

Course Design Elements Most Valued by Adult Learners in Blended Online Education Environments: An American Perspective

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Abstracts

This research describes course design elements most valued by adult learners in blended learning environments that combine face-to-face contact with Web-based learning. It identifies the online course features and the instructional design goals selected as most important by a sample of 67 adults and compares the group rankings with those of various sub-groups based on gender, pre-course technology and self-direction skills and experiences, and preferred learning strategies as measured by *Assessing the Learning Strategies of Adults* (ATLAS). The results of the study support the principles of adult learning, indicating that adults value course designs containing options, personalization, self-direction, variety, and a learning community. Findings also identify some differences in learning emphasis by gender, preferred learning strategies, and previous experience with technology and self-directed learning. Implications of these findings for higher education in serving adult learners are discussed.

Die von Erwachsenen in gemixten Online Lernumgebungen am meisten geschätzten Kursgestaltungselemente: Eine amerikanische Perspektive

Dieser Forschungsbericht beschreibt die Kursentwicklungselemente, die von in gemixten (Web-based / Face-to-Face-Kontakt) Veranstaltungen lernenden Erwachsenen am höchsten bewertet wurden. Sie stellt die Merkmale des Online Teils und die Lehrziele fest, wie sie von einer Probe von 67 Erwachsenen für am Wichtigsten eingeschätzt wurden und vergleicht das Ranking dieser Gruppe mit den Ergebnissen verschiedener anderer Gruppen, die auf der Basis von Geschlechtszugehörigkeit, technischem Vorwissen und Selbstbestimmungsfertigkeiten und -erfahrungen und bevorzugten Lernstrategien ausgesucht waren, gemessen durch die *Assessing the Learning Strategies of Adults* (ATLAS)-Methode. Das Ergebnis der Studie stützt die Grundsätze der Erwachsenenbildung, indem gezeigt wird, dass Kursentwicklungselemente, die offene Möglichkeiten bieten, Personalisierung, Selbstbestimmung, Variationsmöglichkeiten zulassen, die dadurch eine Lerngemeinschaft ermöglichen, am höchsten geschätzt werden. Es wurden auch einige geschlechtsspezifische Differenzierungen in der Lernbewertung, den bevorzugten Lernstrategien, sowie von Vorerfahrungen in der Technologie und im selbst bestimmten Lernen gefunden.

Éléments dans la conception des cours que les apprenants adultes apprécient le plus lorsqu'ils travaillent dans des environnements d'étude mixtes, en ligne et hors ligne: une perspective américaine

Ce travail décrit les éléments dans la conception des cours que les apprenants adultes apprécient le plus dans les environnements d'apprentissage mixte qui associent les contacts présentiels et l'apprentissage fondé sur le Web. Il identifie les caractéristiques des cours en ligne et les objectifs de conception éducative qu'un échantillon de 67 adultes a choisis comme étant les plus importants. Il procède à une comparaison des classements attribués par le groupe avec ceux de divers sous-groupes basés sur le genre, les compétences et l'expérience antérieures en matière de technologie et d'autonomie ainsi que sur les préférences en matière de technologie d'apprentissage telles qu'on peut les mesurer au moyen de l'Évaluateur des Stratégies d'Apprentissage des Adultes (ATLAS). Les résultats de cette étude confortent les principes de l'apprentissage chez les adultes qui font valoir que les adultes apprécient les schémas de cours offrant plusieurs options, une personnalisation, un champ d'autonomie, de la variété ainsi qu'une communauté d'apprentissage. Les résultats obtenus font aussi apparaître certaines différences dans la façon dont l'apprentissage est orienté en fonction du genre, des préférences en matière de stratégie d'apprentissage, du vécu antérieur en matière de technologie et de l'autonomie de l'apprenant. Suit une discussion sur les implications de ces découvertes pour l'enseignement supérieur destiné aux étudiants adultes.

Introduction and background

E-learning based on Internet technology has been prominent in American higher education since 1996, the year the Internet suddenly surged into prominence. Net-based instruction continues to grow in popularity (Kascus, 1997; Barron & Rickelmann, 1999; Degnan, 1999; Kestenbaum, 1999; Horton, 2000), and is, in fact, sharply accelerating (Shea, 2002; Symonds, 2003). The e-learning revolution is clearly in evidence on campuses throughout the US. A 2003 study of degree-granting institutions by the Sloan Consortium reported that, by that time, 11% of all American students were taking classes online, that a majority of academic leaders believed that online learning outcomes were equal to those of face-to-face instruction, and that two-thirds said online learning was critical to their long-term development strategy.

While Net-based e-learning has been helpful in attracting students, it has also taken American universities into some new and unfamiliar territory. The introduction of e-learning has drawn post-secondary education into the international knowledge economy, making it a player in the competitive 250 billion dollar 'learning industry' in the US (Cappelli, 2003; Irvine, 2003). Thus, distance education on campuses across America now faces a new strategic model, an emphasis on 'the business of education' (Ausburn, 2002, 2004), and the pressures of the fundamental economics of business, including competition for students, fiscal accountability, and return on investment (Phillips, 1997, 2002; Phillips & Phillips, 2002; Cappelli, 2003).

As higher education has ramped up its e-learning operations, it has also seen a shift in its demographics that has created an important new customer for e-learning. The new demographics of colleges and universities identify part-time *adult learners* as the new majority, with non-traditional working adults over age 26 now comprising over 50% of the American post-secondary student population. This group has become the fastest growing market segment and the largest audience for online learning (Shea, 2002; Cappelli, 2003; Levine, 2003; Symonds, 2003). It has also become the focus of a dynamic new player in higher education: the for-profit colleges that specialize in online degrees. These for-profit online institutions have grown explosively in the past decade and are currently expanding aggressively. Much of their success has been directly attributed to their focus on the adult market, their understanding of the needs and preferences of adult learners, and their core value of superb adult customer service (Symonds, 2003).

As higher education faces this strong new competition for large numbers of non-traditional adults, it becomes increasingly important for faculty and administration to identify the needs and wishes of adults as students. It is important to understand their preferences for various aspects and features of online learning and to apply this understanding to online course design and delivery.

Adult learners have unique learning needs and expectations that set them apart from their younger counterparts. Adult learning has become an importance force in American education, and a significant body of literature has established clear emphases for adult educators. These are typically recognized in the principles of the *androgogy* model developed by Knowles, which stresses need-to-know, immediacy of application, sharing of life experiences as a source of knowledge, independence and self-direction, and ownership of their learning as hallmarks of adult learners (Knowles, 1980, 1984; Knowles *et al.*, 1998). Other adult education theorists have also stressed autonomy, self-direction, and affinity for real-life learning as key characteristics of adult learners (Tough 1977; Brookfield, 1986; Fellenz & Conti, 1989; Merriam & Caffarella, 1999). In recent research on communities of practice, both formal and informal professional and social communities have been identified as additional important components of adult learning (Wenger, 1998).

Just as adult learners have unique characteristics that set them apart from younger students, so learning environments that join Internet learning with face-to-face experiences have characteristics that differentiate them from both traditional classrooms and totally online situations. This mixed-mode instructional model, generally termed *hybrid, blended or sandwich learning*, has been recognized as an effective alternative that can combine the best features of each model, help foster rapport among participants, and decrease 'psychological' distances and isolation (Wolcott, 1996; Horton, 2000; Horton & Horton, 2003; *Syllabus Magazine*, 2003). There has, in fact, been considerable support in recent literature for the Internet plus face-to-face blended or hybrid model that joins technology, campuses, and people. Some believe that this 'mixing bricks and clicks' may be the ideal learning structure for non-traditional adult learners. It has been cited as the best way to resolve many e-learning concerns expressed by both faculty and students, a critical e-marketing strategy, and possibly ultimately the most popular and widely-used e-format (Bleed, 2001; Granitz & Greene, 2003; Horton & Horton, 2003).

Purpose of the study

There currently exists both a solid theory and research base relating to adult learning and an awareness that blended learning that combines online and face-to-face components can produce unique and effective learning

experiences. There is also a body of research that has generally recognized that affinity for learning at-distance is not uniform and that learner characteristics and needs are likely contributors to preferences and success (Galusha, 2001). In studies with adult learners, both previous experience in non-traditional education (Rekkedal, 1983) and gender (Proost & Elen, 1997; Barrett & Lally, 1999; Kimbrough, 1999; Sullivan, 2001) have been demonstrated to affect attitudes and behaviours in distance learning. Among instructional design elements of distance courses online, the research evidence favours interactivity, communication, and 'bonds' or 'connectedness' as important features of course design, with elements such as chat, e-mail, discussion boards, group activities, and learning communities typically drawing positive responses from students (Ausburn, 2001; Roberson & Klotz, 2002; Roblyer & Wiencke, 2003; Woods & Ebersole, 2003).

Despite these converging research threads, however, little is currently found in the literature regarding the instructional goals and design features identified as most important to their learning by adults with various personal and background characteristics in blended learning settings. With increasing numbers of adults as distance course customers and blended formats strong in popularity, this lack of knowledge is problematic.

This study addressed this gap by describing the rankings of course design elements by a group of 67 adults in blended distance courses combining face-to-face meetings with Internet-based self-directed study and collaboration. The purpose of the study was to identify the instructional features selected as most important by this group and to compare the group rankings with those of various sub-groups based on learner variables frequently identified in the literature as related to preference and performance in distance learning.

Methods

The subjects and the blended courses

The subjects were 67 adult students enrolled in five courses in a large state university in the US, all taught by the researcher. All the courses were similarly-structured blends or hybrids, combining periodic class meetings with facilitated self-directed study and collaborative work through a Web-based course site presented via the Blackboard course platform. The 67 subjects were all working adults studying part-time for teacher certification or advanced degrees in education and training. They represented a mix of males (58.2%) and females (41.8%), an age range of early-30s to mid-50s, and a variety of instructional and administrative jobs in workplaces such as schools and technical centres, universities, businesses, public agencies, and community organizations.

Instrumentation

The study's data were obtained through two sources: (1) a questionnaire developed by the researcher, and (2) the *Assessing the Learning Strategies of Adults* (ATLAS) self-test.

Research questionnaire. The questionnaire asked the subjects to identify their gender; learning strategy as measured by ATLAS; self-assessed level of technology skills at the beginning of the course, using categories defined on the questionnaire (see table 1); number of pre-course experiences with technology-based learning; and number of pre-course experiences with self-directed learning. The questionnaire also solicited their selections and rankings of online course site elements and instructional goals for distance courses.

The questionnaire presented subjects with a listing of eight features (see table 2) available to them on their course Internet site. They were asked to rank these eight features in the order they felt represented their importance or value to them personally as a distance learner.

The questionnaire also presented a list of 15 course instructional goals (see table 3) identified by the researcher's experience and the research literature as important to students' successful completion and satisfactory evaluation of learning at-distance. All 15 goals were included in the design of the courses experienced by the subjects participating in the study. The questionnaire asked the subjects to select from these 15 instructional goals the five goals they personally found most valuable in completing their course work at distance and then to rank the five goals in order of importance to their success.

Assessing the learning strategies of adults (ATLAS). ATLAS is an instrument recently developed at the researcher's university and currently under intensive programmatic research there as a tool for instrumented learning (see Conti (2003) for online access to ATLAS). Instrumented learning (Blake & Mouton, 1972;

Table 1 *Sub-group profile within the sample of adult learners (n = 67)*

Sub-group	n (%)
Gender	
Male	39 (58.2%)
Female	28 (41.8%)
Level of pre-course technology skills (self-assessed)	
Novice (Knew how to do basic functions, could use basic functions in a few software programs, had basic Internet skills such as opening and navigating 'no frills' web-sites, sending and receiving e-mail, and using key-word search engines)	23 (34.3%)
Fairly skilled (Knew how to do most things I needed, could function skillfully in a variety of software, and could perform such Internet functions as power searches, plug-in download and install, and navigate web-sites using plug-ins)	27 (40.3%)
Power user (Could do advanced software and hardware tuning, modify systems settings and install new hardware components, was a sophisticated user of a variety of high-end software, and could create my own web-pages)	17 (25.4%)
Reported number of pre-course experiences with technology-based learning	
First experience	22 (32.8%)
1–3 experiences	28 (41.8%)
4 or more experiences	17 (25.4%)
Reported number of pre-course experiences with self-directed learning	
First experience	12 (17.9%)
1–3 experiences	30 (44.8%)
4 or more experiences	25 (37.3%)
Preferred learning strategy (measured by ATLAS)	
Navigator	28 (41.8%)
Problem solver	23 (34.3%)
Engager	16 (23.9%)

Table 2 *Online course features: sums of rank points and rank ordering for sample (n = 67)*

Feature	ΣRankPoints	Rank order
Course announcements and reminders from instructor	383	1
Course information documents (syllabus, schedules, outlines, grading procedures and policies)	369	2
Information about assignments and instructions for completing them	363	3
Course instructional/content documents and materials (handouts, PowerPoint slides, Internet sites)	333	4
Personal and contact information for instructor	287	5
Direct linkage to posted Internet sites for completing assignments or independent study	285	6
Communication with classmates and instructor via asynchronous and synchronous discussion boards and virtual chat	197	7
Email linkage to classmates and instructor	195	8

Table 3 Course instructional goals: sums of rank points and rank ordering for sample ($n = 67$)

Course instructional goal	Σ RankPoints	Rank order
Provide options for individualization/customization of learning	122	1
Facilitate self-directed learning	118	2
Provide variety in learning activities and assignments	93	3
Encourage and enable active communication and interaction among learners	75	4
Provide effective 2-way communication between learners and instructor	72	5
Provide opportunities for learners to expand their technology skills	68	6
Provide an introduction to the course and establish clear expectations	62	7.5
Provide worthwhile learning experiences in 'live' meetings	62	7.5
Provide an anchor or 'home base' for the course	54	9
Provide access to sufficient and relevant course content	50	10.5
Give learners a sense of 'belonging' and involvement	50	10.5
Encourage and facilitate active and participatory learning	48	12
Give learners fast and effective technology and content assistance when requested	45	13
Give learners adequate feedback to enable them to evaluate and track their performance	39	14
Provide adequate guidance and structure to keep learners focused and on-task	38	15

Mouton & Blake, 1974, 1984) seeks to gain understanding of self and others, improve performance, and enhance the processes of metacognition and learning how to learn. Assessed by various learning instruments, learning *styles* have long been generally accepted as stable and deeply ingrained processes for taking in and processing information (Ausburn & Ausburn, 1978; Kramer, 2002). In contrast, learning *strategies* are believed to be less rigid and more related to personal preferences and choices made by learners in undertaking learning tasks (Smith, 1982; Fellenz & Conti, 1993; Conti & Kolody, 1995). ATLAS is a self-assessment instrument that classifies learners into three groups, based on their preferred strategy or approach to learning: Navigators, focused and results-oriented learners who favour efficient and effective learning through a carefully charted learning plan; Problem Solvers, critical thinkers who explore a variety of options in working with learning problems and avoid rapid closure until multiple paths are explored; and Engagers, passionate learners who love to learn, approach learning from the affective domain, learn with feeling, and seek personal identification and a high level of involvement in a learning project (Conti & Kolody, 1995, 1999).

Procedures

As part of their evaluation activities at the end of their hybrid distance courses, all 80 students in the five participating courses were asked to take ATLAS independently online (Conti, 2003) and then to complete the research questionnaire. Sixty-seven completed questionnaires were returned to the researcher, representing an aggregate response rate of 84% across the five classes participating in the study. From the questionnaire data, a profile of the 67 subjects was created, using frequencies and percentages in the gender, pre-course experience, and ATLAS sub-groups. The profile is shown in table 1.

A chi-square test was performed to compare the ATLAS distribution found among the subject group to the American national norms for the test, which is a nearly equal distribution of 36.5% Navigators, 31.7% Problem Solvers, and 31.8% Engagers. While the subject group had somewhat more Navigators (41.8%) and fewer Engagers (23.9%) than the norm, the chi-square revealed the group was not significantly different from the ATLAS norms ($\chi^2 = 1.98$; $df = 2$; $p = 0.37$), and, thus, was an acceptably representative sample on this variable.

To analyse the selection and ranking patterns of the sample and its sub-groups, point values were assigned to rankings by reversing ranks and point values (e.g. rank 1 = 8 points; rank 8 = 1 point), so that more points went

to higher ranked items. The 'score' assigned to various online course features and instructional goals was defined as the sum of the rank points earned, or Σ RankPoints. Both rankings and Σ Rank Point scores were used in the data analysis. A simple descriptive analysis technique was used to develop a profile of the ranking patterns of the subject group and its sub-groups.

Results and discussion

Online course features

The research questionnaire asked the subjects to rank order a set of eight features commonly found in online course sites. Rankings were then converted to rank points, and these points were summed to create a Σ Rank-Points score for each feature. The group's ranking results for the eight features of their online course sites are shown in table 2.

Analysis of the ranking data suggested four clearly defined groups or 'tiers', based on major break points in the Σ RankPoint scores and point ranges within and between each tier. Tier 1 at the top of the rankings comprised the top three course site features: (1) Course announcements and reminders from instructor, (2) Course information documents such as syllabus, outlines, requirements, and grading procedures, and (3) Information about specific assignments and instructions for completing them. The clear choice of these features as most important to the adult subjects is indicated by a range of only 20 ranking points among them, accompanied by a 30-point gap from the third-ranked item in this top tier to the highest scoring item in the second tier. Common to all three features identified in this top tier is their function as creators of *structure and security* for learners. All three features offer guidance and confirmation to help keep students focused and on-task as they progress through learning at-distance, which has frequently been identified in the distance education literature as a critical component in learner success.

Tier 2 of the online course features contained only the fourth-ranked item: (4) Course instructional or content materials, such as documents, computer slide presentations, and Internet sites. This single-item tier was separated from Tier 1 by a gap of 30 rank points and from the third tier by 46 rank points. Relatively high ranking of course *content* by adults was not surprising, given their typical affinity for relevance and real-world applications of new knowledge and skills. It was noteworthy that, in these face-to-face plus Internet blended courses, the 'structure' variables were ranked above the 'content' variable. One possible contributor to this ranking order is that, in this type of blended learning environment, content was also addressed in the face-to-face meetings, making it unnecessary for the at-distance component to carry the entire burden of the course content.

In Tier 3, two course features received nearly identical Σ RankPoint scores at ranks five and six: (5) Personal and contact information for instructor, and (6) Direct linkage to posted Internet sites for completing assignments or independent study. This Tier was identified by a range of only two points between its components and large rank point distances to Tier 2 (46 points) and Tier 4 (88 points). These two features might be regarded as *convenience* features, offering rapid point-and-click access to instructor assistance and to Internet content information. This convenience was regarded as less important than the structure/security and content features of the online sites.

The final Tier 4 also comprised two features separated by only two points at ranks 7 and 8: (7) Communication with classmates and instructor via asynchronous and synchronous discussion boards and virtual chat, and (8) Direct e-mail linkage to classmates and instructor. These two *communication* features were clearly ranked at the bottom of the set of course features, as indicated by a gap of 88 rank points from Tier 3. While it was somewhat surprising that these communication functions were ranked at the bottom of the course features, given the emphasis in the online learning literature on learner interaction and involvement, it is possible they were perceived as less important than other features in this type of blended environment where face-to-face communication and social opportunities were frequently available. Of note is the fact that, in the subsequent analysis of the 15 course goals for the distance courses, facilitation of communication and interaction was ranked in the top five by this sample of adult learners.

The rankings shown in table 2 were generally highly consistent across the various sub-groups in the sample. However, several important differences in rankings assigned to the eight online course features were observed among some sub-groups when 'ranking difference' was defined as \pm two rank orders' from that assigned by the entire sample. Using this criterion, several noteworthy variations were observed.

The course announcements and reminders from instructor feature, ranked first by the whole group, was ranked 3.5 (tied with another feature for ranks 3 and 4) by both the power technology users and those with

four or more previous experiences with technology-based learning. This suggests that technology skills and experience may be important in determining adults' sense of comfort and security in distance learning and their need for a reassuring presence of their instructor until this comfort is established.

The course information feature, ranked second by the complete group, exhibited an interesting pattern among the ATLAS learning strategy sub-groups. The Problem Solvers matched the whole group in ranking the provision of information such as course syllabus, outline, and requirements second among the course features. By contrast, the Navigators ranked this feature as number one, while the Engagers gave it a rank of four. The Navigators' top ranking may reflect a typical critical concern and need for information about the functioning and 'rules' of a course to enable their preferred strategy of charting an efficient and effective learning path for themselves. The Engagers' lower ranking than the other ATLAS groups may signal less interest in 'rules of engagement' and their preference for discovering what opportunities are available to them and getting involved on their own terms and according to their own interests.

Provision of course 'content' in documents, computer slides, and Internet sites was ranked in fourth place by the whole group. In contrast, the content feature of the online course site was ranked second by the power technology users and those experiencing self-directed learning for the first time. It was ranked lower at sixth place by the ATLAS Problem Solvers. The content emphasis by the power technology users may indicate that their high comfort level with online technology allowed them to have fewer technical concerns and to turn their attention to the substance of what they were learning. For learners inexperienced with self-direction, provision of specific instructor-assigned course content may fit the teacher-centred instructional model with which they are familiar and, thus, be viewed as both a security need and an expectation. For the Problem Solvers, lower ranking of content provision may reflect their preferred analytical strategy of seeking out and evaluating multiple inputs, ideas, and solutions for themselves.

Provision of personal and contact information for the instructor received a number five ranking from the whole group. However, the novice technology users ranked this course site feature higher at number three. Their ranking of this feature was higher than those of learners experiencing either technology-base learning (rank = 5) or self-directed learning (rank = 6) for the first time. This suggests that comfort and confidence with technology may be more decisive than experience in applying either technology or self-direction skills for learning in determining adults' security needs for familiarity and contact with their instructor in distance environments.

Course instructional goals

The subjects were also asked to select from a list of 15 instructional goals the five goals they viewed as most important to them personally and to rank their selections in the order they believed them to contribute to their personal success in learning at-distance. The 15 goals and their rank ordering by the entire group of 67 subjects are shown in table 3.

As shown in table 3, based on Σ RankPoint scores, the five highest ranked instructional goals for the whole sample were: (1) Provide options for individualization/customization of learning, (2) Facilitate self-directed learning, (3) Provide variety in learning activities and assignments, (4) Encourage and enable active communication and interaction among learners, and (5) Provide effective 2-way communication between learners and instructor. The first two goals were clearly identified by the group as their top choices by a 25-point score gap between them and the third-ranked goal. The top five goals, identified as Tier 1 for this analysis, were also generally highly ranked across the gender, technology skills, pre-course experience, and learning strategy sub-groups. The notable exception was the very low ranking (rank = 13) given by the ATLAS Navigator sub-group to the number five goal of providing effective two-way communication between learners and instructor. It is possible that, once they established their understanding of the course objectives and their chosen paths to attain them, the Navigators trusted their own strategies and felt little need for personal communication with the instructor except for occasional verification of being on-target.

The rankings of the remaining 10 instructional goals are also shown in table 3. Fairly clear clusters are evident in the Σ RankPoint scores, creating four tiers below the top five grouping: Tier 2—ranks 6 and 7.5; Tier 3—ranks 9 and 10.5; Tier 4—ranks 12 and 13; and Tier 5—ranks 14 and 15. While there were many similarities in the rankings of the course goals in Tiers 2–5 across the sub-groups, there were also some noteworthy differences.

The goal of providing opportunities to expand technology skills (rank = 6 for whole group) was ranked in the top five by males (rank = 4), but very low by females (rank = 13.5). This goal was also ranked high by

novice (rank = 4.5) and fairly skilled (rank = 5) technology users, and by those experiencing technology-based learning for the first time (rank = 3) or less than three times (rank = 5), but low by power technology users (rank = 12) and those experienced with technology-based learning (rank = 15). These patterns were expected and are supported in the literature. They illustrate the relatively greater significance generally placed on technology by males and the skill concerns of inexperienced technology users new to technology-based learning.

The goal of providing an introduction to the course and establishing clear expectations received a mid-range ranking (rank = 7.5) for the whole group. However, it was ranked very high by the power technology users (rank = 2) and in the top five by those most experienced with technology-based (rank = 3.5) and self-directed (rank = 4.5) learning, and by the ATLAS Navigators (rank = 4). These results may indicate that learners who have gotten past concerns with delivery technology and the skills required for self-direction shift their focus to what a course is about and what learning outcomes are expected of them. For Navigators, a strong focus on course expectations is likely a reflection of their need for clear direction in applying their preferred learning strategy of developing a well-planned path to goal achievement.

On the goals of providing an anchor or 'home base' for the course and giving learners a sense of 'belonging' and involvement, there were sharp ranking differences between males and females. The males gave these goals low priority, ranking them at numbers 14 and 13, respectively, while the females ranked them among their high and middle priorities at numbers 5 and 8.5, respectively. This supports the finding of greater concerns about technology and maintaining personal relationships frequently reported in the literature among females in distance and technology-based learning. The groups experiencing technology-based and self-directed learning for the first time also ranked the 'belonging' goal higher than most other groups, perhaps also indicating a need for the security of group identity and personal involvement in learning formats with which they were unfamiliar.

The goal of giving learners fast and effective assistance on request also brought out a marked contrast between males and females. Males ranked this goal as much more important (rank = 7) than did females (rank = 15), perhaps indicating a gender difference in concern for maintaining perceived competence and adequacy of performance. The ATLAS Engagers also ranked this goal (rank = 7) higher than most other sub-groups, perhaps revealing their awareness that those with this learning strategy can quickly distance themselves from tasks when they are unable to stay actively and personally involved.

For the goal of providing adequate guidance and structure to keep learners focused and on-task, ranked last at number 15 by the whole group, two sub-groups gave sharply different rankings. Novice technology users gave this goal the rank of 9, and ATLAS Problem Solvers ranked it among their high priorities at 5.5. For technology novices, this ranking may indicate concern for getting side-tracked in course performance while struggling with new technology skills required for working at-distance. For Problem Solvers, this ranking may appear to contradict their natural preferences for exploration and alternatives. However, it may represent recognition of their tendency to stray off-task and a need for guidance in reaching required goals in a formal learning situation.

Conclusions and significance of the study

This study is limited by a specific definition of blended learning environments as a combination of online learning plus a limited number of face-to-face experiences. The study is further constrained by representing a single online course platform (i.e. Blackboard) and by a fairly small sample representing the adult students and courses of a single instructor. However, to the extent that they may be generalizable, the findings of the study have implications for colleges and universities in several areas related to serving adult learners in similar blended environments. For faculty developing courses with an online at-distance component, awareness that adults may value options, variety, and self-directedness in their learning opportunities can help guide effective instructional design that will attract and retain adult learners. The adults in this study also placed high value on effective two-way communication with their classmates and instructor, and felt they benefited from frequent announcements and reminders from their instructor. This suggests that faculty working online should be readily available to their adult students, encourage frequent communications and interactions, and apply techniques such as e-mail reminders to check course sites for new information and instructions. It has, in fact, been the author's experience that these 'push' strategies are highly valued by adults and consistently receive praise in their course evaluations.

The study also supported the idea that, in online instruction, as in more traditional environments, learners with different characteristics may differentially prefer and benefit from various instructional features and goals.

In this sample of adult learners, several specific preference differences were observed among sub-groups based on gender, learning strategies, and pre-course experiences with technology and self-directed study. These differences were similar to those frequently reported in the literature and merit further investigation in online learning research as well as consideration in blended course design. The presence of such differences emphasizes the need for research that asks not which techniques are 'better', but rather *for whom* various techniques are most effective. It also indicates that faculty designing blended courses for adults should take advantage of the many instructional strategies that can be applied in the hybrid model to support the multiple learning needs of these students.

The results of this study supported the basic principles of adult learning. This suggests that these principles should be well noted by faculty who wish to design courses that attract and retain adult customers. Adult education theory and literature stress the expectations of adults for personal relevance in what they learn, participation in setting their learning outcomes based on their real-world needs, self-direction of their learning resources and pathways, and establishment of an active learning community. These priorities are reflected in the course features and instructional goals ranked as most important by the adult learners in this study. The concept of *community* in learning and professional practice, and the ability of the Internet to support its growth and maintenance, has found considerable voice in the adult learning literature (Wenger, 1998; Hara & Kling, 2000). Its emergence as a strategic theme for e-learning and its marketing (Granitz & Greene, 2003) should be a clear call for course designers in colleges and universities as they recruit the increasingly important adult market.

Also supported in this study is the growing expectation and demand by adult learners for learning options, choices, and personalization. The phenomenon known as *mass customization*, or service of large numbers of 'markets of one' (Stuart, 1994) has become a business imperative in the information society, and is rapidly making its presence felt in higher education (Pine, 1993; Stuart, 1994; Ausburn, 2002, 2003). In higher education, customized learning will have to achieve a degree of cost-effectiveness, or return on investment (ROI). In a review of the strategies and technologies of customized learning, Ausburn (2004, p. 2) stated that '... the mass customization imperative for education can be viewed as the meeting of needs and preferences of individual learners without sacrificing efficiency of time or cost'. She claimed that successful implementation of customized course and materials design can be accomplished by a combination of the flexibility of object-based instructional design with reusable learning objects (RLOs) and new systems of digital asset management (Ausburn, 2004). Granitz and Greene (2003) recognized the importance of learning personalization and customization, and their use to enhance customer service, as strategic themes for successfully marketing online learning to adults. Similarly, Symonds (2003) pointed out that cost-effective personalization and customer service have become key factors in the success of American online for-profit universities in attracting adults. The expectation of adult learners for options and personal choices is strongly evidenced in the selection of top-ranked instructional goals by the participants in this study. This is worthy of notice by university faculty designing learning environments to appeal to this audience, and merits further testing in international settings.

Finally, this study presents some new additions and validations to the emerging knowledge base about the ATLAS test of adult learning strategies. Differences were observed among Navigators, Problem Solvers, and Engagers in their preferences for course features and instructional goals in blended learning environments. Significantly, these differences were explainable from the ATLAS construct and theory base. As research on this new tool for instrumented learning advances, these findings merit further investigation, including in international settings. The learning strategy construct defined and measured by ATLAS may emerge as an important learner variable and a useful tool for instructional design of online and blended learning experiences for adults in higher education.

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