary

learning style/preference was not a factor in the value outcome among participants regardless of the blended learning strategy (i.e. the four research groups have very similar distributions to those presented in Figure 11).

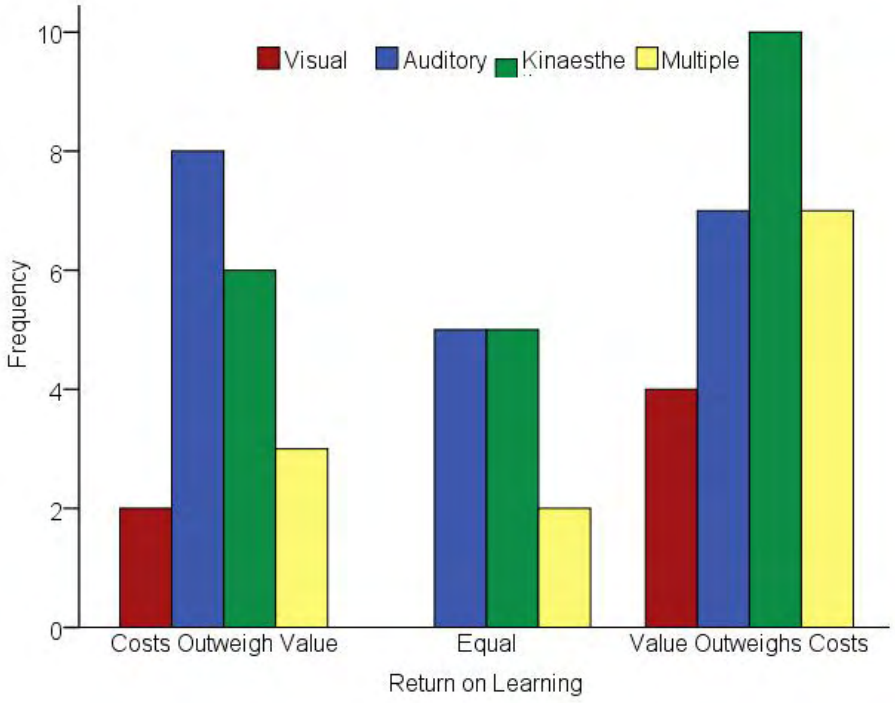

Figure 11. Return on Learning versus Learning Styles/Preferences.

It is interesting, nevertheless, to note that those with multiple learning styles were more likely to report "value outweighs costs" than they were to report "equal" or "costs outweigh value." More visual learners also reported "value outweighs cost" than vice versa. However, this is not the case for auditory learners. They were more likely to report "cost outweighs value" than "value outweighs costs" and "equal" suggesting that the blended strategies were not well matched for learners with auditory learning styles in this research.

Learning Style/Preference and Soft-Skills Development

Further analyses to determine whether posttest scores were different as a function of both group assignment and learning style/preference were conducted using multivariate ANCOVA

method. Neither the set of outcome variables on the Scotiabank soft-skills, nor any individual factor showed significant effects to this end. Learners with different learning styles in different groups demonstrated similar levels of learning outcomes across all groups. However, there were a few key elements of interest whose results approach significance.. There were some noteworthy 'trends' that seem to emerge in the areas of "self-development" and "relationship building" soft-skills development by learning styles. Details follow.

Self-Development Soft-Skill Development. Participants who were classified with having a "multiple type" primary learning style/preference (i.e. those who had the same measure for two learning styles) had higher scores on self-development after covarying pretest scores, than those in other groups. Those with an "auditory" style/preference had lower posttest scores than participants with other learning styles/preferences. These 'trends' approach significance ($F_{(3,153)}$ = 2.24, p = .086, η^2 = .04; small effect size) as illustrated in Figure 12.

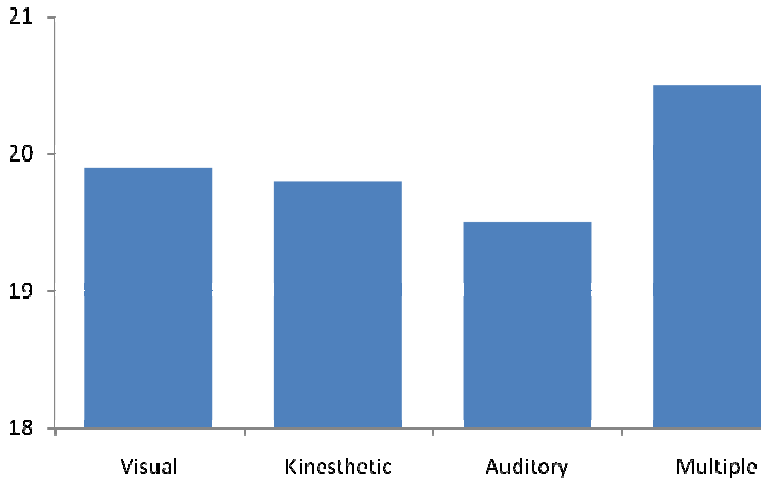

Figure 12. Posttest Mean Scores on Self-Development, by Learning Style.

Relationship Building Soft-Skill Development. Participants who were classified with having an "auditory" primary learning style/preference had lower scores on relationship building, after covarying pretest scores, than those in other groups. These results, again, approach significance. ($F_{(3,153)}$ = 2.20, p = .091, η^2 = .04; small effect size) as indicated below in Figure 13.

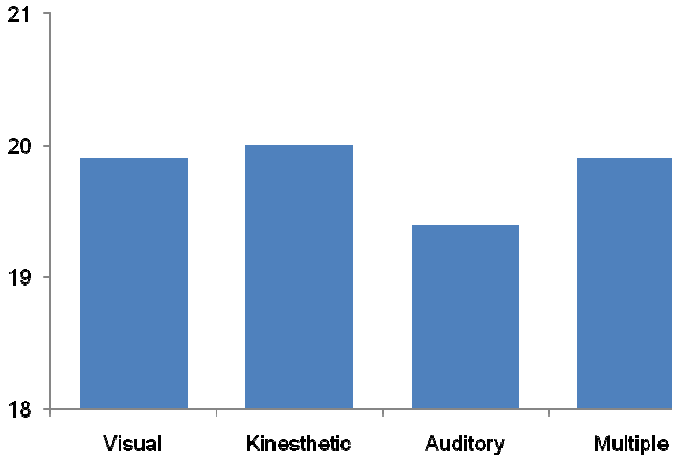

Figure 13. Posttest Mean Scores on Relationship Building, by Learning Style.

Other soft-skill development of interest in this study were persistence (Figure 14), coaching (Figure 15) and communication (Figure 16) – all of which had pre- and posttest positive changes (small or moderate effects) indicated in Table 5. However, no significant difference by learning style was found.

Persistence Soft-Skill Development. Perseverance was not different at posttest (covarying out pretest scores) across learning styles/preferences ($F_{(3,153)} = .46$, $p = .71$).

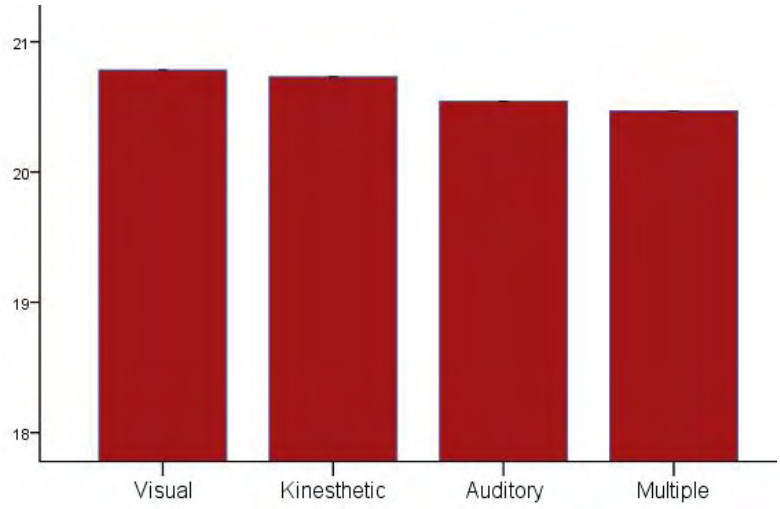

Figure 14. Posttest Mean Scores on Persistence, by Learning Style.

Coaching Soft-Skill Development. Posttest scores on Coaching were not different at posttest, after controlling for pretest scores ($F_{(3,153)} = 1.26$, $p = .29$).

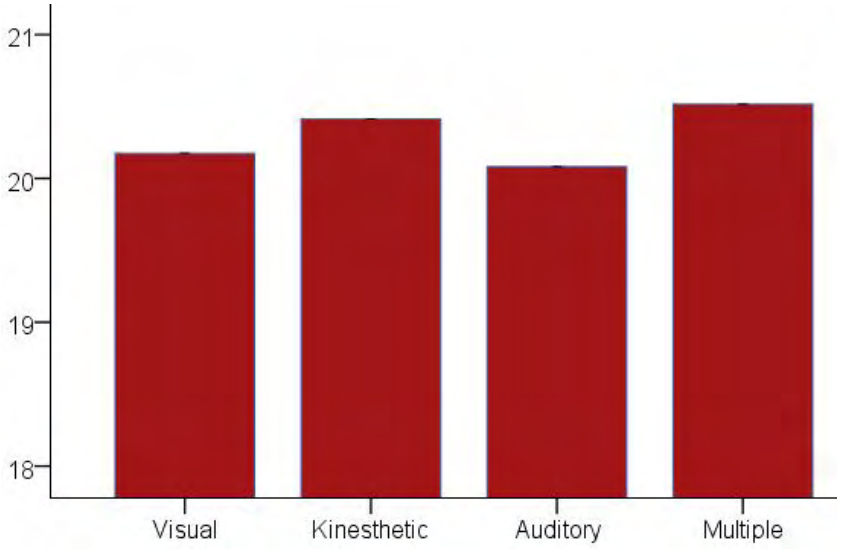

Figure 15. Posttest Mean Scores on Coaching, by Learning Style.

Communication Soft-Skill Development. Scores on Communication were not different at posttest, controlling for pretest scores ($F_{(3,153)} = .78$, $p = .51$)

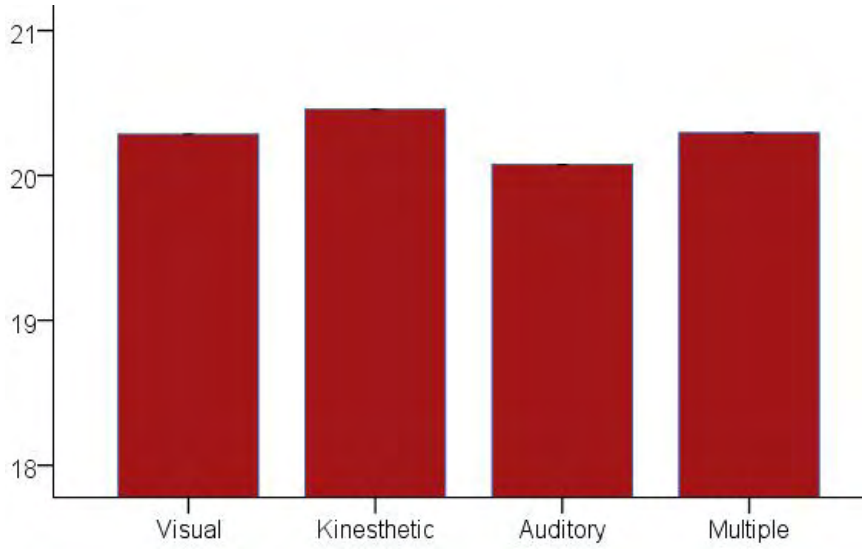

Figure 16. Posttest Mean Scores on Relationship Building, by Learning Style.

Summary

The third hypothesis was found to be false. There was no link proved between closer matches of learning styles and blended learning strategies, and no significant difference in the likelihood of learners with different learning styles reporting different outcomes and impact on personal performance. With hindsight this seems obvious. Blended learning strategies are not uni-strategies employing a single delivery method. Instead they offer a rich learning context aimed at stimulating all of the senses – visual, auditory and kinesthetic. Therefore, in practice it seems reasonable that learners with different learning styles have the potential to thrive. However, the surprising finding in this research is the way those with multiple learning styles performed. They were far more likely than other participants to report "benefits outweigh costs" versus "costs outweigh benefits" than those with single dominant learning styles. This reinforces the point that blended learning strategies provide rich learning contexts across learning styles, and possibly suggests that those who have more a diverse range of learning styles (versus those with a single dominant style) may benefit to a greater degree from blended learning offerings.

The pre/posttest learning styles result indicating that there were changes over the period of the research is also noteworthy, possibly signalling the transitory nature of these subjective self-assessments. Or, perhaps calling into question the survey measure we used. Nevertheless, since there were no significant links between learning styles and performance, it seems rather

pointless to hold much store in learning style assessments (whether they change or not) for screening or streaming learners to specific blended learning programs. However, the finding that is perhaps even more interesting than the change itself, is that so many people (over 60%) self-identified as kinesthetic learners (i.e. preferring to "learn by doing" in a hands-on approach). This may actually have something to do with the context – workplace learning. People tend to take a practical approach in the workplace, and learning by doing (both formal and informal learning) is generally the way daily work practices are disseminated. This suggests that regardless of learning styles, workplace learners may perceive themselves as preferring hands-on learning *on the job*. This mismatch between perception versus measured learning styles score may also draw attention to the issue of personal preferences for learning. Preferences (i.e. whether learners prefer an auditory, visual, or kinesthetic approach to learning new things) may change or shift depending on the topic to be learned and/or the context in which it needs to apply. All this to say although it is somewhat disappointing that learning styles cannot be used as a predictor of learning outcomes success, the value of learning style assessments may actually rest more in the learner self-awareness generated. Participants, as mentioned earlier, were not told their learning styles until well after the research completed. In return for completing pre/posttest surveys, participants were advised they would receive a personal summary (Appendix H) of personal results. This was widely anticipated, and participants were quite interested to see their scores. Therefore, having learners complete a learning styles measure prior to every course, accompanied with suggestions on how to make the most of the way materials are being presented could be a value-added, constructive use this kind of a tool. A follow-up learning styles survey might also be useful to encourage reflection on "learning to learn". This personal reflection might well be used for future reference, and/or as a starting point for new courses perhaps.

At the end of the project, participants were also asked which of the four blended learning strategies in the research groups they would have chosen if this had not been done randomly. In other words, which of the blended approaches were their preference. Their response was: 55% preferred RG2 (e-learning used pre-post classroom course), 18% chose RG3 (e-learning blended with personal development, collaboration, and coaching), 14% preferred RG4 (e-learning blended with an action-learning project), and 13% chose RG1 (e-learning used as a background resource for personal development). As a point of comparison, the question about personal

preferences for blended learning strategy was asked at a conference session where preliminary research findings were being shared with a group of about a hundred professional trainers and managers. A Classroom Response System (CRS), sometimes referred to as “clickers”, was used to capture the data and present it back in real-time in the conference session. Responses to the question “Which of the following blended models would you prefer?” were: 50% of conference participants preferred RG3, 25% chose RG2, 17% selected RG4, and 8% preferred RG1. Then the conference participants were asked: “Which of the following blended learning models do you think participants preferred?” Responses were: 36% predicted RG1 was the top choice; 32% chose RG2, 27% selected RG4, and 5% chose RG3. Everyone laughed as these results were revealed in the conference. What the experts identified as their own preference (RG3) was the selection they predicted learners would *least* prefer! Then the actual research participant choices were presented and again the participants laughed as the results were revealed. What the training experts had predicted as the participants top choice (i.e. RG1) was actually the *least* preferred by research participants! The main lesson from this experience for everyone in the room was that even as training and development experts, it is likely ineffective to predict learners’ blended learning preferences based on our own preferences, or on our predictions. To find out what blended strategies are preferred by learners in a meaningful and accurate way, *learners must be asked to choose for themselves*. Interestingly, a learner-in-control pedagogy underpins second generation e-learning and the approach that guided this research study. The conference experience confirmed the importance of involving learners directly in their own learning. That, however, was most certainly not an expected outcome at the inception of this research. This will be explored further in the Discussion and Implications section of this report. A summary of the preferences identified by the different groups is presented in Figure 17.

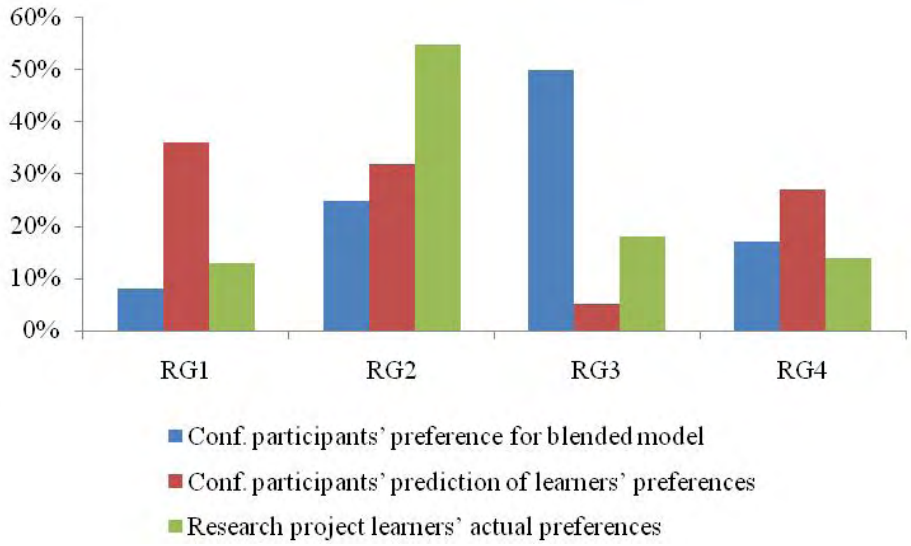

Figure 17. Preferences for Blended Learning Strategies.

Interrelationships Between Major Factors Studied

The research study assessed the learning outcomes and impact on job performance of four different blended learning strategies while exploring learning styles and motivators and barriers for learning. It was anticipated that one of the four blended strategies, Level 4 in the model where participants brought work projects as the focus for learning, would most likely have higher returns. Since the Level 4 model is a very action-oriented approach to learning, it was thought that those with kinesthetic learning styles would most likely outperform their colleagues with other learning styles assigned to the same research group. It was also thought that the ratio for major motivators to major barriers would be higher for those who created a lot more new value versus others who did not. However, none of these predictions came about as anticipated. Nevertheless, the desire to find interconnections between learning outcomes, learning styles, and motivators persisted. The research team manipulated the findings, applied numerous statistical analytical procedures in the search for some inter-relationships that met significance tests. And, no such inter-relationship has been found. For example, learners who spent more time online did not outperform others. Those who reported "benefits greatly outweigh costs" were present in all four of the research groups, had participants with each of the three different learning styles, spent

anywhere from less than an hour to between three and six hours on the research project, and identified different barriers and motivators for learning than their colleagues who were in the same research group. Similarly, those who reported “costs greatly outweigh benefits” also were in all of the groups, exhibited all of the different learning styles, spent widely varying amounts of time on the project, and also had different barriers and motivators for learning as illustrated in Table 15.

This absence of inter-connections that are statistically significant between the three tested hypotheses is in itself an important finding. It emphasizes that there likely are no easy answers, no prescriptive formulas, and no definitive procedures guaranteeing success at a course or program learning design level. This will be explored further in the recommendations section of the report.

Table 15 Comparison by Individuals

Biggest soft-skill diff*	ROL	Hours	Learning style / age / service	Major Motivators	Major Barriers	RG
• +10 Communication • Less developed to Primary	Benefits > Costs	3-6	• Visual • Age: 30-45 • > 5 yrs service	• Flexibility in time • Interactions with others • Sense of community • Confidentiality • Engaging design • Relevant content • Work at my own pace • Fits your style of learning	• Problems with technology • Information overload • Feeling anxious about tests • Vague instructions • Lack of self-discipline • Time-management	RG3
• +7 for Influence • Secondary to Primary	Costs > Benefits	1-3	• Kinesthetic • Age: >45 • > 5 yrs service	• Relevant content • Work at my own pace	• Time-management	RG3
• +7 for Coaching • Secondary to Primary	Benefits > Costs	1-3	• Auditory • Age: 30-45 • > 5 yrs service	• Timely feedback • Confidentiality • Engaging design • Relevant content • Work at my own pace • Fits your style of learning	• Insufficient feedback	RG2
• +5 for Perseverance • Secondary to Primary	Costs > Benefits	1-3	• Auditory • Age: 30-45 • 4 years of service	• No major motivator was indicated.	• Problems with technology • Vague instructions • Lack of exp. with course tools • Lack of Internet skills	RG3
• +4 for Perseverance • Secondary to Primary	Benefits > Costs	1-3	• Visual • Age: 30-45 • > 5 yrs service	• Confidentiality	• Vague instructions	RG2
• +3 for Self-development • Secondary to Primary	Benefits > Costs	3-6	• Multiple-type style • Age: >45 • > 5yrs service	• Flexibility in location • Interactions with others • Sense of community • Timely feedback • Confidentiality • Engaging design • Relevant content • Fits your style of learning	• Problems with technology • Vague instructions • Time-management • Lack of exp. with course tools • Lack of Internet skills	RG1
• + 3 for Empathy • Primary	Costs > Benefits	<1	• Auditory • Age: 30-45 • > 5 yrs service	• No major motivators	• Problems with technology • Insufficient feedback • Vague instructions	RG1
• +3 for Perseverance • Primary	Benefits > Costs	1-3	• Kinesthetic • Age: 30-45 • > 5 yrs service	• Flexibility in location • Timely feedback • Confidentiality • Relevant content • Work at my own pace • Fits your style of learning	• No major barriers	RG4
• +2 for Results focus • Secondary to Primary	Benefits > Costs	<1	• Kinesthetic • Age: 30-45 • 4 years of service	• Flexibility in location • Relevant content • Work at my own pace • Fits your style of learning	• Problems with technology • Lack of exp. with course tools	RG4

Note. Level of Skill Development Descriptors: (a) *primary* (i.e., comfortable with and demonstrate strong tendencies in these competencies. They come most naturally and are used consistently); (b) *secondary* (i.e., demonstrated sometimes; they may be demonstrated less consistently and be less developed than primary competencies); (c) *less developed* (i.e., end to use these competencies less and are more hesitant to use them).

Profile of Participants Who Did Not Respond to the Final Surveys

Two hundred participants indicated that they would like to participate in the research project. Of these, 43 completed the initial survey that informed on location, business line, years of service, etc, but did not complete any other surveys. A further 61 completed aspects of the project at both pre- and posttest, while 98 did not complete any of the final surveys. Nevertheless, the e-learning reports show that 153 of the original 200 participants (76%) did use the e-learning system for an average of 2.5 hours over the period of the research project. Table 16 shows a comparison by research group.

Table 16 Comparison of e-Learning System Usage by Research group

Research Group	Number of Participants in the Original Group	Number of Participants who Logged on	Total Hours	Hours / Participant
RG 1(e-learning as a background resource for personal development)	32	20	24 hrs	1.2 hrs
RG 2 (e-learning used pre-post classroom course)	48	27	50 hrs	1.8 hrs
RG 3 (e-learning blended with personal development, collaboration, and coaching)	60	58	184 hrs	3.2 hrs
RG 4 (e-learning blended with an action-learning project)	60	48	119 hrs	2.5 hrs
Totals	200	153	377 hrs	2.5 hrs

In terms of participants who theoretically “completed” the research project (as identified by those who submitted all of the required final surveys), each of the research groups had attrition near or over 50%. Research group three had participants who showed the least amount

of loss, where 48% did not complete all of final surveys, where in groups two and four, there was about 70% incompletion and in research group one, there was just over half. The differences seen here (Table 17) are not significant ($\chi^2 = 7.16$, $p = .067$, $\varphi = .21$).

Table 17 Percentage of Participants Who Did or Did Not Complete, by Research Groups

Research Group	Completers	Non-completers
RG1	44%	56%
RG2	31%	69%
RG3	52%	48%
RG4	28%	72%

Participants' attrition varied by learning style, but not to a significant degree ($\chi^2 = 6.39$, $p = .094$, $\varphi = .203$). In other words, the differences (Table 18) do not indicate that there are any surprising proportional differences.

Table 18 Attrition as Evidenced by Learning Style (Pretest Results)

Learning Style	Completers	Non-completers
Auditory	36%	64%
Visual	22%	78%
Kinesthetic	41%	59%
Multiple Type	57%	43%

Multivariate analyses indicated that on Scotiabank soft-skills as a whole, there was no difference in the set of scores between those who completed the project and those who did not ($F = 0.452$, $p = .947$).

DISCUSSIONS AND IMPLICATIONS

The focus of this research study was to compare the learning impact/outcomes of four different blended learning strategies. One of the main rationale was to observe, monitor, test and validate the four-level theoretical model resulting from a previous action learning research study emerging from work reported by Adams (2004). As the results of this research materialized it became evident that there wasn't an indisputable "best blended learning model" emerging. Quite unexpectedly, there were learners who thrived equally well in *each* of the four research groups, as well as others in each group who did not. It seemed that the answer to this outcome might lie in the random assignment of participants to blended learning research groups, and analysis of learning styles data seemed to hold promise for interpreting the research findings. Once again this did not prove to be the case. Not only was there no consistency between learning styles of those who performed well (or not so well) in each of the four research groups, there were pre- and posttest changes in learning styles, as well as major differences between learners' perceptions of primary learning styles versus measured learning styles. This added to the complexity of interpreting the findings. And finally, analysis of barriers and motivators for learning showed no predictive trends, and also suggested that not only could jobs and job contexts be both motivators for learning, they could be barriers for learning as well. In other words, blended learning closely linked to jobs and job contexts where learning is devalued or perhaps even punished would seem to have little chance, if any, of taking hold.

As each of the original three hypotheses/propositions proved false, the following new themes emerged in their place:

- The importance of understanding the workplace context where learning needs to happen
- The importance of empowering workplace learners to take ownership of their own learning to do their jobs better, thereby creating new value for themselves and their organization

- The potential of blended learning as a powerful tool for "mass customization" where the benefits of highly personalized learning can accrue

Each of these themes is discussed and explored in this section of the report as the foundation for a new theoretical blended learning model for workplace learning that will be presented in the Recommendations section of this report.

The importance of understanding the workplace context where learning needs to happen

The four-level model being tested in this research emerged over years as part of an earlier action-learning research project that explored and iterated blended learning approaches in different workplace contexts in search for a model that generated concrete value for individual learners and their organizations. In that model, Level 4 tightly integrating action-learning projects as the driver for high impact learning was born in a very competitive, project-oriented culture. The company can best be described as a network of autonomous profit centers in a highly competitive industry with relatively short client contracts. Training was often viewed by operations as a drain on resources – a cost, not an investment. The breakthrough blended learning strategy in that other organization was to mandate stretch action-learning projects as the focus for very results driven learning. Level 4 in that highly competitive, resource scarce context was a success. In contrast, Scotiabank highly values employee training and development, sees learning as an investment, and encourages collaboration and sharing. The Bank is well recognized as an employer of choice. This is a completely different culture than that where the original four-level model emerged. Scotiabank's knowledge-focused, collegial and collaborative culture favours Level 3 (e-learning for personal development blended with collaboration and coaching) and Level 2 (e-learning blended with classroom learning) models, both of which proved highly effective.

The underlying assumption in the first hypothesis is about finding strategies for effectively integrating work and learning to maximize learning output and impacts. This hypothesis does hold true when the context favours learning, as is the case at Scotiabank. The corollary, however, is that the tight integration of work and learning needs to align with organizational culture to maximize impact/outcomes. In theory action-learning projects (Level 4) can deliver very high benefit-cost returns. However, this will not likely be the case unless organizational practices and culture embrace – and reward – project-based learning.

The other difference between the Scotiabank research and that in the organization where the four-level model emerged is the role, or priority, of the research project. In the original action-learning research study, the research aspect came in behind organizational practice. In other words, the organization took the lead on the learning initiative and researchers provided expertise, advice, and objective feedback. From an organizational perspective, the employees were highly visible. Confidentiality of the data gathered by the researchers was maintained; however, the senior management team knew the employees involved and how they performed. That initiative was part of a succession planning program in a rapidly growing organization. Learners wanted to be visible. They wanted to prove their expertise by showcasing what they could achieve. They wanted to be the next in line for promotion. Once again, Scotiabank was completely different. Participants involved were not visible – all interaction, including the names of those involved was kept completely confidential by the research team. The technologies and research groups were not part of daily workplace offerings or practices. They were added in for the six-week research period only. Confidentiality was identified as a major motivator for participants in this study. However, confidentiality was also a trade-off. While it enabled learners to respond honestly, unhindered by organizational effects, it also created the freedom for learners to choose to start or end the research project at will. Rarely is this ever the case in today's workplace. With tight resources and course tracking statistics, starts/drops/completes are heavily monitored. Interestingly, even without corporate accountability and surveillance factors involved, all of the four approaches had learners who identified positive value creation, positive skill development, and over 75% (153/200) of those who agreed to start the research did spend the suggested time online (i.e. twenty minutes a week for six weeks for a total of at least two hours). This most certainly bodes well for the future of on-the-job approaches to blended learning. If these results can be achieved in a confidential research context, imagine the results when corporate factors such as recognition and rewards are included.

Lastly, this research suggests that it is very beneficial to use surveys about barriers and motivators for learning to better understand learners' perceptions of their work contexts, as well as what personal aspects they find encourage or thwart learning and performance improvement. An ideal use of this kind of information would be to help individuals self-assess what is needed to help them maintain sustainable learning and continuous personal improvement. Another uses could be surveys at a program level to determine what aspects are working in favour of personal

learning, and others that are actually holding learners back from achieving exceptional outcomes. This goes beyond “smile sheet” assessments administered at the end of a workshop. These barriers and motivators for learning would need to be designed to provide feedback on the fundamental design and implementation of the program. And one final use for barriers and motivators surveys could be at a work-team, or supervisor or manager level where direct reports or team members would be able to identify barriers and motivators in the context that encourage self-development, continuous improvement, and innovation versus those that hold people back from doing a better job. By understanding both the motivators and the barriers, it should be possible to turn some of the negatives into positives as well as to strengthen the positives to balance the scales in favour of learning.

The importance of empowering workplace learners to take ownership of their own learning to do their jobs better, thereby creating new value for themselves and their organization

This research study clearly shows that different blended learning models can have different individual impacts (i.e. pre/post soft-skills scores) and organizational impacts (i.e. cost-benefit ratio). A somewhat troubling factor in these research findings, for both the research team and the educational community, is that there are no statistically significant, conclusive predictors emerging to explain the differences in a way that can be generalized to a success for all learners model. Instead these findings reinforce and perhaps deepen our awareness of the uniqueness of individual learners, their jobs and job contexts – and the challenges this creates for organizational learning programs. This is a major theme running through all of the findings being reported here.

Although one can argue “uniqueness” of learners is perhaps not a surprising finding, it most certainly has far reaching implications for workplace learning. Unlike academic courses or programs where learners are separated from their jobs and job contexts to learn specific material or demonstrate skills to earn a degree or certificate, workplace learning requires learners to apply what they are learning on the job. After all, doing the job better and creating new value are the dividends on workplace investments in employee training and development. One of the messages in this research is that these unique individual factors make it highly unlikely that all learners in the same program, not matter how carefully and competently designed, will have consistent learning outcomes. Add to this the differences in perceptions of motivators and barriers for learning and different learning styles, the equation for success becomes even more elusive. This

infers every learner needs a personal learning plan, a highly customized, just-for-me, career-long course of study. Human Resources professionals have been searching for systems and processes to help them assign and/or stream people into productive learning situations, as well as into good job matches. Interestingly, the conference experience (see Figure 7) clearly shows how risky this expert-driven approach can be. The probability for error seems quite high, and every misjudgment costs the organization in terms of underutilized resources, both physical and human. So what's the answer? Everything in this study suggests the answer lies in giving learners more control and say in their own learning to create contexts that will motivate themselves to learn, and also involve learners in creating their own courses of study. This is quite a radical, and perhaps visionary, statement by today's standards. For example, learners would self-assess personal learning needs, create personal motivators, design personal courses of study to fill learning gaps, self-evaluate and report progress, and claim or reap meaningful individual and organizational rewards based on personal targets. Can this "mass customization" approach to workplace learning be achieved, or is it simply a utopian view? That's the million dollar question.

The potential of blended learning as a powerful tool for "mass customization" where the benefits of highly personalized learning can accrue

Although the research did not find a single "best blended learning model," it did prove that even twenty minutes of online learning blended with other learning modalities over a six week program in every blended learning program in this research can have a positive impact for some learners. As part of a blended learning strategy, therefore, online learning is a highly effective delivery mechanism. The research also proves that different blended learning strategies can work equally effectively for different people.

The key challenge seems to be how to match learners to strategies that will work best for them. One idea is to think in terms of a checklist of options enabling learners to design personalized courses of study much like they build a take-out salad, or order a pizza. Learners could even, theoretically, be guided using a blended learning approach to learn how to take complete ownership for their own learning and personal development. To implement a customizable checklist approach where learners could self-select blended learning options, the first challenge would rest in building the infrastructure of offerings and supports (i.e. the technology aspect and content of the checklist) to make this available, and to maintain and

monitor it to ensure quality and relevance. The next challenge would be to teach learners how to make wise decisions and build effective blended learning solutions to meet personal and organizational needs. And lastly, there would need to be measures of effectiveness of the system put in place as well as organizational mechanisms (i.e. reward systems) integrated to embed a continuous improvement philosophy. If ever there has been a time when this could be achieved, it seems to be now. The abundance of new technologies and tools that can be mixed and matched to offer synchronous and asynchronous learning support is unprecedented. Think about how Twitter, Nibs, Voice-threads, and other new web-based tools and devices could be used to enrich and energize personal learning. A willingness, and sense of urgency, to pioneer new ways to make a "mass customization" approach to workplace learning and employee development a reality is what is required. Not only would this free learners from the conventional bonds of expert-designed and delivered programs and courses by putting them firmly in control, it would also involve the reinvention of the traditional trainer and course designer roles to those of mentors and professional coaches who would help learners to "learn to learn" effectively.

RECOMMENDATIONS

This research study set out to investigate four different blended learning strategies for supporting workplace learning to identify the most effective strategy and better understand it by analyzing barriers and motivators for learning, and learning styles of the participants in that research group. Instead the research team discovered that some individuals excelled in each of the research groups, and also that there were no common individual characteristics for those who did well in each group, or across the research study. Learning styles differed, learning preferences differed, and major motivators and major barriers for learning also differed. In other words, the major finding is the inability to find a predictable, repeatable, no-fail approach to *workplace* learning for *soft-skills* development. These unexpected findings have seeded a new "mass customization" theory driven by the understanding that each learner has a unique personal learning profile that includes personal characteristics, learning needs, learning style/preferences, job responsibilities, and job context. This is not a new idea. Training and professional development experts have been talking about the importance of customized individual learning models for over a decade. What is new, however, is that there are finally technologies available

to support a “mass customizable” learning strategy now. The findings in this blended learning research project provide insights on ways to start putting highly personalized programs in place.

In the tradition in action-learning research, both practical and theoretical contributions to knowledge about blended learning are presented in this section to aid both practitioner and academic communities in moving professional practice and research ahead in this field.

Practical Contribution to Knowledge about Blended Learning

This blended research project offers the following practical advice for those interested in developing blended learning strategies for soft-skills development aimed at maximizing learning outcomes for individuals and their organizations:

- Importance of flexible blended learning models that offer learners as much choice as possible
- Value of regularly scheduled learning over time
- Importance of “learning accountability loops” to create tightly structured links between work and learning
- Importance of pre/posttests to evaluate outcomes
- Importance of acknowledging and rewarding learning in meaningful ways for learners
- Importance of a continuous improvement mandate for training and development departments

Each of these points is explored in more detail below.

Importance of flexible blended learning models that offer learners as much choice as possible

Blended learning approaches offer a rich context for learning. The blend of different technologies and instructional approaches creates contexts that can engage learners in a variety of ways, thereby enabling learners to process information using more than one learning style. To build on this research finding, consider offering different options, such as those suggested in figure x that have been rated by Scotiabank participants at the end of the research project. In this way learners will be able to self-select the modes of interaction that suit their needs for the topic being studied and the way they can best integrate learning and job responsibilities to create as much synergy between work and learning as possible.

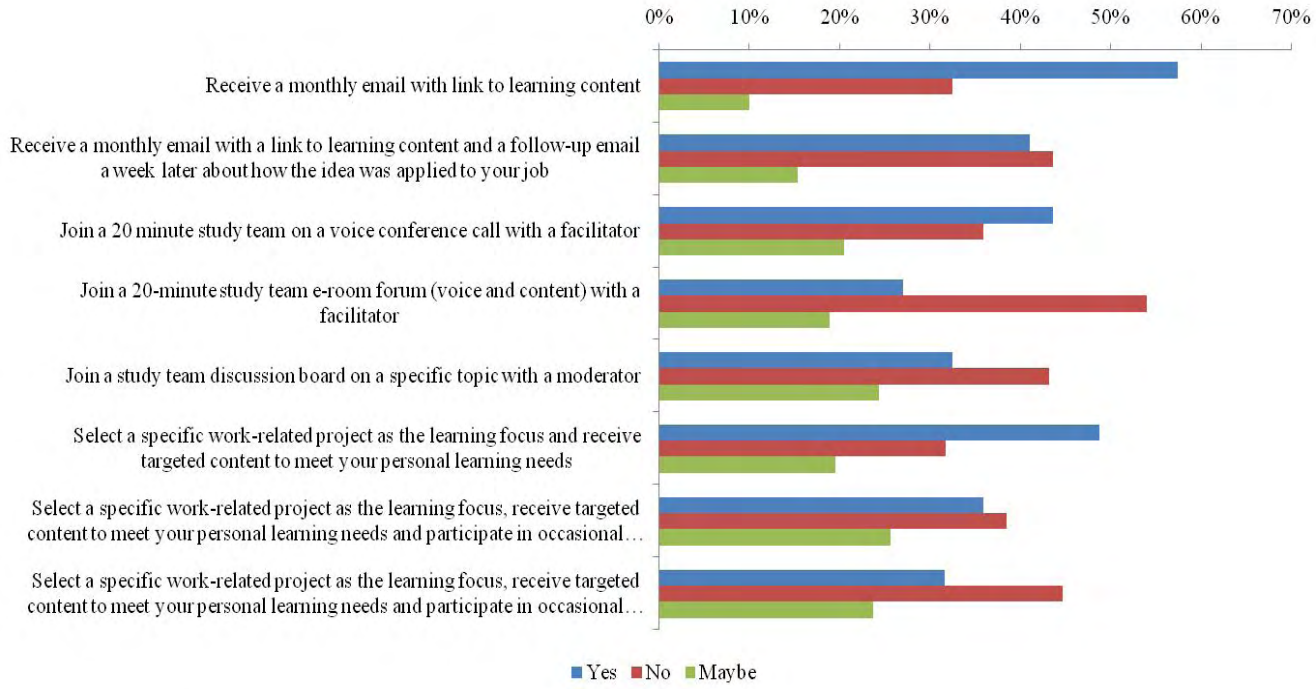

Figure 18. Learner Preferences for Blended Learning Support. Bars represent the percentage of participants' responses to a survey question, "Which of the following learning activities would be of interest? Please select all that apply."

Value of regularly scheduled learning over time

In this research study, learners were asked to find 20 minutes a week (i.e. 2 hours in total over the six-week period) to dedicate to the research project and their personal learning. The online usage figures confirm that those who used the online NewMindsets™ learning materials did create value spending an average of 2.5 hours in personal study as indicated in Figure 19. Therefore, consider designing blended learning offerings in short spurts. It is most likely easier for many management or supervisory employees to schedule a twenty-minute block of time for personal learning in their busy work days than it will be to get away from the job for a half-day or all-day seminar or training session.

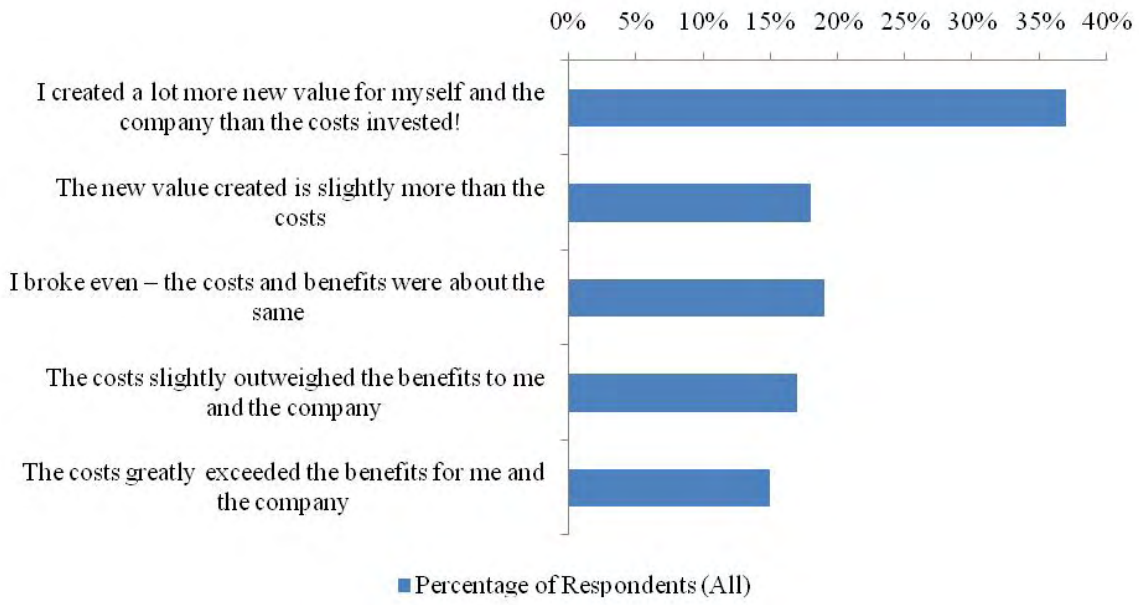

Figure 19. Summary of the Cost-Benefit Returns for the Research Project.

Importance of "learning accountability loops" (Adams, 2008) to create tightly structured links between work and learning

The research supports the importance of creating blended learning strategies that tightly link learning and work if the aim is to maximize job impact. As discussed earlier in the report, tight links between learning and work will vary by organization and by individual learners. Therefore, it is important to ask learners how they would prefer to create the tight framework that will provide the structure needed to ensure learning gets on their schedule. A list of possible options for doing so is included in Figure 20 where Scotiabank employees have rated the options in terms of effectiveness for them. From an organizational perspective, a tight blended learning structure may involve a strong mandate to create new value from the management team. This was the case in the organization where Level 4 (in the original four-level model research) produced superior cost-benefit returns in comparison to the other levels in the model. However, as can be seen from Figure 21, Scotiabank research participants had varied reactions to mandating learning value creation as a widespread blended learning strategy. Nevertheless, if one takes the total of the responses for high/very high/extremely high, 30-40% were agreeable.

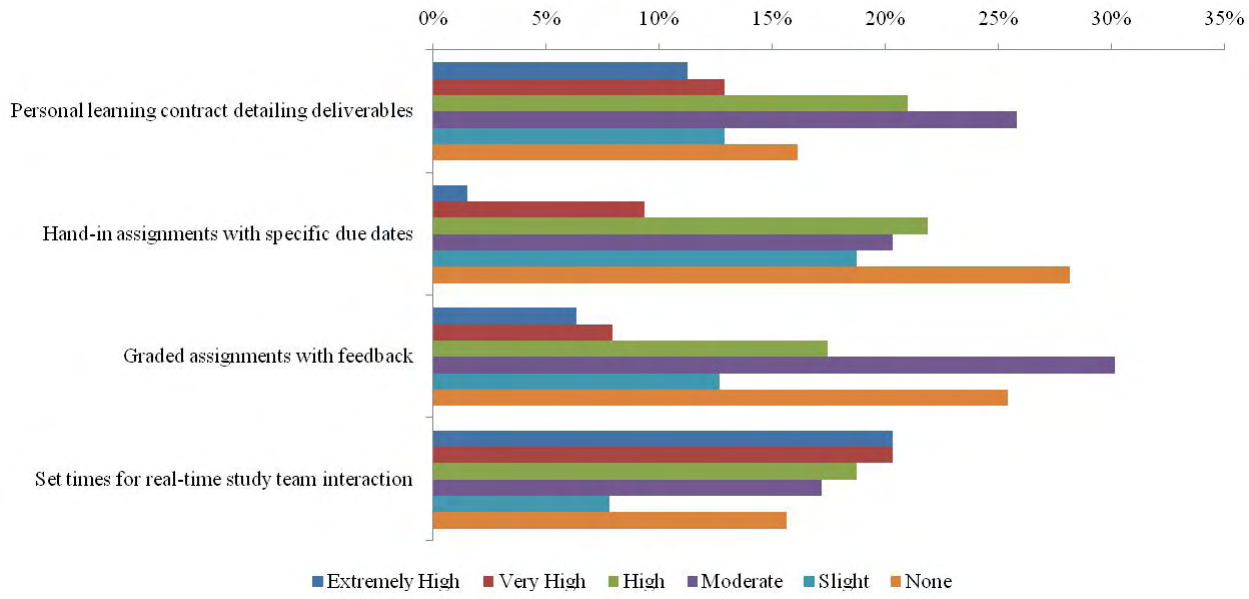

Figure 20. Learner Preferences for Structured Blended Learning Options. Bars represent the percentage of participants' responses to a survey question, "The research was designed in a highly flexible manner to provide meaningful research data on the choices made. For example, we didn't grade your work, or have rewards or penalties for participation as is the case in most formal courses. If we were to do the study again, rate your level of interest in the following options that could provide more structure."

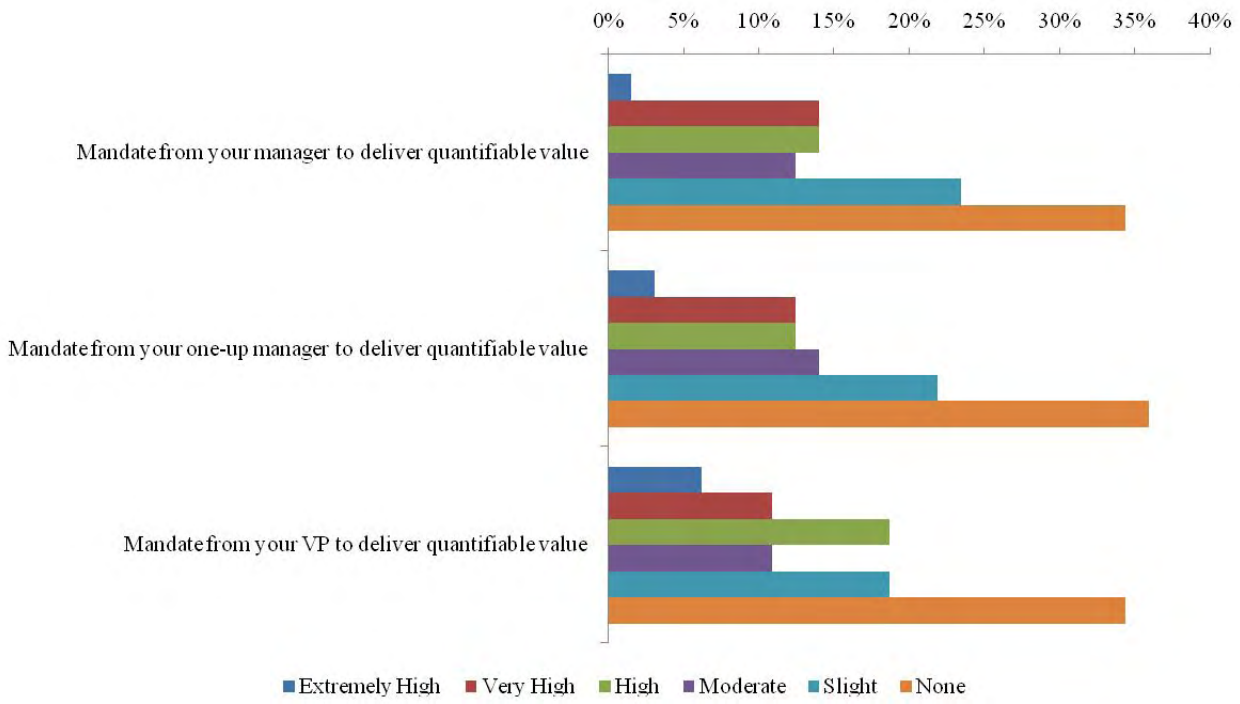

Figure 21. Learner Preferences about Blended Learning Mandate Options. Bars represent the percentage of participants' responses to a survey question, "The research was designed in a highly flexible manner to provide meaningful research data on the choices made. For example, we didn't grade your work, or have rewards or penalties for participation as is the case in most formal courses. If we were to do the study again, rate your level of interest in the following options that could provide more structure."

The important message in Figures 20 and 21 is the wide variety of responses, even when all employees are in the same organization. For this reason, it seems advisable to ask learners for their preferences about ways to help them create tightly structured learning than making the decision for them by designing inflexible top-down approaches when maximizing learning outcomes and job impact is important.

Importance of pre/posttests to evaluate outcomes

The use of pre/post measures proved to be effective in this research for determining shifts and changes in variables of interest. The learning outcomes data provided an objective manner in which to assess the degree of value created and soft-skill development for both learners and the

organization. The pre/post comparisons for learning styles and barriers/motivators for learning were also useful for surfacing assumptions and provoking new insights about learners and learning contexts. Although this research has been unable to explain the reasons for the changes in learning styles and barriers/motivators for learning in a conclusive manner by linking them to blended learning strategies, conducting pre/post surveys seems like a good practice to follow as part of an ongoing evaluation process. For example, feeding this information back to learners may be an effective way to promote reflection about their learning preferences and processes (i.e. which learning styles are dominant, how barriers and motivators for learning influence levels of commitment and ease of learning). Over time this regular feedback may also help to promote a deeper understanding for both organizations and individual learners on how best to structure learning experiences that have maximum impact for everyone involved.

Importance of acknowledging and rewarding learning in meaningful ways for learners

The research findings revealed the importance of creating workplace contexts that motivate learning rather than block it. This, however, is more complex than was originally anticipated. Instead of finding broad themes and consistencies in aspects of job responsibilities and job contexts across an organization that motivate or block learning, the study found that more often than not this seems to be learner-driven. In other words, although there may seem to be consistencies in motivators (i.e. 88% identified the importance of relevant content for learning as a major motivator), that is the exception. Other major motivators such “able to work at my own pace,” “flexibility in time,” “flexibility in location,” and “confidentiality” were identified as major motivators by only half of participants. There was even less agreement about major barriers for learning. This reinforces the importance of investigating what learners do find motivating and rewarding if organizations want learning and continuous improvement programs to payback continuous positive dividends. This point cannot be over-emphasized. What one person my find motivating or rewarding, another may find irrelevant, or possibly even a de-motivator or barrier to personal learning. Figures 22 and 23 show the variety of reactions to questions posed on final research survey about effective ways to acknowledge learning (i.e. letter from manager) and reward learning (i.e. reward points redeemable for goods and services, career advancement).

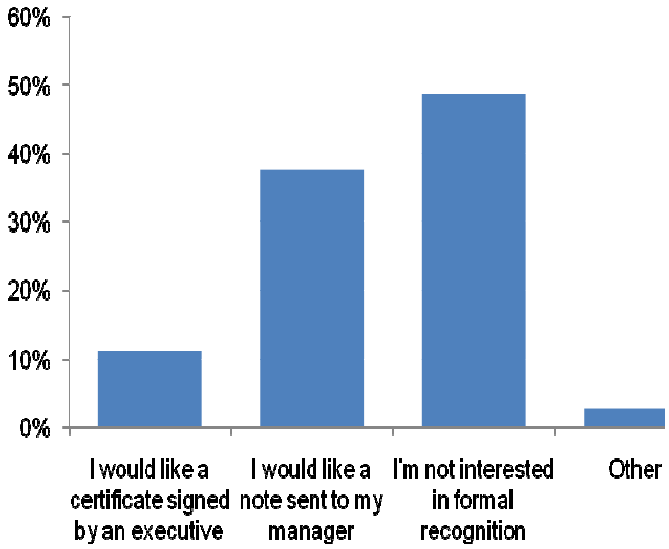

Figure 22. Preferences for Formal Recognition.

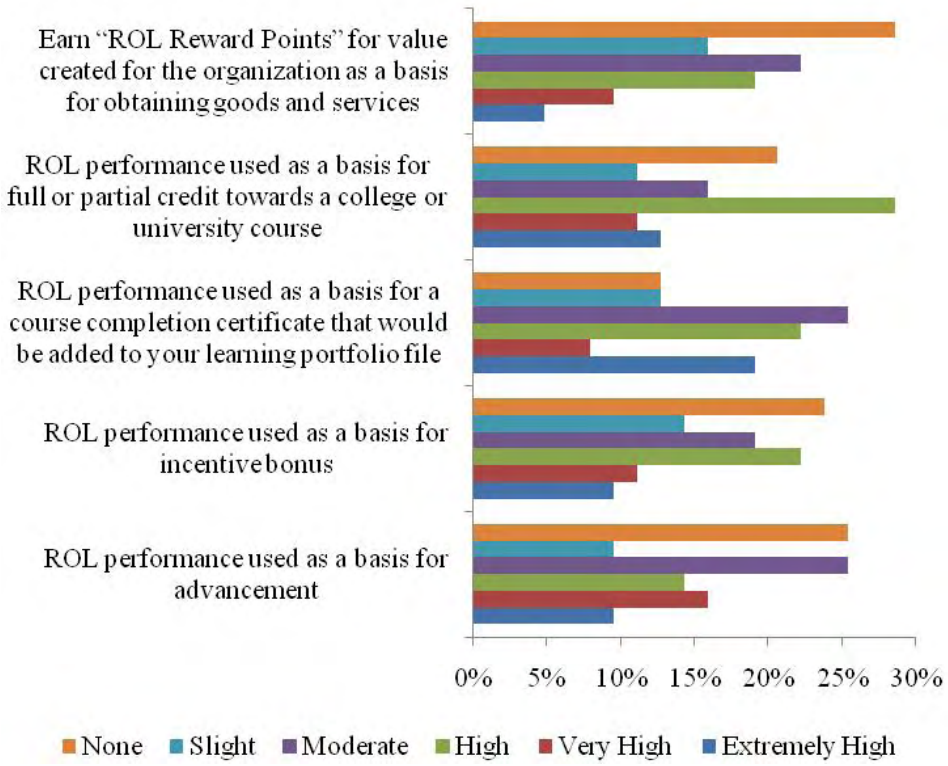

Figure 23. Learner Preferences for Rewarding Blended Learning Output, where ROL means Return on Learning as Cost-Benefit Ratio. Bars represent the percentage of participants' responses to a survey question, "The research was designed in a highly flexible manner to provide meaningful research data on the choices made. For example, we didn't grade your work, or have rewards or penalties for participation as is the case in most formal courses. If we were to do the study again, rate your level of interest in the following options that could provide more structure."

Importance of a continuous improvement mandate for training and development departments

Many of the findings in this research study require us to re-evaluate conventional wisdom and rethink conventional practice around learning. Adopting blended learning strategies provide incentives for both. As new technologies are developed and introduced, finding more effective ways to do what has been done in the past and actually reinvent workplace professional development seems of paramount importance as resources become tighter and workplace

demands greater than ever. This requires more than session feedback (i.e. sometimes called “smile sheets”) evaluations. It means seriously looking at every course and program being offered to understand where gains can be made and ways to create business cases for continuing, updating or abandoning offerings. All too often new offerings that outlast their value, but never get cycled out of production, are draining valuable organizational resources that could be directed towards upgrading and /or initiating new more relevant offerings. Many of the approaches explored in this study (i.e. outcome measures by learner by offering; pre/posttest contextual evaluations; learner style/preference surveys) could be used as a starting point.

Theoretical Contribution to Knowledge about Blended Learning

A preliminary theoretical framework for elements of a “mass customization” approach to workplace learning and professional development is presented in Figure 24 based on the key learnings that have emerged in this research project. The major shift is pedagogical in nature. Instead of a top-down “organization knows best” approach to learning and development, the model is underpinned by a learner-in-control approach where every employee makes decisions about learning within the context of his or her own job-based needs and responsibilities. This is not to say that there will never be a case for top-down, highly regulated conventional learning approaches. Of course there will be times when that learning model will be far more effective. For example, when it comes to organizational mandates around legislated or routinized processes and procedures, more conventional models will be appropriate. However, for soft-skills development to do one’s job better, the mass customization model enabling learners to take ownership of personal learning and development will be advisable. The fundamental change is in moving from an organizational model where decisions are made for learners, to one where organizational learning experts ask questions to find effective ways to support a learner-in-control approach. This is not a traditional course-based model. It is a holistic approach designed to foster self-directed, meaningful, career-long learning.

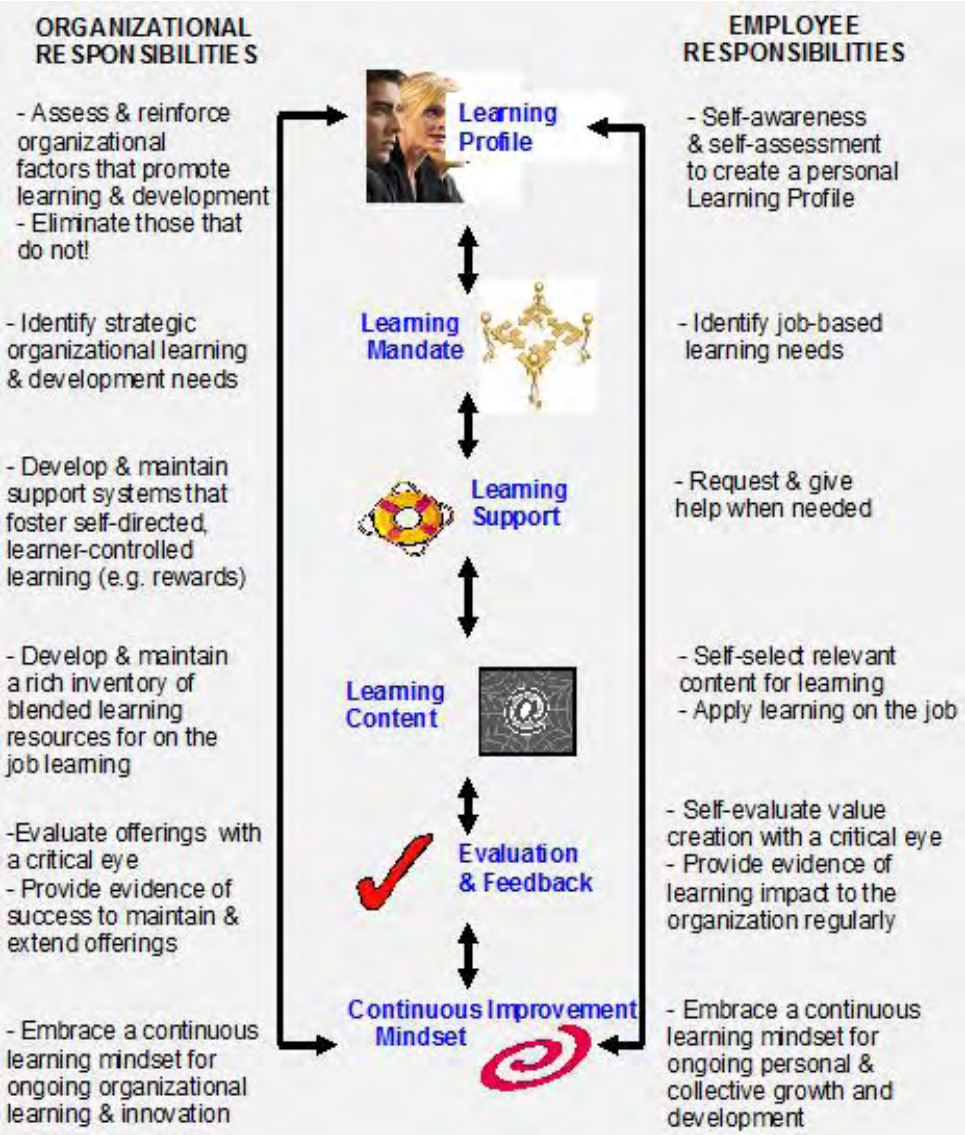

Figure 24. A Mass Customization Model for Workplace Learning.

In the proposed mass customization model for workplace learning, learners will self-assess how they learn best and what needs to be learned to improve job performance. Learners will request help and give help to others as appropriate in their dual roles of learners and teachers in a vibrant learning community. Learners will self-select learning content, self-determine appropriate evaluation strategies, and self-report evidence of learning impact to support their assessment claims. This ability for learners to adequately take control of their own learning cannot happen in isolation. It needs to be fostered through organizational support systems created

and deployed to meet organizational learning strategic imperatives that can advance the development of a unique, competitive knowledge advantage. With a coherent and consistent approach to learning tightly woven into the organizational fabric, organizational culture will evolve to that of a dynamic learning partnership. Learning and job performance will be aligned and tightly linked through reward systems and strategic mandates, and supported through holistic organizational strategies for acquiring and/or creating learning content and technology systems.

CONCLUDING THOUGHTS AND NEXT STEPS

To conclude, the rationale for this research study was threefold: (a) to observe, monitor, test, review and validate the four-level framework in a large, leading-edge Canadian organization; (b) to deepen and extend our understanding of the use of e-learning for supporting soft-skills development in the Canadian workplace to maximize impact on job performance; and (c) to provide a solid platform for future blended learning research in the workplace. Much has been achieved to advance our understanding of blended learning strategies and their impacts in terms of workplace learning. As with most research, answering questions often leads to even more questions. Such is the case in this situation. That a single best blended learning model could not be clearly delineated opens up the possibilities of a highly individualized approach to workplace blended learning strategies – a personal learning path for each and every employee. What has been viewed as impossible in the past because of the seemingly infinite nature of this vision, seems merely steps away with the possibilities being created in today's web-world. It is our hope that this research report brings new light and a sense of urgency to this call for action.

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