2008

Satisfaction with E-Learning--Courses are Good for Some of the People, Some of the Time?

"Sheryl Sharma
UNSW, sherylsharma@gmail.com

Hyo-Joo Han
"Georgia Southern, hhan@georgiasouthern.edu

Robert Szymanski
University of Central Florida, rszymanski@bus.ucf.edu

SATISFACTION WITH E-LEARNING – COURSES ARE GOOD FOR SOME OF THE PEOPLE, SOME OF THE TIME?

Sheryl Sharma
UNSW
sherylsharma@gmail.com

Hyo-Joo Han
Georgia Southern University
hhan@georgiasouthern.edu

Robert Szymanski
University of Central Florida
rszymanski@bus.ucf.edu

ABSTRACT

This paper reports the results of a study of college students in the US that examined specific learner characteristics affecting satisfaction with e-learning courses. It finds that satisfaction is largely governed by the degree to which one is confident in one's ability to regulate the factors that influence course work and one's goals in taking them. These goals can be both in terms of grades and results or a perception that the course has added value to their education experience. The findings suggest that not all people are suited to e-learning and institutions need to find ways to identify and encourage efficacious characteristics in the students. It also has some implications for those offering IS courses online.

Keywords: e-learning, online learning, satisfaction, self-regulated learning

I. INTRODUCTION

There is extensive research looking at the benefits of e-learning for organizations, educational institutions and the government. Although research has established the effectiveness of e-learning, the specific learner characteristics leading to successful learning outcomes in e-learning environments is unclear. Additionally, research suggests course satisfaction is often low for technology-based instruction (Frankola, 2001; Phipps and Merisotis, 1999; Welsh, E.T., Wanberg, C.R., Brown, K.G. and Simmering, M.J., 2003; Zimmerman, 2002). As such, as the number of e-learning courses continues to expand, there is a need to truly understand learners and design quality e-learning environments conducive to learning.

As learners become more adept at working with and using technology-based tools and applications, and develop a better understanding of, and appropriately use, effective learning strategies, they may be more satisfied with e-learning courses because they have had a positive experience, which may then encourage future use of e-learning courses

II. BACKGROUND

This paper extends the work reported in Sharma, Land and Dick (2006) at the IAIM conference in Milwaukee and focuses particularly on satisfaction with e-learning courses. That paper reported on data collected in the corporate environment for a pilot study and gives a comprehensive outline of the relevant literature. As such a relatively brief overview will be given in this paper, focusing on the educational institution environment.

Research (Welsh, et. al., 2003; Reynolds, 2002) frequently perceives e-learning as delivering education “*by a computer, via a network... most often the Internet, … intranet or local area network*” (Reynolds, 2002, p.2). Others, however, consider this restriction to the use of a network defines online learning, which is actually seen as a subset of e-learning (Bennink, 2004; Urdan and Weggen, 2000).

The social cognitive perspective of self-regulation provides a valuable framework to understanding learners and their learning outcomes. According to Social

Cognitive Theory (Bandura, 1977), environmental influences, personal factors and behaviour are reciprocally determined. Environmental influences include social pressures and contextual characteristics while personal factors can include demographics, self-efficacy and goals. Behavioural components consist of self-observation, self-judgement and self-reaction. Often referred to as "triadic reciprocality", each of these three components influences one another. That is, the environment is influenced by personal factors and behaviour; personal behaviour is influenced by environmental cues and behavioural changes; and behaviour is affected by both environmental events and personal influences (Compeau and Higgins, 1995; Terry, 2002; Hodges, 2005). This interaction among behavioural, personal, and environmental components forms the basis for the various approaches learners take to manage their learning.

From the social cognitive perspective, self-regulation refers to the degree to which learners are "*metacognitively, motivationally, and behaviourally active participants in their own learning process*" (Zimmerman, 1986, p.308; Zimmerman & Schunk, 1989, p.5). "*Metacognitively, self-regulated learners are persons who plan, organize, self-instruct, self-monitor, and self-evaluate at various stages during the learning process. Motivationally, self-regulated learners perceive themselves as competent, self-efficacious, and autonomous. Behaviorally, self-regulated learners select, structure, and create environments that optimize learning*." (Zimmerman, 1986, p.308).

Self Regulated Learning (SRL) theory implies that learners must possess certain self-regulatory attributes to succeed in their learning environment. Although e-learning environments may differ from traditional learning environments both Azevdeo (2005) and Lee (2004) argue that for computer-based learning environments to be effective, learners must be self-regulated.

Much research has established the importance of motivational constructs as predictors of academic success in traditional classrooms (Wolters, 2003, p.202). However, motivational constructs that predict learner outcomes, including completion, achievement and satisfaction, in an e-learning environment require more research (Miltiadou and Savenye, 2003; Wolters, 2003; Whipp and Chiarelli, 2004). E-learning researchers (Dalton et. al., 2000; Finnemann, 1998; Hellebrandt, 1999; Hoffman, 1995; Lee, 1997 cited in Reynolds, 2002, p.3) have suggested that "*motivation plays a key role in determining human behavior in learning environments, and could be the underlying cause of e-learning's relatively low completion rates*"., perhaps suggesting some degree of dissatisfaction with such courses

McWhaw and Abrami (2001, p.313) defined goal orientation as "*the reasons or goals students[/learners] have for engaging in learning tasks*"; or in other words, "*the way in which [they] approach a task*" (Zweig and Webster, 2004, p.232). Lynch and Dembo (2004) state that "*learners who are goal oriented (either intrinsically or extrinsically) are more likely to set specific learning goals than learners with poor goal orientation*". Thus, a learner's goal orientation plays a significant role in academic self-regulation.

Niemczyk and Savenya (2001) examined self-reported motivations and use of learning strategies of students enrolled in a general studies Computer Literacy course at a large university in the US. Although, their findings indicated that intrinsic goal orientation was not significantly related to course grades, student responses suggested that reasons for taking the course surrounded the belief that the course material was interesting. This may imply that goal orientation may be related to learner satisfaction. Niemczyk and Savenya's (2001) findings also indicated extrinsic goal orientations and high self-efficacy were positively related to course grades.

The most widely adopted definition of self-efficacy is that of Bandura (1997, p.3 cited in Hodges, 2005, p.377) who has defined self-efficacy as referring to "*beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments*". Bandura's work has identified four main sources of self-efficacy, namely: (Trentham, 2003, p.18-20; Bates & Khasawneh, 2004, p.4-5; Bandura, 1977)

- *enactive mastery experiences or actual experiences*: past success can increase self-efficacy while failure can decrease it;
- *vicarious experiences*: individuals estimations of their own capabilities based on performance of others;
- *verbal persuasion*: involving for example, coaching and/or positive feedback regarding one's capabilities; and
- *emotional or physiological arousal*: changes in emotional states such as anxiety, fear, or positive anticipation can provide cues about the level of success or failure that can be anticipated in completing that task.

Self-efficacy for self-regulated learning is defined in this study as "*learners' beliefs about their effectiveness in regulating their own learning*" (Morris, 1997, p.15).

Often, people's behaviour can be better predicted by beliefs that people hold about their capabilities, that is self-efficacy, rather than their actual capabilities as "*these self-perceptions help determine what individuals do with the knowledge and skills they have*" (Pajares and Schunk, 2001). Thus assessing a learner's belief in their ability to regulate their learning may be just as important assessing their level of self-regulation.

As learners focus on using the technology, they may ignore important self-regulation strategies (Zariski and Styles, 2000). This may have a detrimental impact on learning outcomes as it may lead to lower satisfaction levels, and may also discourage them from persisting and completing courses. Thus, in an e-learning context, computer self-efficacy which is an "*individuals' beliefs in their ability to use computers*" (Spence, 2004, p.18), may be a key predictor of their learning outcomes. Numerous researchers have identified the need for more research looking at perceived self-efficacy and learning outcomes, particularly in the areas of computers and online learning (Compeau and Higgins, 1995; Eastin and LaRose; 2000).

Time and environment management fall under the broader category of resource management (Zimmerman and Martinez-Pons, 1986). Much research has emphasized learners' ability to manage their time and environment and researchers agree this is predictive of or is correlated with learning achievement, persistence and completion (Miltiadou and Savenye, 2003; Zimmerman and Martinez-Pons, 1986; Lee, 2004; Macan, T. H. Shahani, C., Dipboye, R. L., & Phillips, A. P., 1990; Britton and Tesser, 1991; Trueman and Hartely, 1996; Wolters, 1998; Whipp and Chiarelli, 2004).

Both Wolters' (1998) and Whipp and Chiarelli's (2004) studies on college students found that successful online learners engaged in various environment structuring strategies to help them complete their academic tasks and make learning easier. These involved working in a quiet place, taking breaks to remain attentive, creating and using a psychological space which acted like a class on a consistent schedule, and ensuring access to all required equipment and materials.

Wolters (2003) states that additional research is required that assesses the impact of students' environment management separately from other self-regulatory attributes (p.196). There is little evidence linking environment management as a separate factor to students' effort, persistence, or performance on academic tasks. Generally, environment management is grouped into a general measure of volition or self-regulation which as a whole is associated with the aforementioned outcomes. This study seeks to assess environment management separate from other self-regulatory attributes.

The importance of help seeking behaviour in distance learning has been well supported by several researchers suggesting that "help seekers" may be more likely to achieve learning outcomes (Wang and Newlin, 2002; Hara and Kling, 2003; Whipp and Chiarelli, 2004; Zariski and Styles, 2000; Zimmerman, 2002). As mentioned earlier, e-learners may experience social isolation as e-learning environments may separate the learner from instructors and other learners. In such a situation, learners who do not employ help seeking strategies may become frustrated with e-learning courses which impact negatively on their satisfaction, persistence and achievement in e-learning courses.

The above is summarised in the research model, shown as Figure 1.

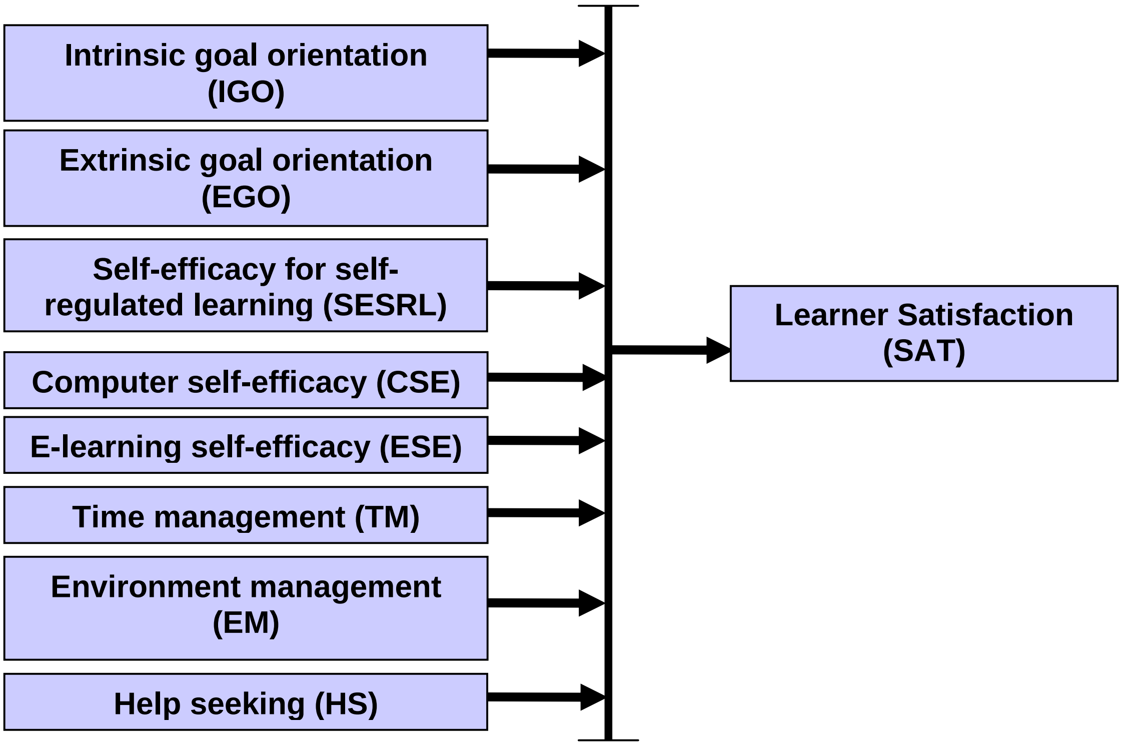


Figure 1 - The Research Model

Hypothesis: The greater one's intrinsic goal orientation, extrinsic goal orientation, self-efficacy for self-regulated learning, computer self-efficacy, e-learning self-efficacy, time management, environment management and help seeking behaviour, the more likely he/she will have greater satisfaction with e-learning courses.

III. METHODOLOGY

Certain specific self-regulatory attributes have been modeled as constructs with formative indicators. Formative indicators measure the different aspects that form the particular self-regulatory attribute. Reflective indicators, on the other hand, measure the same underlying concept and have been used to model the constructs representing the overall self-regulatory attributes (Chin 1998). When modeled, the formative constructs are linked to their corresponding reflective constructs, which are then linked to performance. Including formative and reflective measures allows evaluation of both overall self-regulatory attributes as well as specific underlying causes of the self-regulatory attributes that learners believe are essential in forming their overall level of a particle attribute of self-regulation (Mathieson & Peacock & Chin 2001, p. 86). The Motivated Strategies for Learning Questionnaire (MSLQ) was used as the main basis for questionnaire items for this study to assess the specific self-regulatory attributes (formative items) of intrinsic goal orientation, extrinsic goal orientation, and help seeking. The MSLQ has been validated through factor analyses, reliability analyses, and correlations with measures of achievement (Pintrich & Smith & Garcia & McKeachie 1991 cited in Lynch et al. 2004). Other instruments employed to measure specific self-regulatory attributes in this study are the computer self-efficacy scale (Murphy & Coover & Owen 1989 cited in Spence 2004), the self-efficacy for SRL scale (Gredler & Schwartz 1996 cited in Morris 1997), and the time management behaviour scale (Trueman et al. 1996). Questions designed to measure the overall self-regulatory attributes (reflective items) and performance, were newly created by authors, based on construct definitions identified in the literature. (Note: based on a pilot test of the survey, formative constructs where there was not a strong link to the corresponding reflective construct for self-regulatory attributes were not retained for the main study).

Environment management has been modelled as a second order factor (representing the construct at a higher level of abstraction), made up by a number of first-order factors or dimensions. Controlling one's environment and avoiding distractions in one's environment are the two factors that form environment management. Environment management has been modelled as a molar second order factor as a change in one of the first order factors may not necessarily result in a similar change in other first order factors (Chin & Gopal 1995). The second order factor has been measured using the repeated indicators approach, in which the second order factor is directly measured using all the indicators for each of the first order factors (Wold cf. Lohmöller 1989, pp. 130-133 cited in Chin, Marcolin & Newsted 1996).

Learner satisfaction was assessed using 4 items designed to assess a learner's overall satisfaction with the e-learning courses. During the pre-test, a number of researchers suggested the use of different types of questions to reduce the likelihood of "mono-method bias" where using a single scale can produce a bias in results. In particular, it was suggested to make use of partial sentences which require the participant to use the answers to complete the blank in a sentence. For example, "Overall, I am quite _____ with the e-learning course" to be completed with responses on a 5-point Likert scale where (1) is Frustrated and (5) is Contented.

The self-report questionnaire employed in this study was adapted from Sharma et al. (2006) to make it relevant to college students and consists of questions for demographics, intrinsic goal orientation, extrinsic goal orientation, self-efficacy for self-regulated learning, computer self-efficacy, e-learning self-efficacy, time management, environment management, help seeking, e-learning course completion, performance, and learner satisfaction. Negatively worded items, included to encourage respondents to read the questions carefully, were reverse scored before data analysis. A high score for a particular item indicates that the learner has a high level of the corresponding self-regulatory attribute whereas a low score indicates the learner has low levels of the particular self-regulatory attribute.

The data was collected from three courses, referred to here as Class A, B and C. Class A (n = 31) is a higher level Information Systems course for predominantly business seniors, who are not doing an IS major. After an introductory face-to-face lecture the course was conducted almost completely on-line, using WebCT and email. Students were required to attend a WebCT chat session each week, make occasional contributions to discussion topics, complete a series of chapter quizzes (open book) and do an on-line (but supervised) exam. Also, each week they were required to submit an assignment of approximately one page, on a case study or text book topic/question via email, which was graded and returned. Assessment was 20% for chat and discussion participation, 30% for Quizzes, 30% for the weekly assignments and 20% for the final exam. Class B (n = 99) is a required three credit hour lower-level computer concepts class. This online class was comprised of 70% of freshmen and sophomore students from different colleges; of these, 68.37% were females and 31.63% were males. Students were required to attend a WebCT classroom on a regular basis to obtain weekly modules for various learning materials and to do learning activities including a weekly one-hour online quiz of 20 questions and discussions for each week's module. Assessment was 75% for face-to-face exams, 22% for online weekly quizzes, and the rest was online discussion participation, an email and self-introduction assignments to encourage students to be familiar with WebCT tools at the beginning of the semester. Class C (n = 499) is a 4-credit hour course that's taught with one, relatively small face-to-face group with the lecture is streamed to students in the other sections. There are primarily juniors in the course, with a significant number of seniors. It's part of the business core. Assessment includes online discussion, an exam, which is taken in a testing lab, and a significant ERP project. Total n was 629. Across all classes, gender was evenly split 51/49 male/female; age under 21, 26 %, 21 – 30, 68% and 6% over

30; regarding computer use, 36% had been using a computer for between 5 and 10 years 48% more than 10.

Data analysis was conducted using two statistical software tools, namely PLSGraph Version 3.00 and SPSS V14.0. Descriptive statistics were utilized to provide an overview of the demographic data for this study. The structural equation modelling (SEM) technique called partial least squares (PLS) was selected as a) this study focuses on causal-predictive analysis, b) formative measures have been used, and c) its ability to simultaneously model the structural paths (i.e., relationships among constructs) and measurement paths (i.e., relationships between a construct and its indicators). Although, data is being obtained from a number of classes, the data is analysed at an overall level to obtain more general findings. Results are also provided on a class by class basis so consistency can be compared.

IV. RESULTS

THE MEASUREMENT MODEL

As Chin (1998) identifies, composite reliability is a closer approximation than Cronbach's alpha since composite reliability does not assume equal weighting for indicators. Internal consistency reliability or examination of correlations is irrelevant to constructs with formative measures as each formative indicator causally impacts the latent variable. Thus, the construct can be viewed as an effect rather than a cause of the item responses and no interdependencies among items can be assumed (Mathieson et al. 2001, p. 94). Cronbach's alpha scores and composite reliability for each of the constructs with reflective measures was computed. Generally, Cronbach's alpha should be above 0.80 and composite reliability above 0.70. With the exception of overall extrinsic goal orientation, all Cronbach's alphas were in the acceptable to excellent range indicating good internal consistency reliability. For overall extrinsic goal orientation, although Cronbach's alpha was low, composite reliability was acceptable. Composite reliability was above 0.70 for all constructs with reflective indicators except for overall extrinsic goal orientation for Class A results (.48, possibly as a factor of the low N for that class). Additionally, average variance extracted (AVE) was above the acceptable 0.50 for all constructs with reflective indicators with the same exception for overall extrinsic goal orientation for Class A only results. These results indicate high convergent validity. However, it must be noted that overall extrinsic goal orientation reported low AVE, only just above 0.50. With all class data combined, results also indicated minimal collinearity for items – with R-Square below 0.80 and a variance inflation factor (VIF) below 5 for formative indicators. Discriminant validity was assessed as adequate for constructs with reflective items by examining intercorrelations and AVE and cross loadings.

Loadings only apply for constructs with reflective indicators and should generally be above 0.707. All loadings, with the exception of Q25_OV_EGO[1] (for all classes and combined class data) and Q41_OV_EGO2 (for class A only data) for overall extrinsic goal orientation, are significant at the 0.01 (T-stat > 1.96) level and in the acceptable to excellent range with the majority above 0.9. Overall, these high loadings suggest that the items tend to strongly reflect their respective constructs. If the problematic questions are to be used in future research, it may be beneficial to consider their wording to determine any potential problems. For formative indicators, the weights rather than loadings are examined (Chin 1998). With all class data combined, all indicators had significant weights with the exception of Q7_HS (Generally, I try to work things out on my own if I have problems learning the e-learning course material).

[1] Generally, participating in the e-learning course is a means to an end (such as course credit, approval from others or grades

[2] Generally I would participate more in the e-learning course if it helps me attain external rewards (such as course credit, approval from others or grades

THE STRUCTURAL MODEL

The following model (Figure 2) illustrates the overall results from PLS. The results presented in this model will be discussed in this section. Additionally, bootstrapping with 1000 sample cases was performed and the results will be presented with all path estimates.

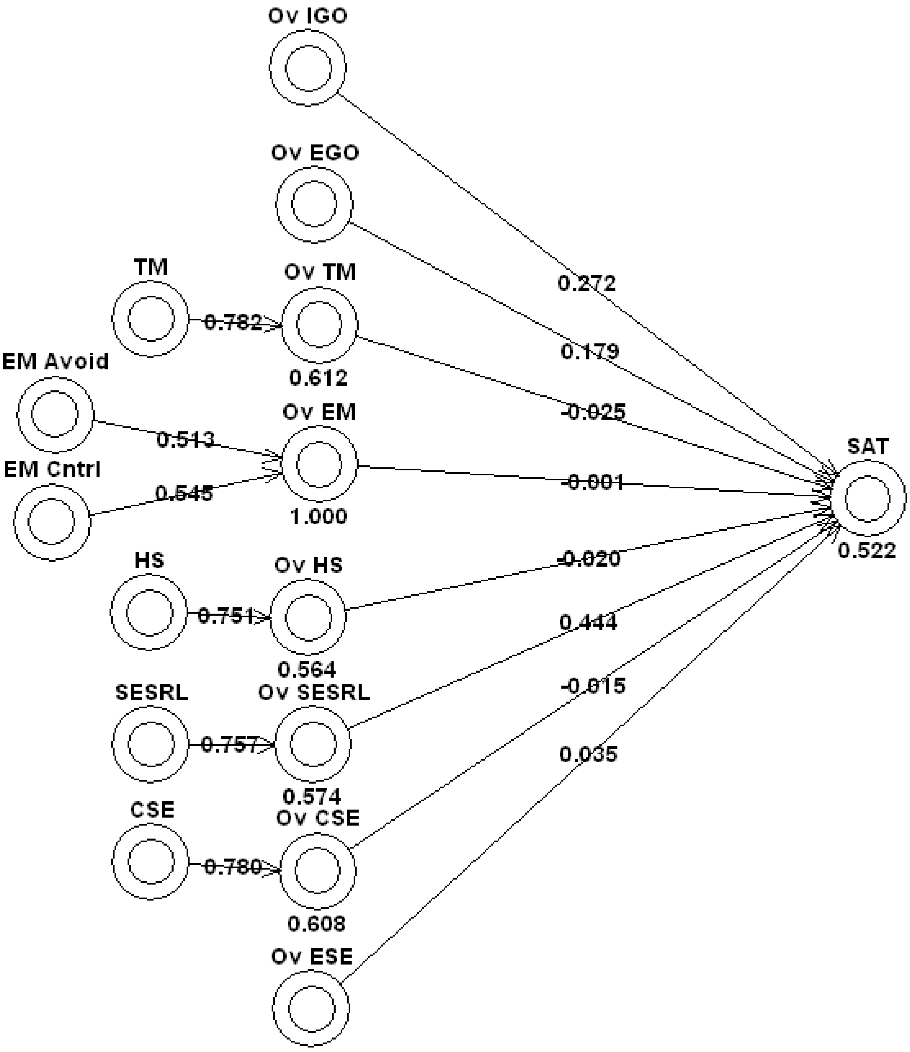


Figure 2: PLS Model from the Main Study (All Classes)

The first step in evaluating the structural model involves examining the path between constructs with formative measures and the corresponding constructs with reflective measures. The paths for computer self-efficacy, self-efficacy for self-regulated learning, time management and help seeking are all reasonably high, above 0.70 (except Ov SESRL for class A only data) which suggests that the formative set has reasonably good coverage. Ideally, the paths should be above 0.80 for adequate coverage in the formative set. These paths are given in Table 1, including paths per class with problematic results shaded. As the numbers in brackets indicate, all paths were significant at 0.01.

Table 1: Path Estimates and Significance for Formative to Reflective Constructs

CLASS		SESRL - Ov SESRL	CSE - Ov CSE	TM - Ov TM	HS - Ov HS
ALL	R^2	0.574	0.608	0.612	0.564
	PATH	0.757 (38.0584)	0.780 (40.6581)	0.782 (50.4123)	0.751 (39.4844)
A	R^2	0.427	0.703	0.676	0.540
	PATH	0.653 (7.2486)	0.839 (20.1127)	0.822 (20.2816)	0.735 (8.2266)
B	R^2	0.670	0.598	0.679	0.653
	PATH	0.819 (23.7796)	0.774 (15.6376)	0.824 (24.1993)	0.808 (24.1969)
C	R^2	0.566	0.610	0.609	0.545
	PATH	0.752 (30.8488)	0.781 (37.0853)	0.780 (44.8629)	0.738 (32.2835)

Table 2 reports all path estimates and the significance of these estimates of second and first order factors. All paths have significance at the 0.01 level. The two dimensions that form overall environment management – avoiding distractions and controlling distractions – all have acceptable paths to overall environment management, with a minimum of 0.5130 (for all class data combined). The results suggests that the most important factor reflecting overall environment management is controlling distractions followed by avoiding distractions.

Table 2: Path Estimates and Significance for Second Order and First Order Constructs

CLASS	Ov EM	
	EM Avoid	EM Control

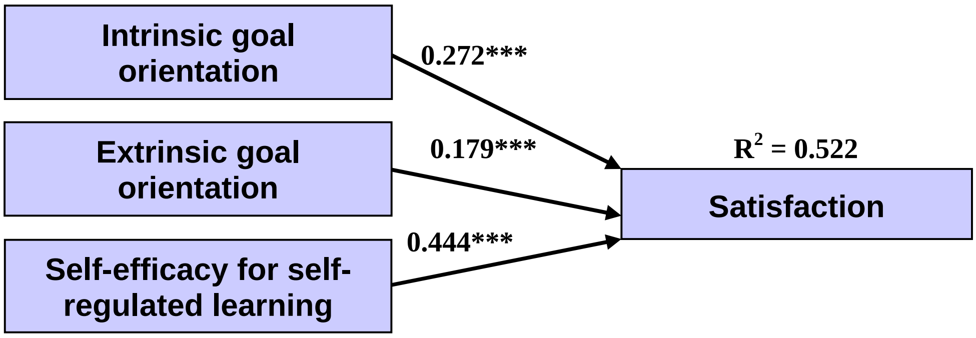
ALL	0.5130 (83.1589)	0.5450 (83.1355)
A	0.5120 (10.0192)	0.5520 (12.5336)
B	0.5120 (29.7963)	0.5240 (32.4711)
C	0.5140 (72.1328)	0.5490 (71.2041)

Paths between the overall constructs and dependent variables are indicated in Table 3. The numbers in brackets indicate the significance obtained for path estimates from bootstrapping with 1000 samples. Significant paths at the 0.01 level are shaded.

Table 3: Path Estimates and Significance for Self-Regulatory Attributes and Learning Outcomes

	ALL (R2 = 0.522)	**CLASS A (R2 = 0.628)**	**CLASS B (R2 = 0.613)**	**CLASS C (R2 = 0.502)**
Ov IGO	0.2720 (7.3585)	0.3900 (1.6784)	0.1950 (2.2145)	0.2570 (5.9261)
Ov EGO	0.1790 (4.2629)	0.2440 (1.1771)	0.0630 (0.6992)	0.1970 (4.1749)
Ov SESRL	0.4440 (10.2011)	0.3380 (1.3079)	0.5340 (4.2038)	0.4200 (8.2093)
Ov CSE	-0.0150 (0.5290)	-0.0440 (0.2277)	0.0400 (0.5347)	-0.0210 (0.6258)
Ov ESE	0.0350 (0.6741)	0.0810 (0.3095)	0.1910 (1.3230)	0.0190 (0.3202)
Ov TM	-0.0250 (0.5340)	0.1400 (0.7259)	-0.1250 (1.0040)	0.0010 (0.0186)
Ov EM	-0.0010 (0.0280)	-0.1110 (0.4471)	-0.1440 (1.2727)	0.0090 (0.2311)
Ov HS	-0.0200 (0.6331)	0.0160 (0.1038)	0.1230 (1.2750)	-0.0250 (0.6945)

The results indicate considerable support of the model with an R-Square value of 0.522 for satisfaction (for all class data) and the influence of certain key factors, represented by the path values. A number of significant paths were found in this study. These are summarised in Figure 3..



*** 0.01 (> 1.96)

Figure 3: Research Model with Significant Paths from the Main Study

To assess the predictive relevance of the structural model, blindfolding procedure with an omission distance of 25 was run. As Q2 above 0 implies the model has predictive relevance, the results for predictive relevance provided in table 4 confirm that the structural model has satisfactory predictive relevance.

Table 4: Predictive Relevance

Construct	**ALL Q^2**
Overall Self-efficacy for Self-Regulated Learning	0.4240
Overall Computer self-efficacy	0.5275
Overall Time management	0.4743
Overall Help seeking	0.3941
Overall Environment management	0.7931
Satisfaction	0.3853

V. DISCUSSION

Of the eight self-regulatory attributes under study, three of these – self-efficacy for self-regulated learning, intrinsic goal orientation and extrinsic goal orientation – were found to positively impact learner satisfaction.

It is perhaps not surprising that those with a high belief in their effectiveness to regulate their own learning should be satisfied with these courses. Not only are today's student au fait with the use of the technology as part of their daily lives, the technology itself assists them in their endeavours. They are confident that they can control the flow of information and minimise disruptions to enable them to learn and do the tasks required of them. More important perhaps is the belief in their abilities. The data for this study came from students, with the exception of Class B, mostly in their junior or senior years where study habits and goal expectations are already set. The class B students had a choice between an online section and a f2f section. Another study (of the same group of students) noted those who decided to take an online section on their own were more disciplined and confident with their computer skills. In the class evaluations conducted from time to time, students frequently commented on how "time management" was an important component of their study. This suggests that they either came into the course with this skill or acquired it while completing it. Learners' beliefs in their ability to self-regulate may suggest that they believe they are active learners who believe they are able to take control of their learning. As such, a learner's confidence and belief that they have greater control over their learning efforts could lead to greater satisfaction.

The intrinsic goal factor is strong, too. To some extent it is possible that this is a result of the particular courses selected for the study. An objective in these courses is to demonstrate to the students how a knowledge of IS is essential in business and to show them how it can help solve business problems or take advantage of opportunities. The courses are practically based with a focus on real world events and case studies. This may mean that by the time students are close to graduation they are considering more carefully the real world problems they are likely to face and see the course as providing extra value in their degree. There may be implications here for those schools offering minors in IS as part of a business major – these may be best placed in later years. Nevertheless, there is in an indication in this study that satisfaction with e-learning courses is more than about getting good grades – it is about improving the value to the student of the university experience and hopefully, equipping them better to face employment.

The extrinsic goals of grades and results are also key to satisfaction, as one would expect from college students because the courses assessments are part of their degrees. Contributing factors (as employed in these classes) may be feedback on submitted work as the course progresses. It is worthy of note that this factor was only significant in the class C and overall, probably as result of the sample size. However class A, even with a small size was tending in that direction too – a feature of this class is regular feedback on progression.

These three variables are all related to motivation. A learner who is motivated can perceive the tasks he/she undertake as a positive process. This may be because they are consistently motivated to persist during e-learning courses and thus they may be more satisfied with their task. The reasons learners identified for taking e-learning courses include many personal motivation aspects as opposed to for convenience or cost reasons which may be more important for the organization rather than the individual. Assuming that the e-learning courses they take satisfy these motivations, learners may be more satisfied with the e-learning courses they take for these reasons.

This study has examined only mandatory Information Systems classes. Further research will need to be conducted to determine whether these findings are generalisable to a wider range of disciplines and it may be that the particular modes of delivery have influenced the findings too. However, as e-learning courses become pervasive, course designers will need to build into courses ways to promote self-efficacy in particular. Examples of possible methods for improving self-regulatory attributes identified through existing literature include providing computer skills practice in training/orientation classes, learners may engage in their own computer use prior to taking e-learning courses, provisions of time management training; organizational encouragement of the relevance and value of e-learning including tying e-learning course completion and/or performance to employee evaluations or creating an organizational culture that fosters lifelong learning; and provisions of advice or training on self-regulation strategies. Future research should investigate how to improve self-regulation in e-learning environments and identify predictors of SRL attributes which may provide a theoretical foundation for organizations, educational institutions and learners looking for methods to improve SRL attributes.

In summary, a learner who has greater intrinsic goal orientation, extrinsic goal orientation and self-efficacy for self-regulated learning, is more likely to be satisfied with the e-learning course experience. This suggests that e-learning is not for all of the people all of the time – indeed it may only be for some of the people, some of the time – some people may be unsuited to e-learning altogether, others may only find it useful to take some of their courses this way. The challenge for educational institutions is to be able to help these students self-identify as students who will be most likely to do well in such classes and enrol in them.

REFERENCES

Azevedo, R. (2005) Computer Environments as Metacognitive Tools for Enhancing Learning. *Educational Psychologist*, 40 (4), 193 – 197.

Bandura, A. (1977) Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review*, 84 (2), 191 – 215.

Bates, R and Khasawneh, S. (2005) Organizational learning culture, learning transfer climate and perceived innovation in Jordanian organizations. *International Journal of Training and Development*, 9 (2), 96 – 109.

Benninck, R. (2004) Implementing elearning from the corporate perspective. Retrieved August 13, 2008 from http://www.flexiblelearning.net.au/knowledgetree/edition05/download/Benn ink.pdf,

Britton, B. K., and Tesser, A. (1991). Effects of time management practices on college grades. *Journal of Educational Psychology*, 83 (3), 405 – 410.

Chin, W. W. (1998). The partial least squares approach for structural equation modeling. In G. A. Marcoulides (Ed.), *Modern methods for business research*. Mahwah, NJ: Lawrence Erlbaum Associates, 295–336.

Compeau, D. R. & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS Quarterly*, (19) 2, 189-211.

Eastin, M. S. and LaRose, R. (2000) Internet self-efficacy and the psychology of the digital divide. *Journal of Computer-Mediated Communication*, 6 (1), Retrieved August 2008 from http://jcmc.indiana.edu/vol6/issue1/eastin.html

Frankola, K. (2001) Why Online Learners Drop Out. Retrieved August 2008 http://findarticles.com/p/articles/mi_m0FXS/is_10_80/ai_ 9352432/pg_1

Hara, N., and Kling, R. (2003). Students’ distress with a web-based distance education course: an ethnographic study of participants' experiences. *Turkish Online Journal of Distance Education* (TOJDE), 4(2)

Hodges, C.B. (2005) Self-Regulation in Web-based Courses: A Review and the Need for Research. *Quarterly Review of Distance Education*, 6 (4), 375 – 383.

Lee, I. (2004) Searching for new meanings of self-regulated learning in e-learning environments. Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2004 (pp. 3929-3934) Retrieved August, 2008 from http://dasan.sejong.ac.kr/~inlee/set/articles/searching_040426.pdf

Lynch, R. and Dembo, M. (2004) The Relationship Between Self-Regulation and Online Learning in a Blended Learning Context. International Review of Research in Open and Distance Learning, Retrieved August 2008 from http://www.irrodl.org/index.php/irrodl/article/viewArticle/189

Macan, T. H. Shahani, C., Dipboye, R. L., & Phillips, A. P. (1990) College students' time management: correlations with academic performance & stress. *Journal of Educational Psychology*, 82 (4), 760 – 768.

McWhaw, K. and Abrami, P.C. (2001) Student Goal Orientation and Interest: Effects on Students’ Use of Self-Regulated Learning Strategies. *Contemporary Educational Psychology* 26 (3), 311 – 329.

Mathieson, K., Peacock, E. & Chin, W.W. (2001) Extending the Technology Acceptance Model: The Influence of Perceived User Resources. *The DATA BASE for Advances in Information Systems*, 32 (3), 86 – 112.

Miltiadou, M. and Savenye, W.C. (2003) Applying Social Cognitive Constructs of Motivation to Enhance Student Success in Online Distance Education. *AACE Journal*, 11 (1), 78-95

Morris, D.R. (1997). A study of self-regulated learning in a nuclear power plant setting. Doctoral dissertation, University of South Carolina, 87 pages.

Morris, D.R., Gredler, M.E., & Schwartz, L.S. (1998). The role of self-regulated learning in an industrial training environment. Paper presented at the annual meeting of the American Educational Research Association, San

Diego. Retrieved August 2008 from http://eric.ed.gov/ERICWebPortal/custom/portlets/recordDetails/detailmini.jsp?_nfpb=true&_&ERICExtSearch_SearchValue_0=ED418331&ERICExtSearch_SearchType_0=no&accno=ED418331

Niemczyk, M.C., Savenya, W.C. (2001) The Relationship of Student Motivation and Self-Regulated Learning Strategies to Performance in an Undergraduate Computer Literacy Course. Annual Proceedings of Selected Research and Development Papers Presented at the National Convention of the Association for Educational Communications and Technology (24th, Atlanta, Georgia, November 8-12, 2001)Retrieved August 2008 from http://eric.ed.gov/ERICWebPortal/custom/portlets/recordDetails/detailmini.jsp?_nfpb=true&_&ERICExtSearch_SearchValue_0=ED470107&ERICExtSearch_SearchType_0=no&accno=ED470107

Pajares, F. and Schunk, D.H. (2001) Self-Beliefs and School Success: Self-efficacy, Self-concept, and School Achievement. Chapter in R. Riding & S. Rayner (Eds.), (2001) *Perception* (pp. 239-266). London: Ablex Publishing.Retrieved August 2008 from http://www.des.emory.edu/mfp/PajaresSchunk2001.html

Phipps, R. and Merisotis, J. (1999) What's the Difference?: A Review of Contemporary Research on the Effectiveness of Distance Learning in Higher Education. *Report for The Institute for Higher Education Policy*. Washington: Free Hand Press.

Reynolds, K.A. (2002) Going the Distance with Distance Learning: An Analysis of Motivational Factors That Influence E-Learning Course Completion Rates. Thesis, Wright-Patterson AFB, OH, Air Force Institute of Technology, 131 pages

Sharma, S., Land, L and Dick, G. N. (2006) "What Makes a Good E-learner?" *Proceedings of the International Conference on Informatics Education & Research*, Milwaukee, December, 2006 pp 56-80.

Spence, D.J. (2004) Engagement with Mathematics Courseware in Traditional and Online Learning Environments: Relationship to Motivation, Achievement, Gender and Gender Orientation. Doctoral dissertation, Georgia State University, 139 pages

Terry, K.P.S (2002) The Effects of Online Time Management Practices on Self-Regulated Learning and Academic Self-Efficacy. Doctoral dissertation, Virginia Polytechnic Institute and State University, 154 pages

Trentham, C.L. (2005) The relationship of participation in a residential living and learning community to goal orientation, self-efficacy, and self-regulation of learning. Masters Thesis, Oklahoma State University, 149 pages

Trueman, M. and Hartley, J. (1996) A Comparison between the Time-Management Skills and Academic Performance of Mature and Traditional-Entry University Students. *Higher Education*, 32 (2), 199 – 215.

Urdan, T. A., & Weggen, C. C. (2000). Corporate e-learning: Exploring a new frontier. WR Hambrecht + Co. Retrieved August 17, 2008 from http://www.spectrainteractive.com/pdfs/CorporateELearingHamrecht.pdf

Wang, A.Y. and Newlin, M.H. (2002) Predictors of web-student performance: the role of self-efficacy and reasons for taking an on-line class. *Computers in Human Behavior*, 18 (2), 151 – 163.

Welsh, E.T., Wanberg, C.R., Brown, K.G. and Simmering, M..J. (2003) E-learning: emerging uses, empirical results and future directions. International Journal of Training and Development, 7 (4), 245 – 258.

Whipp, J.L. & Chiarelli, S. (2004). Self-regulation in a web-based course: A case study. *Educational Technology Research and Development*, 52(4), 5-22.

Wolters, C.A. (1998) Self-regulated learning and college students' regulation of motivation. *Journal of Educational Psychology*, 90 (2), 224–235.

Wolters, C.A. (2003) Regulation of Motivation: Evaluating an Underemphasized Aspect of Self-Regulated Learning. Educational *Psychologist*, 38 (4), 189 – 205.

Zariski, A. and Styles, I. (2000). Enhancing student strategies for online learning. In A. Herrmann and M.M. Kulski (Eds), Flexible Futures in Tertiary Teaching. Proceedings of the 9th Annual Teaching Learning Forum, 2-4 February 2000. Perth: Curtin University of Technology. Retrieved June 2008 from http://lsn.curtin.edu.au/tlf/tlf2000/zariski.html,

Zimmerman, B.J. (1986) Becoming a Self-Regulated Learner: Which Are the Key Subprocesses? *Contemporary Educational Psychology*, 11 (4), 307 – 313.

Zimmerman, M. C. (2002). Academic Self-Regulation Explains Persistence and Attrition in Web-Based Courses: A Grounded Theory. Doctoral dissertation, Northern Arizona University, Flagstaff.

Zimmerman, B.J. and Pons, M.M. (1986) Development of a Structured Interview for Assessing Student Use of Self-Regulated Learning Strategies. *American Educational Research Journal*, 23 (4), 614 - 628.

Zimmerman, B. J., & Schunk, D. H. (Eds.). (1989). *Self-regulated learning and academic achievement: Theory, research, and practice*. New York: Springer-Verlag.

Zweig, D and Webster (2004) Validation of a Multidimensional Measure of Goal Orientation. *Canadian Journal of Behavioural Science*, 36 (3), 232 – 243.